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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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Before the Nuclear Regulatory Commission

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)
)
Philadelphia Electric Company)
)
(Limerick Generating Station,)
Units 1 and 2))
_____))

Docket Nos. 50-352 OL-2
50-353

SUPPLEMENTAL RESPONSE OF INTERVENOR LIMERICK ECOLOGY
ACTION, INC. TO MEMORANDUM AND ORDER OF COMMISSION
DATED JULY 26, 1989 AND TO MEMORANDUM AND ORDER OF AUGUST 7, 1989

Intervenor Limerick Ecology Action, Inc. ("LEA") supplements its earlier response to the July 26, 1989 Memorandum and Order of the Commission, and responds to the Memorandum and Order of August 7, 1989 as follows:

I. REQUEST FOR FURTHER EXTENSION OF TIME

In our "Response of Intervenor Limerick Ecology Action, Inc. to Memorandum and Order of Commission Dated July 2, 1989", (served on August 1, 1989) ("LEA August 1 Response") we stated that the time afforded to IEA by the Commission to analyze the complex factual issues which it posed to its staff and the parties (and which it deemed material to its decision concerning the licensing of Limerick Unit 2) was completely inadequate. We also noted our view that the Commission's inquiries, while complex, were also incomplete, and ignored numerous nuclear fuel cycle environmental effects in a proposed purported comparison of

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severe reactor accident risk at Limerick with total environmental effect of non-nuclear replacement energy generation.

In response to the LEA August 1 Response, the Commission issued an order served on August 7, 1989 which extended LEA's response time from August 9 to August 14, a total of five days. On Monday morning, August 7, 1989, LEA's counsel was attached for a federal court jury trial in the United States District Court for the Eastern District of Pennsylvania, before the Honorable Edward N. Cahn, in Civil Action 88-7717. That trial concluded by settlement, in the middle of jury deliberations following trial the week of August 7, on Saturday August 12, 1989 in the afternoon.

Due to counsel's unavailability from August 7, 1989 (the date of service of the order extending the response time to August 14, 1989) until August 13, 1989, the time extension granted by the Commission was effectively no extension at all.

LEA requests a further extension of time in which to prepare full and meaningful responses to the Commission's orders and inquiries.

II. COMMENTS OF LIMERICK ECOLOGY ACTION, INC. PREPARED BY
LEA PRESIDENT DAVID STONE IN RESPONSE TO COMMISSION
ORDERS OF JULY 26, 1989 AND AUGUST 7, 1989

In the face of the unavailability of LEA's counsel in trial in federal court, LEA President David Stone prepared the following comments for consideration by the Commission. Without waiving or prejudicing LEA's request for additional time set forth above, LEA submits these preliminary comments for consideration and to avoid any suggestion of default on LEA's part in responding to the Commission's orders.

LEA offers these comments more as a courtesy to the Commission and the parties than in any hope that these words will change any minds. This exchange of comments by the parties, while perhaps interesting in and of itself, cannot possibly constitute compliance with NEPA. Our legal position remains that which we have argued several times before this Commission, most recently in our filing "Response of Intervenor Limerick Ecology Action, Inc. to Memorandum and Order of Commission Dated July 26, 1989". We adopt and incorporate those arguments again here, as well as those further arguments incorporated therein by footnote 7 on page 6 of that filing.

In the context of this filing, the following can only show a range of issues which ought to be more fully considered by the Commission in the course of evidentiary

hearings to which LEA, as we have argued time and time again, is entitled.

We note that it is the applicant, Philadelphia Electric Co., who has brought these issues to this unusual procedural situation by seeking to bypass the normal NRC adjudicatory procedures and seeking an exemption from NRC regulations implementing NEPA. Now instead of focusing on the specific issues remanded by the Third Circuit Court of Appeals, this litigation has veered off into some sort of a generalized discussion on the comparative risks of nuclear power and the risks of other forms of energy production (in the filings of the applicant and NRC staff, the only alternative energy production considered being coal fired electrical generating stations)^{1/}. The applicant and NRC staff filings have thrown numbers all around, sometimes without any technical citation whatsoever, and certainly without production of evidence, witnesses, or any opportunity for discovery. In short, without opportunity for hearing as LEA's earlier filings urged was required as a matter of law. Probably as a result of the Third Circuit Court remand, the word "NEPA"

^{1/} Not considered, for example, is the alternative of additional interim energy conservation measures. While such measures might not be immediately available to the consumer within the applicant's service area, they could well be made available within the time frame relevant to the analysis requested by the Commission: within the next fifteen months. No analysis has been offered by the NRC staff or the applicant relating to the comparative risks of such an alternative.

is now used from time to time by the Commission, NRC staff, and the Applicant in vague association with this kind of non-adjudicatory discussion. The parties are being given a few days to submit filings on incredibly broad, complex, and highly controversial areas of technology, finance, health, and law. The temptation to participate in this free-for-all is overwhelming, and LEA will not resist. We hope we can at least show that there is another side to the story. As a matter of law, LEA maintains that hearings must be held on these subjects if the NRC Commission intends to use the submissions of any of the parties as a basis for its issuance of the Limerick Unit 2 license, and the de facto granting to Philadelphia Electric of the broad exemptions it has requested from established NRC rules and procedures.

We do not accept the idea that what is at issue here is the alternative posed by the NRC in its July 26 Order. By the questions posed in its order, the Commission implies that it must either hold up the Unit 2 license for fifteen months, or be prepared now to postpone the implementation of any SAMDAs until the first refueling outage. That is clearly wrong. What the Commission could do - and should do - is decline to issue the Unit 2 license until the remanded questions are decided by regular NRC regulations and practice and procedure, the preparation of a supplement to the Limerick Draft Environmental Statement, the receipt

of comments thereon, and the completion of a supplemental Final Environmental Statement which properly considers the comments.

At that point, it would be proper to consider postponing until the next refueling outage any actual SAMDA construction which could not be commenced while either unit is running. Only at that point can the cost and benefits of delaying the SAMDA vs. not running the plant for the time needed to make the SAMDA changes be weighed. First, the NEPA requirement will have been satisfied by completing the hearing process and supplementing the Limerick FES. LEA will have been able to exercise its procedural rights to formal discovery, to the presentation and cross-examination of witnesses and so forth. Secondly, the Commission will have a factual record of risks and benefits then before it which can then be applied to the question of when any particular SAMDA ordered by the ASLB need be implemented. Prior to the hearing of the remanded issues, there exists no factual record before the NRC. There are only assertions made by the various parties in a filing such as this one.

In evaluating the cost benefit of implementing any SAMDA prior to full power operation rather than waiting until the completion of the first fuel cycle, several factors should be brought to bear on the question.

First, it should be noted that any SAMDA which according to the prevailing risk analysis, is cost effective if implemented for the full life of a plant, may also be cost effective for one fuel cycle. This is because it is not unreasonable to assume that any estimate of risk could in fact be in error by a factor significant enough to counterbalance the impact of delay in implementation of the mitigative measure. Thus if the time until the first refueling is 16 months (1 and one half years), each such period constitutes one twenty-sixth of a plant's expected operational lifetime (and license duration) and a SAMDA which the applicant contends to be barely cost effective for forty years may in fact be cost effective for even one and a half years if the risk analyses suggest uncertainty of risk of just a factor of twenty-six - even if just for a few accident sequences connected to the SAMDA under consideration. Potential order of magnitude errors in core damage frequency estimates for boiling water reactors (BWRs) like Limerick have already been explicitly acknowledged by the Advisory Committee on Reactor Safeguards. See Attachment A (ACRS letter of May 9, 1989 to Chairman, U.S. NRC).

The NRC Commission cannot simply assume away - particularly without adjudicatory hearings, facts, or

evidence and in the face of the ACRS letter - the possibility that the risks of these highly complicated interdependent systems may have been in error by an order of magnitude or two by the applicant and even the NRC staff. To do so is simply to set up a general policy on severe accident risks under a somewhat more subtle, but just as false, guise as that recognized, and rejected, by the Third Circuit Court in Limerick Ecology Action v. U.S. Nuclear Regulatory Commission. What the other parties seem to be saying here is: " All right, maybe we can't just assume that our risk assessments are good enough to generally rule out the consideration of SAMDA's being cost effective for the thirty or forty year lifetime of a nuclear plant. The Appeals Court has ruled and we go along. NEPA must be applied. But look, we can just assume that our estimates of risk are low enough to rule out consideration of any SAMDA's for fifteen months, or about 1/26th of a plant's lifetime. We just know that we can't be off by as much as twenty-six times on any of these accident sequences. There is no need to give an intervenor a right to challenge through discovery, cross-examination, and presentation of witnesses our figures. We just can't be that far off. So we can give the intervenor a week or two to write some "comments", make some noise about "costs and benefits" in order to pay lip service to NEPA and to the Appeals Court, and litigate the SAMDA issue later."

In fact, in LEA's view, such reasoning, once accepted, could be applied to each year and a half fuel cycle until Limerick closes. We are reminded of the "temporary" emergency water allocations and temperature and dissolved temperature restrictions exemptions requested by PECO of the Delaware River Basin Commission year after year for use by Limerick Unit 1. Under the Commission's "incremental" analysis, there is no logical place to draw the line.

Fair and effective nuclear regulation requires more realism, a requirement for evidence, and the assurances of reliability of a fair adjudicatory system. After all, the Third Circuit Court in Limerick Ecology Action noted Commissioner Asselstine's statement in his dissent in the original Limerick licensing decision that the NRC's estimate of an accident at least as severe as TMI occurring in the next twenty years is "50-50".

LEA also notes that the same time constraints which the Staff admits with respect to evaluating the environmental effects (page 11 of its filing) apply to its consideration of Limerick risks. LEA shares this problem. The correction subsequently made by the NRC Staff with respect to its incorrect use of the "nearly 2.5" risk reduction figure illustrates the pitfalls of such hasty analysis. Another

more serious limitation is that while the NRC staff gives PECO a 2.5 risk reduction factor for certain accident sequences because of certain purported improvements by PECO, the Staff has apparently not had time to rework the risk analysis in view of areas of recent concern by the ACRS and others - areas such as MOV's LOCA's, and the post-Chernobyl understanding of steam explosions even at low power and testing levels of operation. LEA would seek to incorporate such more current analysis into the litigation to which we are entitled by NEPA, the Third Circuit remand, and NRC regulations. See, e.g., Attachment B.

Much of the current uncertainty with respect to Limerick accident scenarios arises from current thinking in Interfacing Systems LOCA's, NUREG 1150 and its limitations, and changes in the way steam explosions must be analyzed in light of recent historical experience. Involved is the way assumptions made in the WASH 1400 report about steam explosions after a core melt (and the so-called V scenarios) must be modified and updated. Recently raised concerns about General Electric Mark I and II containments should be factored in.

LEA cannot attempt to litigate these matters in the course of these comments, except to assert that after adequate discovery and in the course of the required hearings, we

would be prepared to pursue these matters. The Commission must afford LEA that opportunity if the Commission intends to rely on the otherwise unchallenged assumptions of severe accident risk made by the NRC Staff and the Applicant. Even if the basis for those assumptions is derived from the original work analyzing Limerick risk from nearly a decade ago, LEA has the right under NEPA and the Atomic Energy Act to try to apply subsequent information in the course of this litigation. To allow Applicant and NRC staff assumptions to stand without allowing LEA the opportunity to challenge them in the course of litigation not only prejudices and violates our rights in this consideration of the full power license for Unit 2, but would prejudice the on-going proceedings before the ASLB on the remanded issue itself.

Should the Commission accept applicant and Staff figures here without any factual basis developed through hearings, cross-examination, rebuttal testimony and so forth, then those risk assumptions could be used to prejudice consideration of any SAMDA which a more reasonable and up-to-date understanding of the risks might well demonstrate would be cost-effective.

There are other general indications of uncertainty and risk which, while not conclusive in and of themselves, warrant additional scrutiny.

It is probable that the first fuel cycle period is somewhat more risky than average operation. (See NRC staff August 2 filing, p. 23: "Alternatively, forced outages and repairs tend to be above average for an immature reactor.") This, in LEA's view, increases the uncertainty and risk. After all, the TMI accident occurred during that plant's (TMI Unit 2) first fuel cycle. Chernobyl, too, occurred at lower power levels during testing and experimentation. The ACRS has expressed concerns about extended operation at lower power levels.

Also, plant operators are less experienced and less proven fit for duty at these early periods in a plant's operating life. Philadelphia Electric Co., in particular, has yet to prove that its attempts at management and corporate culture reform following the Peach Bottom fiasco, do in fact work at all of its nuclear facilities.

In addition, the fluctuation of power levels to minimize the Crud Induced Localized Corrosion problems which surfaced so early in Unit One's life, may well happen at Unit Two which utilizes the same condenser tube types and water chemistry.

LEA is concerned about this poorly understood problem, and PECO's ad hoc way of handling it through filters rather

than through the more comprehensive remedy of replacing the corroding condenser tubes - the source of the offending copper - with titanium. Should this problem persist at Unit 1, and emerge at Unit 2, not only could occupational radiation exposure levels during SAMDA installation be increased unpredictably, but unforeseen risk-increasing consequences could develop. Installation and maintenance of the filters and deep bed demineralizers as well as any changes in coolant flow velocity, pressure, or temperature due to these changed configurations could well affect potential accident scenarios.

On page 11 of its August 2 filing, the NRC staff admits that its estimates of the incremental environmental effect of generating non-nuclear replacement energy for Unit 2 does not reflect the more precise numbers which may exist in the literature since the late 1970's and early 1980's. The staff says this is due to time constraints. It is our belief that much progress has been made in the analysis of the costs and benefits of various alternatives to nuclear power. For instance, the NRC staff's list of alternatives -- and those considered by the Commission -- should be expanded to include natural gas fired generation, conventional and low head hydro, cogeneration, recycling and energy efficiency.

For example, Philadelphia Electric could immediately

institute the kind of energy efficiency promotion and incentives other utilities have been successfully using since the early 1980s. Significant progress could be made at a reasonable cost in the fifteen month period equivalent to the first fuel cycle of Unit 2. While it is probably true that for the first several months of such a program replacement energy savings would not equal Unit 2 at full power, the gains in energy efficiency caused by such a crash program would accrue to the environmental, health, and cost benefit of the public for many years to come. This investment in efficiency could then result in a reduction for the need for other capacity deemed to be more environmentally harmful than Limerick once Limerick is operating with the SAMDAs installed. This long-term reduction in the demand for what the NRC staff deems more harmful (coal-fired generation) would offset the increased use of such capacity while the energy efficiency improvements are being made and while the SAMDA issue is resolved. Furthermore, since Limerick Unit 2 will not be producing significant electricity by the 1989 summer peaks anyway, there is almost a year to achieve energy use reductions before next summer's peaks. Another advantage is that such reductions through an investment in efficiency would be in place while Unit 2 and Unit 1 are undergoing SAMDA modification and any other changes needed by that time such as the replacement of the present corroding condenser

tubes with titanium.

LEA would be able to present and evaluate the energy efficiency alternatives - as well as the possibilities for natural gas fired cogeneration and low head hydro - in the course of the NEPA litigation to which we are entitled if the Commission intends to weigh these matters in the course of its consideration of the Unit 2 license. Various branches of Pennsylvania State government have developed considerable expertise over the years in this area. Studies presented in the original Public Utility Commission investigation into the need for Limerick Unit 2 may well be useful here. Time and procedural constraints imposed by this extremely limited opportunity to comment prevent us from discussing these issues in detail here.

But, for example, readily implemented measures include the immediate institution of off-peak rates for residences and businesses, utility backed and coordinated financing of state-of-the-art commercially available energy efficient lighting and appliances for the public, expansion of the energy use audits available at no cost to the public, and educational and motivational advertising including public interest spots. It has been shown that a utility can actually make a profit on its investment in the public's energy efficiency. Such long-term future profit would off-set current start-up costs. The Public Utility Commission would probably look favorably upon such a crash

effort.

LEA maintains that PECO has not instituted effectively such a program and in fact is weak compared to many other utilities in this area-- leaving much room for improvement.

Also missing from the NRC staff analysis is the consideration of the environmental effects of natural gas fired and/or oil generation alone as an alternative to Limerick 2 for one refueling cycle (or less). The effects and risk of these are considered to be less than coal, especially since they can be used as "peaking" capacity.^{2/} The NRC staff does not even consider the fact that much or all of Unit 2 capacity may not even be needed as base load capacity, and that as base load capacity Unit 2 may be duplicated by other base load nuclear units already on-line and part of the existing PJM grid mix. It is incorrect to consider a 65%-35% coal/oil mix as the practical base load alternative to Unit 2 for the few months needed to complete

^{2/} In fact, an analysis which considers only the comparative incremental environmental impact of oil fired generation in place of Limerick nuclear capacity, rather than the replacement energy mix assumed by either the applicant or the NRC staff, is more appropriate in the specific factual circumstances of this case. This is because the applicant intends to shut down its Cromby generating station for replacement of its capacity by Limerick. The applicant's Cromby Unit 2 is an oil-fired electrical generating plant of 201 MWe capacity. Therefore, the comparative impacts of fossil/nuclear fuel cycles presented by the NRC staff (August 2 filing, p.17, Table 1) is not applicable here and must be modified to reflect the actual nature of the replacement capacity if Limerick is delayed.

the remanded NEPA litigation or even for the 15 months apparently envisioned by the Commission. A very large part of the current PJM grid energy mix is nuclear. The risks for those plants - if one believes the NRC and the utilities on this - would be essentially the same or better than Unit 2 taking into account Limerick start-up phase and location within 30 miles of 4 million people. What the NRC should not be looking at is the general question of whether all nuclear plants should be replaced for 15 months by the coal/oil generation mix. This is what they have in fact done. What the Commission must consider is what the actual alternative to Limerick 2 base load capacity would be in the PJM grid as it exists today.

In fact, any on-line capacity (whether nuclear or non-nuclear) which is not under Court-ordered review or in which there is no need to limit or restrict any intervenor's right to NEPA due process, or in which no operating or other permits have been reopened by the federal courts ought to be strongly preferred as an alternative to Unit 2 for the time needed to complete the litigation.

It should be emphasized that the NRC staff's analysis of risk for the coal/oil alternative (p. 11) shows a mortality rate for coal of 7 to 12 per 0.8 GW(e)-yr as compared to a mortality rate of .18 per GW(e)-yr for oil (p. 12). The

unfavorable balance of fossil vs. nuclear in the Table 1 (p. 17) is thus largely a function of the coal, not the oil, alternative. Natural gas is not even considered. The fuel cycle mortality risk for oil and nuclear (.18 vs. 1.0 to 1.4 for nuclear) show a strong advantage for oil. Much further analysis must be done before one can rule out the interim use of fossil fuels as a stop-gap for some potential Limerick delay.

We reiterate, further, that LEA does not accept the one fuel cycle premise posed by the Commission. It is not expected to take anywhere near fifteen months to complete the hearings on the remanded SAMDA issues or any other pending issues. After the litigation has been completed and certain SAMDA's have been ordered is the logical and legally correct time to consider when and how they should be implemented.

While LEA agrees with the NRC staff that the carrying charges on the capital investment in Unit 2 should be excluded from this analysis (NRC Staff August 2 filing, p.21) as well as AFDUC charges and security, maintenance, and operational costs (5.3 million per month), LEA does not accept the replacement energy cost penalty as being 228 million dollars. Just by relying on footnote 7 on pg. 10 of the Commission's Memorandum and Order, CLI-89-10, we could

calculate 12 million dollars a month as the increased fuel costs not including any capital costs. That comes to \$180 million for 15 months-- already less than the Staff's \$228 million. These numbers are clearly uncertain.

We do not assume that Limerick start-up need be delayed for anything like fifteen months in order to satisfy our procedural rights. Some delay could happen, but probably only a few months at most. After the litigation is completed, the parties and the Commission could then consider when and how to implement the changes. That is when costs and benefits of further delay in Unit 2 full power can be made. A factual record will then exist upon which to appropriately base a judgment. In fact, depending on the power ascension program for Unit 2, a delay in the issuance of a full power license need not greatly affect actual operation, if at all. Low power testing just began (as of Aug. 11, 1989). Much progress could be made in the litigation before the Commission need address the full power question at all, that is, while low power testing is underway. In fact, the performance of the Unit during low power testing could affect the Commission's decision as it weighs the risk of full-power operation without SAMDAs.

LEA also notes that even delaying the actual start-up of Unit 2 does not mean the loss of any of the Unit's useful

lifetime. In effect, what would happen is that fifteen months would be added in the future in exchange for the fifteen months not utilized now. The expected operational lifetime of the Unit is not reduced in the slightest by mere operational delay.

Since energy costs in the future will almost certainly be higher than now - in fact that's PECO's justification for building Limerick - even that \$228 million assumed by the NRC would be more than recovered by the extra fifteen months of fuel savings at some other point in the future of its operating lifetime. Since capacity exists now, which will at some point be retired, it makes economic sense to stretch out the current usefulness of those units which enjoy long depreciated capital costs and save the Limerick Unit 2 postulated fuel savings for that future fifteen months (or less) when the older plants - whether coal, nuclear, or oil no longer exist to replace Limerick for a time. An added benefit would be that overall nuclear safety and operating experience will be enhanced by the time of that future time period Limerick Unit 2 would be available because its full power operation was postponed for a time now. Certainly, any issues raised by the Third Circuit Court remand will have long since been resolved and implemented by then.

In a real sense, what should be compared is not a fifteen month operation of Limerick Unit 2 vs. the non-operation of the plant for that time and an absolute loss of that generating capacity forever. Rather, what must be balanced is the costs and benefits of present operation vs. future operation. The amount of electricity generated is the same. Only the time of generation is at issue. Future costs and demand can be assumed to be greater than the present costs of replacement power and demands.

A similar viewpoint applies to the risks of operating Limerick Unit 2 without SAMDAs. Since the overall operating lifetime of Limerick can be assumed to be a constant, what is actually being compared is a present fifteen months operation without any SAMDAs added vs. a future fifteen months with SAMDAs in place. That is the real effect of delaying the Unit 2 full power license until SAMDAs are not only litigated, but actually put in place. As LEA has already said, we believe fifteen months of delay to be an extreme case, but the same reasoning would apply to any amount of time.

One need not bring the relative risks of other generation into the picture at all. Of course, if there was a current drastic shortfall of electricity with the prospect that in a few years huge quantities of cheap and safe base load capacity would be brought on line, it might make sense

to run Limerick 2 whatever the risk in order to tide us over. If anything, the opposite is true. Large installations of base load capacity are not in the "pipeline". Even existing nuclear units are aging and becoming less reliable and arguably more dangerous. Older coal plants with new anti-pollution devices and scrubbers, such as Cromby, just a few miles from Limerick, will not last forever. Oil prices will rise and become more environmentally risky to drill for and transport as we must go farther and deeper to find it.

Electricity too cheap to meter and technologies too safe to monitor are simply not over the horizon. There is no harm in a few months' delay of Unit 2 operation while it is made safer, or until there is NEPA compliance, with the added benefit that a safer Unit will exist for an equivalent couple of months in the future when the aging generating capacity in the service area and in the PJM Interconnection is out of service.

Even without using this "now versus the future" point of view, LEA asserts that the replacement fuel figures present by the Staff and PECO would prove to be excessive if it were challenged in the course of the full litigation to which LEA is entitled, if the Commission intends to use that figure in its decision in the Unit 2 decision. There exists considerable expertise and even Limerick-specific

studies which have been prepared by various branches of the Pennsylvania state government in anticipation of the Public Utility Commission's consideration of PECO's Unit 2 rate increase request. We anticipate that various experts will challenge that \$228 million dollar replacement fuel assumption or even the \$180 million dollar estimate.

With respect to capital costs, we would note that if they are to be considered that the whole issue of the financing, the phase-in of the Unit 2 rate hike and costs associated with that, and whether or not there is a way to delay the Unit II rate increase without costing PECO interest must be considered.

Renegotiation of credit would have to be considered. LEA, and we believe the NRC Staff, does not possess sufficient information from PECO to go into these matters, even preliminarily. We require discovery and the right of cross-examination in order to determine the effect of any delay on capital costs and AFDUC charges. This is LEA's right if the Commission intends to use capital costs in its determination of the costs and benefits of truncating LEA's procedural rights under NEPA, the Court remand, and the NRC's own regulations in order to permit full power operation at Unit 2 while the SAMDA issue is pending. The NRC cannot rely on a "commonsense" understanding of these

complicated matters of finance and scheduling especially since the amounts at issue here are only a small fraction of the 4 billion dollar rate hike request for Unit 2.

The capital cost question is also impacted by LEA's "present fifteen months vs. a future fifteen months" analysis. An added fifteen months of capacity needed for instance decades from now when not only replacement fuel but capital and construction costs have skyrocketed, is certainly worth a lot more than a present fifteen months when already paid for units can substitute for Unit 2 power. Those older units of whatever type will not be around indefinitely, whereas a delay in Unit 2 start-up will simply add time to its later operating life.

We note that if PECO truly concludes that months of delay would be costly to it, the Company can simply agree to make certain SAMDA changes. Even if all the changes are not strictly cost-effective from PECO's point of view with respect to risk, the Company certainly is better off investing money in extra safety rather than what it claims to be costly delay. The NRC Commission does not need to interject itself in any unusual way into these proceedings. The Commission certainly need not abridge LEA's legal rights in order to save Philadelphia Electric a tiny fraction of its 4 billion dollar investment in Unit 2.

It is simply not credible that if delay is as costly to Philadelphia Electric as it now claims, the Applicant would not find a way to resolve the SAMDA issue and avoid these huge losses. It is difficult to understand why a utility whose annual profits run in the 400 million to 500 million dollar range, and whose investors are guaranteed a large percentage gain on Unit 2 in addition cannot afford to go the extra mile in assuring the public and the Courts that the Limerick plants are as safe as reasonably possible. For PECO to waste ratepayer and government funds in dragging this matter out in the NRC and the Courts is unconscionable. But for PECO to ask this Commission for special consideration out of a claim of impending hardship, and to go on to risk months of further litigation, uncertainty and delay which by its own reckoning would cost tens if not hundreds of millions of dollars and whose legal repercussions could affect the future of the nuclear industry itself, is tempting fate. We have all heard much about a new sort of corporate culture at the Philadelphia Electric Company. Limerick Ecology Action, Inc. has known the Philadelphia Electric Company for twenty years now and we have yet to see the change.

III. CONCLUSION

For the reasons stated in Section I above, the Commission should afford LEA a further extension of time for

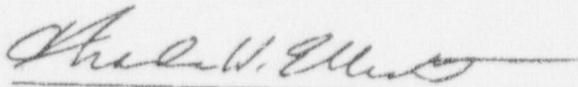
reply. For the reasons stated in Section II above, the Commission should revoke its July 26 Order, and afford LEA an opportunity to examine the issues raised by the order in an adjudicatory setting with procedural safeguards of presentation of evidence, cross-examination, and otherwise in accordance with the Commission's regulations and rules of practice. Further, the Commission must surely decline to issue an operating license for Limerick Unit 2 until the issues raised by the Third Circuit remand are heard in accordance with law.

Respectfully submitted,

AS TO SECTION I ABOVE

POSWISTILO, ELLIOTT & ELLIOTT

By:

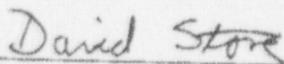


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AS TO SECTION II ABOVE



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NUCLEAR REGULATORY COMMISSION**
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WEEK ENDING May 23, 1989

NEWS RELEASES

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FOR IMMEDIATE RELEASE
(Wednesday, May 17, 1989)

NOTE TO EDITORS:

The Nuclear Regulatory Commission has received from its Advisory Committee on Reactor Safeguards four letter reports. They provide comments on:

- 1) NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants,";
- 2) a draft generic letter related to occupational radiation exposure of skin from hot particles;
- 3) a generic letter on safety-related motor-operated valve testing and surveillance; and
- 4) the NRC's human factors programs and initiatives.

Attachments:
As stated

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D.C. 20555

May 9, 1989

The Honorable Lando M. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: NUREG-1150, "SEVERE ACCIDENT RISKS: AN ASSESSMENT FOR FIVE U.S. NUCLEAR POWER PLANTS"

During the 349th meeting of the Advisory Committee on Reactor Safeguards, May 3-6, 1989, we discussed the second draft of NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," with members of the staff. We also had the benefit of the documents referenced.

Although we have not had an opportunity for more than a brief look at this second draft, we have been asked to recommend uses to which it could be put before the completion of the peer review as organized by the NRC staff. At this time, on the basis of a cursory examination, we can recommend only that, if its conclusions are used, they should be examined very carefully in light of the criticisms leveled at the initial draft. For the most part, criticism of the initial draft focused on what has come to be called the Level II portion of the probabilistic risk assessments (PRAs) discussed in the report. It would appear on this basis that prior to peer review of this second draft, information and insights that may come from other parts of the report can be given more credence than those from other parts of the PRAs. We observe, however, that the core-damage frequencies reported do not take into account a number of external accident initiators that in other contemporary PRAs have appeared as major contributors to the risk calculated.

Of some interest to us, in connection with staff usage, are comments from some segments of the staff that might be expected to use either the results or the insights derived from the report. During the past month we have observed the following:

During our April 6-8, 1989 meeting, the Director of the Office of Nuclear Reactor Regulation reported on a major effort being considered to reduce the risk that he believes is associated with the interfacing-systems LOCA. We observed that the draft NUREG-1150 report did not identify this as a major risk contributor. He responded that he was skeptical of the results of PRAs. He felt

that, if his current concerns are borne out by further investigation, this issue is important enough that it should be resolved before the individual plant examination (IPE) program is completed.

Also during our April 6-8, 1989 meeting, we discussed with members of the staff from the Office of Nuclear Regulatory Research the performance of motor-operated valves (MOV) in nuclear power plants. They presented a study, performed at Brookhaven National Laboratory, which they are using as partial justification for requiring a major program of testing, maintenance, and repair of MOVs in operating plants. The report concludes that the core-damage frequency for boiling water reactors (BWRs), taking into account what they now believe to be the performance of MOVs, is more than an order of magnitude greater than the core-damage frequency for BWRs reported in the draft NUREG-1150. On the basis of the staff's conclusion regarding this matter, they are recommending an extensive program which they believe will enhance valve performance. They consider this problem so important that it too should not wait for the IPE program. They are convinced that NUREG-1150 does not represent properly what they view as a major risk contributor.

We conclude from these experiences that it may be worthwhile, in the review process, for those responsible for NUREG-1150 to solicit comments from other elements of the staff which might be expected to use the results of the report.

In summary, on the basis of a very preliminary review, the insights and the results of the second draft of NUREG-1150 should be used with considerable caution before the planned peer review has been concluded. We expect that more credence might be given to the Level I parts of the PRAs than to Levels II and III. However, we repeat that some of the Level I results have already been called into question by other parts of the staff.

Sincerely,

Forrest J. Remick
Chairman

References:

1. U.S. Nuclear Regulatory Commission, NUREG-1150, "Reactor Risk Reference Document," Volumes 1, 2 and 3, Draft issued for comment, dated February 1987
2. U.S. Nuclear Regulatory Commission, NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," Volumes I and 2 (Second Draft for Peer Review), dated April 17, 1989 (Pre Decisional)
3. Memorandum dated April 18, 1989, for the Commissioners from V. Stello, Jr., Executive Director for Operations, SECY-89-121, Subject: Transmittal of NUREG-1150, Second Draft for Peer Review
4. Memorandum dated February 17, 1989, for the Commissioners from V. Stello, Jr., Executive Director for Operations, SECY-89-058, Subject: Status Report and Preliminary Results of NUREG-1150
5. Memorandum dated December 8, 1988, for the Commissioners from V. Stello, Jr., Executive Director for Operations, SECY-88-307, Subject: Plans for Future Review of NUREG-1150

ATTACHMENT A

1. Wash 1400, Reactor Safety Study, August 1974
Pages 242,253,255,256, and Figure 1 of Appendix I.
Appendix V.
Main volume Pages 132 thru 135.
2. NUREG 1150 Appendix E Page E-3 and E-2.
Accident initiating events:
V. Unisolatable rupture of a low pressure coolant injection,
caused by the failure of the set of valves that normally
isolate the RCS, reactor cooling system from the low pressure
system.
3. Limerick E.I.S. NUREG 0974 Table J.13.15 MOV failure rates.
4. NUREG 1251 Volume 1.
5. Letter F. A. Costanza NRR/NRC to Marvin Lewis dated 5-16-89.
6. NUREG/CR 5124 Interfacing Systems LOCA: BWR Feb 89.
7. International Atomic Energy Association (I. I. S. 3540-S1,
3540-M3, 3540-P1.2:1987 (V29 #4) , P1 Bulletin, 3540-S11
Nuclear Safety Review for 1986.)
3540-M3 Summary Report on the Post-Chernobyl Accident 1986.
Page 27 Accident occurred within seconds.
8. Jim Harding, Chernobyl, Earth Island J. Page 21, Fall 1986.
9. Limerick SER NUREG 0991, Supplement 6 Aug 85.
Misrepresentation of Containment isolation valves.
10. Memo from Rob. Tedesco to Licensing Boards: Errors in BWR
Vessel Water Level Indication date 2-9-89.
11. NUREG/CR 5112 Evaluation of BWR Water level sensing line break
and single failure. Dated 3-89.
12. NUREG 1275 Operating Experience Feedback Report-Technical
Specifications: All volumes especially volume 4, dated 3/89.

ATTACHMENT B



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

January 15, 1987

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Chairman Zech:

SUBJECT: ACRS COMMENTS ON THE IMPLICATIONS OF THE ACCIDENT AT THE
CHERNOBYL NUCLEAR STATION UNIT 4

During the 321st meeting of the ACRS, January 8-10, 1987, we considered the implications of the accident at the Chernobyl nuclear station as it relates to nuclear power plants in the United States. This subject was also considered during our 320th meeting, December 11-13, 1986 and our 319th meeting, November 6-8, 1986. In our review, we also had the benefit of meetings of our Subcommittee on Safety Philosophy, Technology, and Criteria held on November 5 and December 10, 1986, and discussions with the NRC Staff.

The Chernobyl accident reminds us that, although a large nuclear power plant accident somewhere in the United States is unlikely, it is not impossible. We believe it is essential that a thorough evaluation of the Chernobyl accident be performed and any important lessons from this evaluation are used in evaluating the risk posed by domestic nuclear power plants. We recognize that the NRC Staff has such a program under way.

We believe that the most important lesson to be learned from the Chernobyl accident is that high priority must be given to ensuring that the management and the operating staff of each plant are competent and are motivated to operate the plant safely and in strict compliance with plant administrative controls. Strong emphasis should be given to the adequacy of the training and to the ability of the responsible personnel to prevent, to manage, and to mitigate severe accidents. The operating staff should include on-site personnel with engineering capability who fully understand the design and operating characteristics of the plant and the implications for plant safety. Such a staff should know the basis for the engineering and safety decisions made during plant design. Although these recommendations are not new, the Chernobyl accident has reemphasized their importance.

Chernobyl also reinforces the known importance of determining the extent to which containments are capable of dealing with accidents more severe than the currently specified "design basis accidents." We recommend that the NRC Staff give continued high priority to its current effort to

January 15, 1987

examine the containment performance expected for operating nuclear power plants and to examine improvements needed to ensure that risk is limited to an appropriate level.

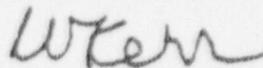
Reactivity transients severe enough to damage a light-water-reactor core can be hypothesized. Risk estimates, operating experience, and informed opinion all indicate that such transients are very unlikely. However, such estimates and opinions depend in part upon assumptions that personnel will comply with the administrative controls for operation, rather than depending entirely upon inherent characteristics of the hardware and processes. Present methods of risk assessment do not satisfactorily account for personnel errors of the sort that could lead to noncompliance with such administrative controls. Operating experience cannot be extensive enough to give high assurance that such errors are incredible. For these reasons, there should be a systematic reexamination of the potential for severe reactivity transients, with emphasis on the impact of human error. Multiple rod ejection, cold water insertions, void collapse, boron depletion, inappropriate bypassing of exposed safety circuits, and the importance of positive temperature coefficients during early core life are examples of the events and conditions that should be restudied. The levels of defense against severe reactivity transients should be identified and, if possible, appropriately codified.

Emergency response following the Chernobyl accident confirmed the need to ensure that the Protective Action Guides developed for application in the United States are comparable with those in neighboring countries and the need to reexamine the national policy on the storage and use of radioprophylactic agents. Since potassium iodide was administered to thousands of people in the Soviet Union as a result of the Chernobyl accident, we hope that useful data regarding its health effects will now become available.

Other emergency response items highlighted by the accident include the importance of effective procedures for relocating large population groups, protecting ground and other drinking water supplies, decontaminating land and facilities, and protective measures for minimizing radionuclide intake through food and other pathways.

The accident at Chernobyl reinforces a previous ACRS concern that the effects of an accident involving a large release of radioactive materials outside containment might negate safe habitation of the control room and other necessary facilities of the affected plant, or other units at a multiple-unit site.

Sincerely,



William Kerr
Chairman

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

SECRET
CONFIDENTIAL

Before the Nuclear Regulatory Commission ⁸⁹ AUG 14 A8:36

In the Matter of)
Philadelphia Electric Company)
(Limerick Generating Station,)
Units 1 and 2)

OFFICE OF)
DOCKETING & SERVICE)
BRANCH)
Docket Nos. 50-352)
50-353)

CERTIFICATE OF SERVICE

The undersigned counsel certifies that a true and correct copy of "Supplemental Response of Intervenor Limerick Ecology Action, Inc. to Memorandum and Order of Commission Dated July 26, 1989 and to Memorandum and Order of August 7, 1989" has been served the 14th day of August, 1989 by first class mail, postage prepaid, except where by telecopier on Sunday, August 13, 1989, as marked with an asterisk, on the following persons:

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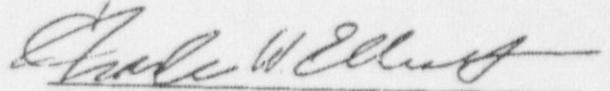
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