September 16, 1980

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE--PNO-TMI-80-45

This preliminary notification constitutues EARLY notice of events of POSSIBLE safety or public interest significance. The information presented is as initially received without verification or evaluation and is basically all that is known by NRC staff on this date.

Facility: Metropolitan Edison Company
Three Mile Island, Units 1&2 /and/
Middletown, Pennsylvania
Docket Numbers 50-289 & 50-320

Jersey Central Power and Light Company
Oyster Creek Nuclear Generating Station
Forked River, New Jersey
Docket Number 50-219

Subject: MAJOR ORGANIZATION CHANGE

Effective September 15, 1980, NRR approved a major change to the organizations of Three Mile Island Units 1 and 2, and Oyster Creek. The change establishes a General Public Utilities Nuclear Group (GPUNG) through which the operating and management responsibilities for TMI-1, TMI-2 and Oyster Creek will be implemented for Met-Ed and JCP&L. The change also includes revised plant staff organizations. The GPUNG is being formed by combining the nuclear experienced management and technical staffs from within the GPU Service Corporation, Met-Ed and JCP&L into a single organizational entity.

The new organization is headed by the Executive Office GPUNG which will be responsible for the operation of Oyster Creek, the operation of TMI-1 and the recovery of TMI-2. Reporting to that office will be onsite directors from each unit.

Media interest has been expected because of public sensitivity to TMI related events. The Commonwealth of Pennsylvania has been informed. The licensee is planning to issue a press release however, the NRC has no plans at this time.

This preliminary notification is issued for information only and no further action by the NRC is anticipated.

The NRC TMI Program Office received notification of this occurrence by telephone from NRR on September 15, 1980, and this information was current as of 10:00 a.m., today.

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VI. Tex PIRG A-34- $H_2$ Monitoring after accident.

The Staff admits this contention when they say the purpose is not to detect explosions, but to prevent them. See page 2 of Wield affidavit. No doubt the Staff that approved TMI design attempted to prevent $H_2$ concentrations that were high enough to explode , but they failed. Staff can not win on this issue by showing that TMI was different. They must show with scientific data that even under the worst case accidents that the recombiners and mixing systems are sufficient to assure that no concentration would reach appx 4 %.

1. The $H_2$ monitoring system should turn on automatically. If one can forget to turn on large valves for several days then one might get careless in the heat of an accident.

2. I wish to be shown that the locations are at points of maximum concentrations.

3. We need to be shown that the mixing potential is sufficient to keep $H_2$ dispersed.

4. The capacity of the combiners is not sufficient to handle a bad accident that generates much $H_2$ gas. This is especially true since there is no provision to force the $H_2$ through the recombiners.

5. The capacity of the Hydrogen Purge System is not specified.

6. The monitoring system is not designed to withstand the force and heat of a hydrogen explosion and still even monitor the hydrogen concentrations as they build up again like they did at TMI.

Respectfully submitted,

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Certificate of Service

In October 2, 1980 (late in the day)-I sent copies to the parties by U.S. mail.

James M. Scott, Jr.
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weir wall and the drywell can be approximated as open channel flow described by the Mannings equation. The slope is the slope of the water surface from the top of the pool to the second opening of the vent, ie the path that the water must flow to get out of the weir wall area into the suppression pool. Staff also is wrong in ignoring the frictional losses both in the vent pipe and in the flow to the entrance of the vent pipe. The concrete wall will be rough and have a large mannings n factor or friction factor if the Moody diagram is used for more detailed caculations. See Figure 5.32 of Streeter's Fluid Mechanics. The friction effect of the concrete wall is doubled because there is two walls , 26 inches apart.

It is common to use the average slope , instead of an exactly smooth slope, in flow caculations. For example the U.S. Army Corps of Engineers uses the HEC-2 Computer program which uses the average slope between river cross-sections in the Mannings formula when it caculates flow rates in rivers.

The staff errored in not considering the expansion and contraction coefficients of head loss, which are similiar to friction coefficients in that they both cause the water flow to go slower. See page 265 of Streeter where it is pointed out that these losses are often larger than the friction losses. In addition the staff has not accounted for the fact that the water must make a right angle turn when it enters the vent opening.

The staff also errors in saying that the clearing of one vent is sufficient. In fact two vents must be cleared of water completely. See page 6-12 of SER.

In summary it can safely be said that neither Tex PIRG nor Staff have correctly considered the complex flow problem involved in rapidly clearing the vents during a LOCA. Computers and math can not do the job accurately enough to justify the small margin allowed by the applicant. The only safe way to test is by full scale tests, at least a full scale sector with three vents. See page 6-12 of SER.

Time has run out so I will make very brief replys to the Material Facts submitted:

1. It should say second set of vents. Also that assumes a drywell wall of uniform strength when in fact it would have weak spots in the corners.

2. The Nov 1974 SER did not ignore friction coefficients. See page 6-13. It is wrong to ignore them especially in the rough concrete walls of the weir.

3. The tests were only concerned with vent losses and the tests were not full scale under actual operating conditions.

4. Once again they only considered the vent-a smooth pipe not a rough concrete wall with right angle turns to reach the vent.

5. The staff is a party to this hearing . I would like to hear their basis and see their data. They also approved the plants that have had all the other problems including TMI.

6. There is no requirement for constant slope, since an average slope of the same value can be used with the same result.

7. The vents have a slope although it is close to zero. It is the water path that is important in determining the slope.

using them in operating plants then why do they continue to fail. Here once again they have proposed a new system using pressure differentials that eliminates the floats. So what! They make no explaination nor offer no proof that this system will work. We are even more concerned about their use of Solid State systems so close to the reactor vessel because of the high radiation levels in that area. As mentioned before in the ASO contention, solid state electronics is very sensitive to such radiation. At the very least the applicant should be forced to detail the operation of the proposed new system to the Board, Staff and other intervenors in the public hearing.

1. We do not disagree with this statement.

2. We do not disagree with this statement except for the last sentence. We do not believe that a G.E. employee who has been on the job for only one month has the right to tell the applicant what system they will use. The applicant has not said what they will do.

3. This statement only addresses the float, but does not ensure that the complete system will work properly. Considering the fact that the last system did not work even though it was no doubt approved by NRC and the GE engineers had promised that it would work there is no reason to believe them this time especially when they have supplied no data to back up their "bald assertion" that it will.

V. Staff's NOJ rel. Tex PIRG A-6- Drywell Cracking

This is considered by Tex PIRG to be their most important safety contention because of the huge consequences to the public safety if the vent clearing times are slow by only a fraction of one second. See Figure 6-2 of SER. In the LOCA the force and speed of the pressure build-up is so great that if the applicants calculations of pressure versus time are off by only 0.5 second, the drywell and containment will within seconds be cracked or shattered with such force that most of the radioactivity would immediately be lost to the atmosphere in a way even worse than that considered in the WASH-740 report by Brookhaven Labs.

First I must point out that the staff has handled this Motion in a much better way than the applicant. They have at least enclosed actual data and referenced actual studies. Also they are correct in some of their corrections to Tex PIRG's work. For example they are correct in pointing out that we did not account for the pressure differential due to the gas pressures. They are also correct in saying that the use of the Mannings formula alone is incorrect for flow through closed conduit.

However they make several errors also. First the Mannings formula is a version of the Chezy formula which is a version of the Darcy-Weisbach formula which the staff admits is proper for the use in pipes. Also staff assumes that the flow is in closed pipes when in fact only part of the flow path is in pipes. The part of the flow from the top of the suppression pool to the vents between the

III. Flow-induced vibration- Tex PIRG No. 11

Here the applicant admits there is a Generic Safety problem that is still unresolved. The NRC and and Advisory Committee on Reactor Safeguards both still say that the problem is unresolved, see B-73 and II-5B of Table D-1 of SER. In addition there would be no need for Generic issue B-60 on Loose parts Monitoring Systems if there were not going to be any loose parts affected by vibration. If the applicants 1974 tests had solved the problem, the ACRS would not have approved this item as a Category B Task which means that it is important in protecting the public health and safety.

In contrast the applicant would have us believe that since it claims to have done some tests (no test results have been shown), and it says that it will do some more tests later, if necessary, then there is no issue left to discuss. If this was the standard for ruling on Motions for Summary Judgment, then there would never need to be any public hearings because all applicants will promise to do whatever they think is necessary to solve the problem.

In response to their Material Facts , We state as follows:
1. We do not doubt that it has studied the problem, but we say, as does the applicant, that the problem has not been completely solved. Note Applicant only says "components are less likely to be damaged".

(2) and (3) only promise to do further studies, maybe. Our contention specifically states that the studies have not yet been done so that future promised studies are not relevant. This is especially so where such studies are only paper studies or based on scale models.

(4) and (6) relate to the past. Tex PIRG is concerned about the future. No basis is supplied for the claim that past vibration problems did not cause any loss of safety protection. Neither had past history led the NRC to expect that at TMI valves would be improperly closed or that a small leak would lead to a melting of the fuel.

(5) We do not contest the fact that ACNGS will have a loose parts monitor, but the applicant does not claim nor does Tex PIRG believe that the system will detect all vibration that could affect the safety of the reactor. Tex PIRG is also concerned by the elimination of the one system that has successfully detected vibration in the past, ie the transversing in-core probes (TIPs) and replacing it with a untested acoustic system.

IV. Control Rod Drive System-Tex PIRG No. 38

Once again applicant has attempted to limit our contention by claiming that it is limited to float switches. The switches were only used to show a (not all) basis for the claim of a defective control rod drive system. As recently as June 28,1980, this system still failed to work when 72 of 185 control rods failed to fully insert at the Browns Ferry nuclear plant using these GE control rod drives. If GE always designs systems properly and tests them before

II. Tex PIRG 10- Intergranular Stress Corrosion Cracking

This very important issue has recently received much attention from the NRC. Criterion 31 requires that the applicant assure that even under accident conditions that involve high pressure, including class 9 accidents now, that the public health and safety will not be harmed by leaks in the reactor coolant pressure boundary. It must even include enough safety margins to protect for effects of irradiation and transient stresses during accidents and after 40 years of operation.

Dispite a large number of failures in operating plants over the past few years of the large pipes that had not even lasted one fourth of the plants operating life and despite the fact that the NRC has listed this problem recently as one of its Category A issues, A-42, the applicant now states that there is no fact issue left and that the problem is so completely solved that it should not even be considered in a public hearing. Even worse it bases this on the fact that it claims to have made some changes that will help the problem. It should be sufficient answer to this claim that the NRC Task Force has not finally announced that the problem has been solved. Also a careful reading of applicant's motion shows that it does not even claim that the problem is solved, only reduced. Reducing a problem of such safety significance does not solve it.

In addition as to each of the Material Issues, Tex PIRG states:

1. We do not disagree with (1), but would only point out that they do not claim that it has not occurred in other stainless steels. Neither have they claimed that as more operating experience is gathered on other pipes that a larger % of pipes will show the problem also. No claim is made and no evidence given to show that as more time passes on the more resistant "low carbon" steels that they too will not show the same problem.

(2),(3), and (4) can be considered together and answered by stating that making some changes to help the problem does not eliminate the problem nor assure the protection required by the regulations. Obviously if the NRC felt the problem was solved the Task Force would have been disbanded.

(5) Not even the applicant's own statements claim that (5) is correct. That claim is only made for Type 316 Nuclear Grade Stainless Steel and even there no basis is given for the statement. The claim is made that G.E. started a study in 1975, but obviously they could not have tried these low carbon steels in operating plants for more than 4 years which is not long enough to assure their safety. The claimed documentation of these studies is only two papers that have not yet even been published. Such self serving statements are not scientific basis for such claims, at least until the scientific community has had time to respond to the papers.

(6) It makes no sense at all to claim that compliance with Guide 1.44 assures meeting the Regulations or solving the problem. Guide 1.44 was in existence in August 1975 (page 5-6 of S. Texas SER) and allowed susceptible austenitic steels which cause the problem.

3. It is irrelevant what the ion concentrations are in the air. Ions and their electric fields are easily shielded by metal box covers around the electronic circuits. But nuclear radiation can easily penetrate the body of airplanes and their thin metal covers that surround some of the electronic equip ment.

$I = I_0 e^{-ux}$ describes the intensity of gamma rays as they pass through materials of thickness x and mass absorption coefficient u. This shows that only 5% loss takes place in the intensity of the gamma ray as it goes through One centimeter of Al. Since that is more than the total thickness of the airplane skin and cover of the electronic container, it shows how easy it is for gamma radiation to affect the sensitive electronics in the plane. See page 2724 of Handbook of Chemistry and Physics, 43rd edition .

4. The radioactive emmissions from ACNGS are not low. Even by NRC calculations over 32,000 curies will be emitted per year into the air. This is almost 5 times as much as the Black Fox Nuclear plant will emit. Each curie is 37000000000. disintegrations per second and 60x60x24x365 times that per year. There is no way that such numbers of emissions are low. A penny for each emission would make the whole world rich, yet each emission can cause a genetic defect, cancer, or damage a solid state electronic device. According to WASH-740 the radioactive plume can be hundreds of miles long. See Appendix B-Figure 6. Although there would be some dispersion as the radiation rises the dispersion factors used in Reg Guide 1.111 show that when combined with the rise associated with the heat released from the reactor the radiation can rise to great distances. The recent St. Helens eruption and Russian bomb tests show that radioactive particles can go around the earth several times.

5. All of the information shown above go to show that it is possible for solid state electronics in airplanes flying near ACNGS to be affected in such a way as to increase the probability to crash. When the few planes that fly near to nuclear plants is considered with the few operating nuclear plants, and the fact that at least two have fallen near to nuclear plants it at least raises the possibility that the well known sensitivity of solid state electronics is the cause. The burden by law is properly on the applicant to show by independent scientific evidence that Tex PIRG is wrong. A careful reading of the Applicant's motion shows that it has tried to put that burden on Tex PIRG. Not only does applicant not understand the physics of the contention , but it does not even supply scientific facts to back up its own theory based on ions. It must clearly show by calculation the intensity of radiation at a few hundred feet above the air ejector if a significant portion of the 20,000 curies are emited at once under the worst case weather conditions which limit dispersion . It must then show the impacts on solid state electronics at that concentration. This will take laboratory experimental data on acutal systems used in modern aircraft. The affidavit of one of applicant's own employees who by his own resume has had no experience with electronics will not fulfill that burden especially when it is written in such general terms as "emissions will decrease with time" but still fail to even define the half life of the relevant material.