



Carolina Power & Light Company

APR 23 1982



Mr. Darrell G. Eisenhut, Director
Division of Licensing
United States Nuclear Regulatory Commission
Washington, D.C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENS^E NOS. DPR-71 AND DPR-62
POST-TMI REQUIREMENTS (GENERIC LETTER 82-05)

Dear Mr. Eisenhut:

As requested by your letter of March 17, 1982, Carolina Power & Light Company (CP&L) hereby submits the attached information concerning the Post-TMI Requirements contained in Enclosure 1 of your letter.

The enclosures provided herein contain a review of the direction of our efforts to respond to the TMI Action Plan Requirements and a specific discussion of each of the items in Enclosure 1 of your March 17, 1982 letter, including CP&L's commitment to complete these items and any interim actions being taken.

If you have any questions on these items, please contact our staff. As required by your letter, this information is submitted under oath in accordance with 10CFR50.54(f).

Yours very truly,

E. E. Utley
Executive Vice President
Power Supply and
Engineering & Construction

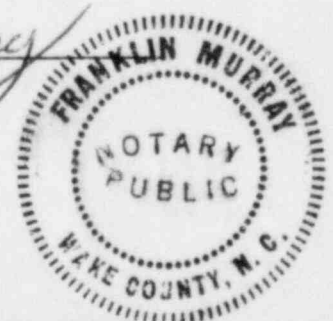
WRM/lr (n-25)
Enclosures

cc: Mr. J. P. O'Reilly (NRC-RII)
Mr. J. Van Vliet (NRC)

E. E. Utley, having been first duly sworn, did depose and say that the information contained herein is true and correct to his own personal knowledge or based upon information and belief.

Notary (Seal)

My commission expires: 10/4/86



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ENCLOSURE 1

In response to your March 17, 1982 request for the status of several NUREG-0737 requirements, our focus is to address the specifics you requested and put in perspective your concern as it relates to the overall issue of TMI Action Plan Requirements.

The NRC issued NUREG-0578 to all operating nuclear licensees on July 18, 1979. This document imposed on licensees many action items relating to design changes, procedure upgrades, emergency planning, and operational staff responsibilities. In order to ensure that a dedicated effort was focused on addressing the many issues in NUREG-0578, CP&L established a corporate task force to focus on the TMI issues. This effort resulted in CP&L completing the "Category A" TMI Action Items on schedule (December 31, 1979). These items were reported to you by our letter of December 31, 1979 (Serial No. GD-79-3307).

The task force began work on the "Category B" TMI Action items in early 1980. The initial effort on the "Category B" items indicated to CP&L that the schedules set forth by the NRC were, in many cases, unrealistic. Nevertheless, CP&L proceeded within the limits of available resources to aggressively pursue, both within CP&L and through our participation in the BWR Owners' Group, completion of the "Category B" items as requested.

In May, 1980, a series of additional NRC requirements, clarifications to requirements, and revisions to requirements began to appear, all of which diluted the effort in progress. This series of correspondence culminated in the NRC issuance of NUREG-0737, "Clarification of TMI Action Plan Requirements," on October 30, 1980. CP&L was forced to reassess our direction and schedule on all projects and to redirect our efforts on many projects, the most noticeable of which are the Technical Support Center, Emergency Planning, Increased Range Effluent Radiation Monitoring, and the Data Acquisition System. Our commitments relative to NUREG-0737 items were reported to you by our letter dated December 15, 1980 (Serial No. NO-81-1873). Several of these commitments were changed in our letter of June 30, 1981 (Serial No. NO-81-1122) as a result of changes in our projected refueling outages and known equipment delivery problems.

CP&L believes that our efforts to date toward resolving the TMI Action Plan items have been very responsive. CP&L has expended a significant amount of manpower and financial resources in this effort. On most issues we have met the NRC requested schedule and for those where we have not, CP&L found that the NRC's schedules were not realistic when the complexity of the work and the continual revision and clarification of the requirements are taken into perspective. We believe that our efforts to date have been toward resolving NUREG-0737 items applicable to Brunswick in an expeditious manner. Enclosure 2 provides a status for each item in your letter of March 17, 1982 (Enclosure 1). A summary of CP&L's firm commitment to complete these projects is provided in Enclosure 3.

In summary, CP&L believes that our efforts on addressing the TMI Action Plan items have been very responsive when considered in perspective to the large volume of other regulatory requirements that have been ongoing or issued within the same time frame, the most notable of which are (1) CP&L's upgrade of augmented off-gas treatment facility, (2) Environmental Qualification of Electrical Equipment (IE Bulletin 79-01B), (3) Pipe support seismic review and upgrade, (4) Torus integrity program, (5) Scram system review and Scram Discharge Volume instrumentation upgrade, (6) Safety system reset review and modifications, and (7) Fire Protection. We believe our ongoing efforts to complete the TMI items are adequate to insure completion in a timely manner, and specifically by the commitment dates given in Enclosure 3 of this letter for the items contained in Enclosure 1 of your letter.

We hope this information indicates CP&L's dedication to the TMI Action Plan and is responsive to the specific items for which you requested information.

ENCLOSURE 2

CP&L RESPONSE TO NRC LETTER MARCH 16, 1982

FOR ITEMS ADDRESSED IN ENCLOSURE 1 OF THAT LETTER

12 Items
NUREG-0737 ITEM I.A.3.1 - SIMULATOR EXAMS

CP&L has implemented the requirement for all applicants for operator licenses to have a simulator examination as part of their licensing examination. The first class to have simulator examinations as part of their licensing examination was completed in November 1981 for the hot-license class 81-1. All future hot-licensing classes will be given simulator examination as a part of their licensing requirement. CP&L considers this item fully implemented at Brunswick.

NUREG-0737 ITEM II.B.2 PLANT SHIELDING

CP&L has completed a significant effort of reviewing plant shielding adequacy and have concluded that no plant changes are required to insure access to critical areas. CP&L has previously reported its findings in our letter of 12/31/79, Serial No. GO-79-3307, to Mr. D. G. Eisenhower. The eight items of concern identified in this letter have been reviewed and no additional modifications to the plant found to be necessary for these reviews. The concern over adequacy of the range of area radiation monitors (identified in our letter) will be addressed consistent with the Regulatory Guide 1.97 issue. CP&L believes the current ranges are adequate for determining the level of control over entry to the Reactor Building for personnel protection.

In regards to environmental qualification, CP&L has previously stated our position (letter NO-80-1873, 12/15/80 to D. G. Eisenhower) that this evaluation will be performed within the frame work of the requirements of IE Bulletin 79-01B. No additional independent effort outside of CP&L's effort on 79-01B is planned.

NUREG-0737 ITEM II.B.3 POST-ACCIDENT SAMPLING

To date, virtually all mechanical and structural design/engineering to support installation of this system on Brunswick Unit 2 has been completed, and electrical designs are being finalized. New sampling equipment purchased from General Electric Company is onsite as well as sample tubing, valves, and electrical cable. Some initial equipment installation has been completed, including Main Control Room panels, drain connections to the Suppression Pool, and mechanical/structural work on supporting systems. All other procurement activities are in process, many having been initiated on preliminary design information in an attempt to have deliveries support installation schedules. CP&L has expended over 8,200 engineering manhours alone on this project since January 1980, not including the effort expended by our Architect-Engineer, General Electric and others.

We foresee two major problems in completing installation of this system on Unit 2 by the end of the refueling outage (scheduled from April 23 to June 25, 1982): (1) Recent slippage in scheduled delivery of the penetration assembly (which ties the Reactor Building sample lines to the new sampling equipment located outside the Reactor Building) is such that installation of the penetration does not coincide with appropriate plant conditions necessary for installation until the end of the outage, and (2) the installation schedule is significantly longer than the outage. Although all attempts are being made to expedite penetration delivery, we see no improvement in delivery that would support the installation window. Further, there are no possibilities of significantly decreasing the installation time requirements of this system.

At present we see no problems in installing the post-accident sampling system on Unit 1 by the end of the scheduled refueling outage for that unit (22-week duration commencing approximately September 1, 1982). Although final detailed design is not totally complete, the system is essentially identical to that of Unit 2, and material deliveries should pose no problem. Preliminary installation of equipment similar to that discussed above for Unit 2 has been completed. The potential exists for a substantial period of testing and checkout before declaring the post-accident sampling system fully operational. Because there will be a significant workload on startup and checkout personnel associated with the completion of other activities during the Unit 1 refueling outage completion phase, an allowance for potential checkout and correction of any deficiencies after completion of the outage (approximately February 1983) is included. The commitment for completion, allowing for known and potential uncertainties, is as shown in Enclosure 3.

It is CP&L's intention to complete all portions of the Unit 2 post-accident sampling system that require an outage condition for installation prior to the end of the scheduled Unit 2 outage, as well as all other portions to which resources can be safely and effectively applied. We will further strive to complete the balance of the installation between the end of the Unit 2 outage and the beginning of the scheduled Unit 1 outage (approximately eight weeks). Should the remaining work following

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the Unit 2 outage exceed the time frame between the outages, completion of installation and checkout will proceed during the Unit 1 refueling outage. In any case, the Unit 2 post-accident sampling system will be complete prior to June 1, 1983.

Until installation of the post-accident sampling system is completed, CP&L believes that the interim compensatory measures which have been implemented are sufficient for the following reasons:

- 1) The post-accident sampling system is intended to support sampling of reactor coolant, torus, and containment following a major accident. Such an accident is a remote probability.
- 2) CP&L's Category A interim measures will allow sampling for moderate accident conditions when access to Reactor Building sample station can be achieved.

The NRC Office of Inspection and Enforcement recently audited this Action Plan item. CP&L is presently reviewing both the inspection results and the compensatory actions presently in place for this item. If it is determined, as a result of this review, that additional compensatory measures are needed, any actions planned or taken will be provided in our response to Inspection Report Nos. 50-325, 324/82-05.

NUREG-0737 ITEM II.B.4 - TRAINING FOR MITIGATING CORE DAMAGES

CP&L has developed a training program on mitigation of core damage and has completed all the necessary training of licensed operators. Development of the training program on mitigation of core damage began in late 1980. Classes began in March 1981 and training was completed in October 1981. Information for this training was taken from Owners' Group correspondence, GE correspondence, and NRC information. The instructor was also sent to mitigating core damage school for two days at the GE Training School; San Jose, California in June 1981. The lesson plans and instruction information are being continually updated as information becomes available. This program has been incorporated into our instruction program for new operator training. CP&L considers this project fully implemented.

NUREG-0737 ITEM II.E.1.2 - AUXILIARY FEEDWATER INITIATION & FLOW INDICATOR

This item is applicable only to PWRs; therefore, not applicable to Brunswick.

NUREG-0737 II.E.4.2 CONTAINMENT ISOLATION DEPENDABILITY

POSITION 5 Containment Pressure Setpoint: CP&L has previously reported completion of our evaluation of the setpoint by letter NO-80-1945, dated December 31, 1980, to Mr. D. G. Eisenhut. As stated in our letter we found the current setpoint to satisfy the NRC's concern. The NRC has concurred with CP&L's assessment by issuance of a Safety Evaluation Report by letter dated August 26, 1981 to Mr. J. A. Jones of CP&L.

POSITION 7 Isolation of Purge and Vent Valves: CP&L does not believe that isolation of purge and vent valves on high containment radiation level is a necessary modification. We believe the release limit (EPA Protective Action Guideline) is enveloped by containment isolation due to high containment pressure (2 psig). CP&L has committed to providing an analysis confirming our position. This analysis is being performed through the BWR Owners' Group and is scheduled to be completed by 4/30/82 (see CP&L letter dated April 7, 1982). CP&L will advise you of the results of our review of the analysis six weeks after receipt from the BWR Owners' Group. That submittal will also include our schedule for providing descriptions and commitments for any necessary modifications.

CP&L does not believe any additional interim measures are necessary other than the procedure upgrade previously performed (see CP&L letter NO-81-1135, dated June 30, 1981) until this issue is resolved.

NUREG-0737 ITEM II.F.1-(1) & (2) ACCIDENT EFFLUENT MONITORING

The design and installation of new noble gas, iodine, and particulate effluent monitors is being completed as three (3) separate projects: one system for the Unit 2 Turbine Building ventilation system exhaust, one for the Unit 1 Turbine Building exhaust, and the third system for the plant stack. The engineering design for Unit 2 Turbine Building is essentially complete, completion of final engineering for Unit 1 Turbine Building has begun, and preliminary engineering for the plant stack system is underway. New sample monitoring systems purchased from General Atomic Company are onsite. Preliminary work has been initiated on Unit 2 Turbine Building modification to support system installation. Procurement activities are in progress and most equipment and materials required for installation have been delivered. CP&L has expended over 7,700 engineering manhours on this project since January 1980, not including work performed by our Architect-Engineer and other consultants.

We have encountered and foresee potential problems in completing installation of the effluent monitoring systems. Isokinetic sample probes have been ordered for both the Unit 1 and Unit 2 Turbine Building monitors, and the delivery is currently scheduled for August 6, 1982. Although this schedule should not impact the completion commitment for Unit 1, the Unit 2 system cannot become operational prior to the end of the Unit 2 outage without the isokinetic probe. The plant stack effluent monitoring system will require a dual Unit 1 and Unit 2 outage to complete installation, which involves replacement of the existing stack isokinetic sample probe. Unit 2 is currently being scheduled for a short snubber inspection outage commencing four to six months following Unit 2 startup from Reload 4, concurrent with the Unit 1 refueling outage. To support startup of Unit 2 from this short outage, and to support our completion commitment for the stack effluent system, the system must be installed and operational, so that installation of the new stack isokinetic probe can be quickly accomplished during the Unit 2 snubber outage. We have several problem areas in meeting the snubber outage date: (1) the proximity and availability of underground electrical conduit systems for this system is such that we may need to construct a major new electrical duct bank from the plant power block to the stack, an unforeseen work scope; (2) although at present we do not foresee delivery problems, the delivery of the stack isokinetic probe has not been firmly established but is expected to be close to the snubber outage date. Any slippage could impact the installation window.

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The availability of electrical cable could potentially be a problem for the Unit 2 effluent monitor system due to the nearness of the Unit 2 refueling outage and for the stack effluent system due to the large quantities required. Although all cable for these systems is either on-site or on order and we have taken all necessary measures to locate cable from other utilities and expedite our cable purchases, we have been unable to secure firm delivery dates better than three (3) month time periods during which cable may be delivered.

It is CP&L's plan to complete the Unit 2 Turbine Building effluent monitoring system in time to support receipt and installation of the isokinetic probe, due on-site August 6, 1982, during the snubber inspection outage commencing four to six months following Unit 2 startup from Reload 4. This should allow the system to be fully operable several weeks later. We see no problems in completing the Unit 1 Turbine Building effluent monitoring system as committed by the end of the Unit 1 refueling outage. We will continue to expedite engineering, installation, and material deliveries to support installation of the stack effluent monitoring as discussed above. Should installation not be completed to support the snubber outage date, final installation of the stack isokinetic probe will be completed during the first available dual unit outage after the Unit 1 refueling outage, but prior to June 1, 1983.

We have existing low-range effluent noble gas, iodine, and particulate monitoring systems for the three effluent release points discussed above. Temporary high-range effluent monitors have also been installed to meet Category A requirements of this TMI Action Item. We believe these permanent and temporary systems are sufficient in the interim until installation completion of the permanent wide range effluent monitors. No further compensatory actions are required.

NUREG-0737 ITEM II.F.1-(3) HIGH RANGE INCONTAINMENT RADIATION MONITORS

No problems are foreseen in completion of in-containment radiation-level monitors by the end of the respective 1982 refueling/maintenance outages on each unit.

NUREG-0737 ITEM II.F.1-(4) WIDE RANGE CONTAINMENT PRESSURE MONITORING

Installation of continuous wide range containment pressure monitors was completed on both units in 1981. Completion of this project was reported by CP&L in our letter dated 12/31/81 (Serial No. NO-81-2119).

NUREG-0737 ITEM II.F.1-(5) WIDE RANGE CONTAINMENT WATER LEVEL MONITORING

The engineering design has been completed for Unit 2, and completion of final engineering for Unit 1 should not be a problem due to similarity of design to Unit 2. Procurement activities are in progress with the majority of equipment and material onsite or due for delivery to support outage installation. Two penetrations have been installed on the Suppression Pool on Unit 2 for this project.

We foresee one problem with the installation of Unit 2 system in that qualified instrumentation valves and manifolds are due for delivery approximately August 8, 1982. This should not impact the installation commitment on Unit 1, but does preclude installation on Unit 2 during the refueling outage.

Our present intentions are to complete installation on Unit 2 by utilizing similar valves and manifolds obtained from other projects. Should this approach not be feasible we will complete installation on Unit 2 during the scheduled Unit 2 snubber inspection outage scheduled to commence four to six months following Unit 2 startup from Reload 4.

NUREG-0737 ITEM II.F.1-(6) CONTAINMENT HYDROGEN MONITORING

To date, all mechanical, structural, and electrical design has been completed for Unit 2 and similar designs are being finalized for Unit 1. New hydrogen/ oxygen sampling and monitoring systems procured from Teledyne are onsite, as well as sample tubing, valves, and electrical cable. Some initial equipment installation has been completed and prefabrication is underway. Procurement activities are in progress with no known delivery problems at this time. CP&L has expended over 10,600 engineering manhours on this project since January 1980, not including the efforts of our Architect-Engineer.

We have encountered one major problem in completing installation on Unit 2 during the refueling outage in that our current installation schedule is significantly longer than the scheduled outage, and there are no possibilities in decreasing the time required for installation. We are evaluating our current designs in an attempt to revise the engineering such that portions of the system requiring a unit outage for installation can be accomplished without precluding continued operation of our existing hydrogen/oxygen monitoring system. We do not foresee any problems in completing installation as committed on Unit 1 by the end of its refueling outage.

It is our intention to complete installation of all portions of the new hydrogen/oxygen monitoring system on Unit 2 that can be safely and effectively accomplished by the end of the Unit refueling outage. We will plan to complete installation in a manner similar to that discussed above for Unit 2 Post-accident Sampling, Item II.B.3. We will, however, evaluate which approach is both safest and most expeditious, i.e., installation of all outage related work during Unit 2 outage with completion during plant operation, or completion of all non-outage work as rapidly as possible with final system tie-in during the next Unit 2 outage of sufficient length to allow completion and startup/checkout, which may be as late as the Reload 5 outage.

At present we have existing hydrogen/oxygen monitors on both units which do meet the intent of this TMI Action Item. The equipment has had numerous operating problems such that it is a high maintenance item and requires above average attention. It has been CP&L's intention to upgrade this equipment regardless of the TMI Action Item for both economic and reliability reasons, and we have committed to do this upgrade in conjunction with the TMI requirements, even though this project is essentially independent of the Action Item. Our existing capabilities coupled with our current level of maintenance meets the requirements of the TMI Action Item and are adequate in the interim until final upgrade is achieved.

NUREG0737 ITEM II.K.2.10 SAFETY GRADE TRIP

This item is only applicable to B&W reactors, and therefore not applicable to Brunswick.

NUREG-0737 ITEM II.K.3.15 - MODIFICATION OF HPCI & RCIC BREAK DETECTION LOGIC

CP&L has completed this project and previously reported this completion by letter NO-81-1135, dated June 30, 1981, to Mr. D. G. Eisenhut. Documentation on the modification is available at Brunswick in Plant Modification Packages 80-222, 80-223, 80-224 & 80-225.

NUREG-0737; II.K.3.19 - INTERLOCK ON RECIRCULATION PUMPS

This requirement is applicable only to non-jet pump BWR's. Since Brunswick is a BWR-4 design (with jet pumps) this requirement is not applicable.

NUREG-0737; II.K.3.22 - RCIC SUCTION AUTOMATIC TRANSFER

The short term requirement to insure that procedures adequately address the manual suction transfer & when needed has been completed. The NRC has issued a Safety Evaluation Report accepting the short term action by letter dated September 4, 1981, to Mr. J. A. Jones of CP&L.

The long term modification to automate the transfer of the suction is planned for completion during the 1982 refueling outages for Units 1 & 2. CP&L foresees no problem with meeting this schedule for Unit 1. One potential procurement problem exists with delivery of the level switches, which may cause a delay in the completion of the modification on Unit 2 during the refueling outage. The level switches are scheduled to be shipped by June 1, 1982. If this date holds we should be able to meet the completion schedule shown in Enclosure 3. All work practicable that can be done without the level switches will be performed during the outage, so that if an unavoidable slippage in level switch delivery occurs, CP&L will be able to complete the project after Unit 2 starts up.

The design for both units is complete and no other problems which could affect the schedule have been identified. However, in consideration of the worst possibly occurring, CP&L believes a firm commitment to complete the project for Unit 2 by December 31, 1982 is justified. CP&L believes the short-term action to insure procedures adequately address manual transfer of RCIC Suction are sufficient until the permanent change can be completed. No additional compensatory action is necessary.

NUREG-0737; II.K.3.24 - SPACE COOLING FOR HPCI/RCIC

CP&L has previously reported this project complete by our letter NO-81-2119 dated December 23, 1981, to Mr. D. G. Eisenhut. The evaluation concluded the HPCI/RCIC systems & support systems would not be effected by the loss of off-site AC power. The space coolers and their support services are all powered from the emergency AC power buses and therefore, are not effected by loss of off-site AC power. No loss of on-site AC power was evaluated based on NRC's clarification that the requirement intended for the loss of off-site AC power to only be addressed.

NUREG-0737; II.K.3.27 - COMMON REFERENCE LEVEL

CP&L has completed all required action on this item and previously reported this by letter NO-81-1135, dated June 30, 1981, to Mr. D. G. Eisenhut. The NRC has accepted our implementation by letter dated October 9, 1981, to Mr. J. A. Jones from Mr. T. A. Ippolito.

ENCLOSURE 3

<u>ITEM</u>	<u>UNIT 1</u>	<u>UNIT 2</u>
I.A.3.1 Simulator Exams	Complete	Complete
II.B.2 Plant Shielding	Complete	Complete
II.B.3 Post-accident Sampling	June 1, 1983	June 1, 1983
II.B.4 Training for Mitigating Core Damage	Complete	Complete
II.E.1.2 Aux. Feedwater Initiation & Flow Indicator	Not Applicable	Not Applicable
II.E.4.2 Containment Isolation Dependability		
Part 5	Complete	Complete
Part 7	Analysis review results and schedule for descriptions/commitments for any necessary modifications six weeks after receipt from BWR Owners' Group.	
II.F.1.1 Effluent Monitoring and 2		
a. Turbine Building	Reload 3*	December 31, 1982
b. Plant Stack (Common mod.)	June 1, 1983	June 1, 1983
II.F.1.3 In-Containment Radiation Monitors	Reload 3*	Reload 4*
II.F.1.4 Containment Pressure Monitoring	Complete	Complete
II.F.1.5 Containment Water Level Monitoring	Reload 3*	Four to six months following Unit 2 startup from Reload 4**.
II.F.1.6 Containment Hydrogen Monitoring	Reload 3*	Reload 5
II.K.2.10 Safety Grade Trip	Not applicable	Not applicable
II.K.3.15 Isolation of HPCI & RCIC Modification	Complete	Complete
II.K.3.19 Interlock on Recirc. Pump	Not applicable	Not applicable
II.K.3.22 RCIC Suction	Reload 3*	December 31, 1982
II.K.3.24 Space Cooling for HPCI/RCIC	Complete	Complete
II.K.3.27 Common Reference Level	Complete	Complete

*No change to prior commitment.

**The Unit 2 snubber inspection outage is anticipated to occur prior to December 31, 1982 and is dependent upon the startup date from the 1982 refueling outage.

The above schedule is based on known and potential problems. No allowance has been made for additional compensatory and/or interim actions beyond those discussed for the specific items addressed. Should any such requirements be imposed, CP&L will reassess the schedules provided.