JCP&L / GPU

Jersey Central Power & Light Company
Madison Avenue at Punch Bowl Road
Morristown, New Jersey 07960
(201) 455-8200

April 25, 1979

Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
IE Bulletin No. 79-08

The purpose of this letter is to respond to the directives set forth in IE Bulletin No. 79-08 which is concerned with events relevant to Boiling Water Power Reactors identified during the Three Mile Island incident. Our responses to the specified action items in Bulletin No. 79-08 are given in Attachment 1. In many of the responses, completion dates for the commitments made are not given because of insufficient time to fully evaluate the magnitude of tasks involved and the manpower requirements to complete them. A schedule which will show the expected completion dates for all commitments made in this letter is now being prepared and will be available by May 11, 1979.

Very truly yours,

Ivan R. Finfrock, Jr.

Ivan R. Finfrock, Jr.
Vice President

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Attachment

cc: NRC Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, DC 20555

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Attachment 1

Oyster Creek Nuclear Generating Station

IE Bulletin 79-08

Item 1

Review the description of circumstances described in Enclosure 1 of IE Bulletin 79-05 and the preliminary chronology of the TMI-2 March 28, 1979 accident included in Enclosure 1 to IE Bulletin 79-05A.

a. This reveiw should be directed toward understanding: (1) the extreme seriousness and consequences of the simultaneous blocking of both trains of a safety system at the Three Mile Island Unit 2 plant and other actions taken during the early phases of the accident; (2) the apparent operational errors which led to the eventual core damage; and (3) the necessity to systematically analyze plant conditions and parameters and take appropriate corrective action.

b. Operational personnel should be instructed to (1) not override automatic action of engineered safety features unless continued operation of engineered safety features will result in unsafe plant conditions (see Section 5a of this bulletin); and (2) not make operational decisions based solely on a single plant parameter indication when one or more confirmatory indications are available.

c. All licensed operators and plant management and supervisors with operational responsibilities shall participate in this review and such participation shall be documented in plant records.

Response

Review sessions for designated individuals have been held. Those individuals who missed a scheduled session due to vacation or schedule interference will be rescheduled as they become available. All licensed operators and plant managers/supervisors with operational responsibilities will attend a review session.

Review sessions emphasized the lessons learned from the Three Mile Island incident and instructed operators not to override automatic action of engineered safety features unless their continued operation will result in unsafe plant conditions and to confirm plant parameter indications when possible.

Item 2

Review the containment isolation initiation design and procedures, and prepare and implement all changes necessary to initiate containment isolation, whether manual or automatic, of all lines whose isolation does not degrade needed safety features or cooling capability, upon automatic initiation of safety injection.

Response

The primary containment isolation initiation signals are the same as those which initiate core spray. That is either low-low water level (7' 2" above the top of the active fuel region) or high drywell pressure (2 psig) starts core spray. High drywell pressure or low-low water level initiates primary containment isolation. Core spray initiation requires the trip of only one sensor while primary containment isolation requires two individual sensor trips. The valves closed by these signals are all drywell and torus vent and purge valves, oxygen sample valves, drywell equipment drain tank isolation valves, and drywell floor drain sump (unidentified leakage) isolation valves. These signals also cause the traversing incore probe system to retract automatically and isolate.

Primary containment isolation may only be reset if the initiating signals have cleared and the "Drywell Isolation Reset" pushbutton is operated. This satisfies the requirements of Item 2 requiring containment isolation in the event of safety injection (core spray). It should be noted that four containment ventilation exhaust valves may be opened under isolation conditions if the reactor mode selector switch is placed in any mode other than "RUN" and a key lock bypass switch is operated. This feature is intended to allow venting of the containment through the emergency gas treatment system if required due to extraordinary circumstances. Other systems penetrating containment which do not isolate on primary containment isolation are as follows:

1. Two closed loop systems isolate on low-low reactor water level, but not on high drywell pressure. They are the reactor water cleanup system and shutdown cooling.

2. Fourteen (14) other isolation valves isolate the reactor on conditions of main steam line high radiation, low-low water level, low main steam line pressure, or steam line break (high steam tunnel temperature or high steam line flow). These valves are the main steam isolation valves (4), main steam line drain valves (4), isolation condenser vent isolation valves (4), and reactor coolant sample line isolation valves (2).

3. The instrument air and reactor building closed cooling water have non-automatic isolation valves.

   In the case of the instrument air system, either of two sources may be aligned to the containment penetration. The preferred source is nitrogen which can be isolated using two manually operated isolation valves. The nitrogen system pressure is maintained at approximately 100 psig and isolates automatically at 65 psig. Isolation of the nitrogen system causes a realignment to the station air system which can be isolated using two manual valves in series with a check valve. The reactor building closed cooling water system has two motor operated isolation valves which can be operated from the station control room.

4. The reactor building to torus vacuum breaker air operated block valves do not isolate on any containment isolation signals, but are maintained in the closed position. The valves will open automatically if the torus pressure is negative with respect to the reactor building. In series with each block valve is a check valve to further assure the containment isolation function.

   The applicable plant emergency procedures will have been reviewed for the concerns identified in Item 2 by April 25, 1979.

Item 3

Describe the actions, both automatic and manual, necessary for proper functioning of the auxiliary heat removal systems (e.g., RCIC) that are used when the main feedwater system is not operable. For any manual action necessary, describe in summary form the procedure, by which this action is taken in a timely sense.

Response

When the main feedwater system is not operable, cooling of the reactor coolant during isolation is accomplished by the isolation condenser system. After attaining a reactor high pressure or low-low reactor water level condition, the system initiates automatically, after a sustained time delay, by the opening of one DC motor operated reactor coolant return valve on each redundant system. A path, relying on natural circulation is then provided to accomplish heat removal from the reactor. Makeup water to the heat sink is required within forty minutes after initiation of the system. Makeup is provided manually from the control room. Manual makeup to the isolation condenser is assured by procedure, utilizing isolation condenser water level instrumentation in the control room.

When reactor temperature is below 350°F, the reactor shutdown cooling system may be manually initiated from outside primary containment. The system consists of a common suction, common discharge from a recirculation loop, and three parallel paths with one pump and one heat exchanger per flow path.

These systems are backed up by numerous alternative methods for cooling down the reactor. The normal methods described above and the alternative methods were assessed by the Systematic Evaluation Program (SEP) safe shutdown review team which performed an on-site visit at the Oyster Creek Station on August 8-9, 1978.

Item 4

Describe all uses and types of vessel level indication for both automatic and manual initiation of safety systems. Describe other redundant instrumentation which the operator might have to give the same information

regarding plant status. Instruct operators to utilize other available information to initiate safety systems.

Response

The following lists the types of reactor vessel level indication and their uses:

A. Four (4) "Yarway" Type 4316 differential pressure indicating switches calibrated to compensate for conditions of reference leg temperature (275°F), weight of steam and density of water at operating pressure are utilized to provide:

   1. Local indication on two (2) instrument racks in the reactor building.

   2. Retransmitted analog signals to two (2) remote indicators on panel 5F in the control room.

   3. Low level scram contact actuation.

   4. High level turbine trip contact actuation.

   5. High/low water level annunciator in control room.

B. Four (4) "Yarway" Type 4316 differential pressure indicating switches (calibrated identical to 4A above) are utilized to provide:

   1. Local indication on two (2) instrument racks in the reactor building.

   2. Low-low level contact actuation for initiating the following safety systems:

      a. Core Spray

      b. Containment Spray

      c. Isolation Condenser Actuation

      d. Recirculation Pump Trip

   3. Low-low level contact actuation for initiating reactor isolation, primary containment isolation, and secondary containment isolation with standby gas treatment system initiation.

   4. Low-low water level annunciator in control room.

C. Four (4) "Barton" Type 278 differential pressure indicating switches are utilized to provide:

1. Uncompensated local level indication on two (2) instrument racks in reactor building.

2. Reactor vessel low-low-low level contact actuation for initiating auto depressurization system. Setpoint of switch is compensated for the density of water in reference leg and variable leg taps.

D. Two (2) "GE/MAC" Type 553 differential pressure electronic transmitters, in conjunction with two (2) steam pressure transmitters, generate two (2) analog level signals, automatically compensated for density of water in vessel which provide:

1. Two (2) compensated narrow range level indications in control room on panel 5F.

2. One (1) selected and one (1) standby compensated level signal for:

a. Three element or single element feedwater control

b. Reactor level recorder on panel 5F

E. One (1) "GE/MAC" Type 553 differential pressure electronic transmitter provides uncompensated wide range level indication on panel 5F in the control room.

All of the D/P cells and transmitters associated with the above instrument systems are located outside primary containment. These redundant and diverse systems provide adequate water level monitoring under all conditions of reactor operations. There are no other indications which could be utilized to measure reactor water level directly. Reactor pressure, in conjunction with process instrumentation on connecting piping systems and containment, provide additional information which is utilized in plant emergency procedures to assess plant status. Emergency procedures will be reviewed for the possibility of providing additional information.

Item 5

Review the action directed by the operating procedures and training instructions to ensure that:

a. Operators do not override automatic actions of engineered safety features, unless continued operation of engineered safety features will result in unsafe plant conditions (e.g., vessel integrity).

b. Operators are provided additional information and instructions to not rely upon vessel level indication alone for manual actions, but to also examine other plant parameter indications in evaluating plant conditions.

Response

A review of all applicable emergency procedures and training instructions involving operation of engineered safety features will be accomplished by April 25, 1979. Change requests will be issued for any procedures which require additional instruction in the precautions of overriding automatic actions of these features, unless continued operation will result in unsafe plant conditions. Additionally, during this review, supplemental information will be provided concerning other instrumentation which would be helpful in evaluating plant conditions.

Item 6

Review all safety-related valve positions, positioning requirements and positive controls to assure that valves remain positioned (open or closed) in a manner to ensure the proper operation of engineered safety features. Also review related procedures, such as those for maintenance, testing, plant and system startup, and supervisory periodic (e.g., daily/shift checks) surveillance to ensure that such valves are returned to their correct positions following necessary manipulations and are maintained in their proper positions during all operational modes.

Response

A review of all valve positions using procedure designating proper valve configuration of engineered safeguard systems, specifically, core spray, containment spray and emergency service water, automatic depressurization, standby liquid control, and isolation condenser systems was performed prior to our last startup on April 7, 1979. A review of engineered safeguard procedure, including valve check offs, will be performed. In addition, a complete review of what we consider to be safety related system procedures, including check offs, will be reviewed in the future to gain additional assurance that other supportive systems, although not engineered safeguards, are in their proper configuration. Assurance that engineered safeguards and safety related valves remain positioned in a manner to ensure their proper operation, since their last valve lineup verification is gained by plant administrative and surveillance procedures. Specifically, engineered safeguard and safety related system configurations are controlled by positioning requirements within the surveillance test procedures and the job order system in conjunction with Procedure 108, Section 5.1, "In-Plant Switching and Valve Tagging". These procedures have been proven to be adequate to control situations where the position of such valves may be changed and assures that valves are returned to their proper position. A review will be conducted of all related procedures -- maintenance, testing, plant and system startup, and supervisory periodic surveillance, to see if it is possible to establish

greater assurance that such valves are returned to their correct positions following necessary manipulations, and are maintained in their proper position during all operational modes where systems may be required to function within the requirements of the Technical Specifications.

Item 7

Review your operating modes and procedures for all systems designed to transfer potentially radioactive gases and liquids out of the primary containment to assure that undesired pumping, venting or other release of radioactive liquids and gases will not occur inadvertently.

In particular, ensure that such an occurrence would not be caused by the resetting of engineered safety features instrumentation. List all such systems and indicate:

a. Whether interlocks exist to prevent transfer when high radiation indication exists.

b. Whether such systems are isolated by the containment isolation signal.

c. The basis on which continued operability of the above features is assured.

Response

A description of the containment isolation valve initiating signals and interlocks is presented in the response to Item 2. With the exception of high main steam line radiation, no interlocks exist based upon high radiation conditions to prevent transfer of radioactive gases/fluids from the containment. Operability of the automatic isolation valves is tested in accordance with existing Technical Specification requirements utilizing approved plant procedures. The applicable plant emergency procedures will have been reviewed by April 25, 1979 for the concerns stated in Item 7.

Item 8

Review and modify as necessary your maintenance and test procedures to ensure that they require:

a. Verification, by test or inspection, of the operability of redundant safety-related systems prior to the removal of any safety-related system from service.

b. Verification of the operability of all safety-related systems when they are returned to service following maintenance or testing.

c. Explicit notification of involved reactor operational personnel whenever a safety-related system is removed from and returned to service.

Response

Administrative controls exist which require verification of the operability of redundant safety-related systems prior to removal of a safety-related system from service. Additionally, instructions exist to verify operability of systems when they are returned to service. Since involved reactor operational personnel accomplish the tasks required for removing and returning systems to service, and procedures specifically require information concerning the status of such systems to be included in shift turnover, continuity of this knowledge is maintained among operational personnel. Review of maintenance, testing, and administrative procedures will be conducted to incorporate the contents of a, b, and c above, where necessary, for added assurance that the mentioned evolutions take place.

Item 9

Review your prompt reporting procedure for NRC notification to assure that NRC is notified within one hour of the time the reactor is not in a controlled or expected condition of operation. Further, at that time, an open continuous communication channel shall be established and maintained with NRC.

Response

A special notification procedure has been prepared which identifies the senior person present (Group Shift Supervisor on up to Station Manager) as the individual responsible for notifying Region I, Office of Inspection and Enforcement, if the reactor is not in a controlled or expected condition of operation. To facilitate open and continuous communication with the Region I IE Office, two new outside telephone lines have been activated at the station. One line terminates in a speaker phone in the control room and the other terminates in a speaker phone in the conference room adjacent to the Station Manager's office.

In order that we may have a better understanding of the events for which one hour notification is required, it is requested that you provide us with further clarification of the phrase "the reactor is not in a controlled or expected condition of operation".

Item 10

Review operating modes and procedures to deal with significant amounts of hydrogen gas that may be generated during a transient or other accident that would either remain inside the primary system or be released to the containment.

Response

Existing operating modes and procedures will be reviewed to deal with significant amounts of hydrogen gas which remain either inside the primary system or are released to the containment. In the review of the emergency procedures, additional guidance, if required, will be provided to specifically deal with hydrogen gas where applicable. During reactor isolation, the top of the reactor vessel can be vented by way of the main steam lines to the suppression pool through the Electromatic Relief Valves (ERV's). The primary containment is inerted with nitrogen to less than 5% oxygen during normal operation. This oxygen limit is a Technical Specification requirement. The response of the primary containment to a hydrogen buildup and the handling of this buildup are described in Amendment No. 68 of the Oyster Creek Facility Description and Safety Analysis Report dated March 6, 1972.

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