Nebraska Public Power District

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NLS8400109
April 2, 1984

Mr. John T. Collins
Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Mr. Patrick J. Brehney, Director
Federal Emergency Management Agency
Region VII
911 Walnut Street
Room 300
Kansas City, Missouri 64106

Reference: a) Mr. J. T. Collins (USNRC) letter to Mr. J. M. Pilant (NPPD) dated February 9, 1984, subject: Exercise Submission Dates

b) Ms. Marlee Carroll (FEMA) Memorandum to All State Directors, Region VII dated March 7, 1984, subject: Milestones for Exercise

Dear Messrs. Collins and Brehney:

Subject: Cooper Nuclear Station Emergency Preparedness Exercise Information

In accordance with the milestones outlined in Reference (a), NPPD is hereby submitting the following items: (1) a detailed description of the exercise scenario and anticipated licensee actions; and (2) complete controller packages for the 1984 Cooper Nuclear Station Emergency Preparedness Exercise. By copy of this letter and in accordance with Reference (b) a duplicate set including Items (1) and (2) above will be forwarded to Mr. Joe Keller, Exxon Nuclear Idaho Company, Inc., for review of the meteorological and radiological data in the detailed scenario.

If you should have any questions or comments regarding the enclosed information, please contact Mr. P. R. Windham of our CNS staff or Mr. A. C. Morgan of our General Office staff.

Sincerely,

Jay M. Pilant
Technical Staff Manager
Nuclear Power Group

JMP/acm:emz3/8
Enclosures

cc: E. L. Jordan w/Item 1 only
U.S. Nuclear Regulatory Commission

J. Keller w/Items 1 and 2
Exxon Nuclear Idaho Company, Inc.

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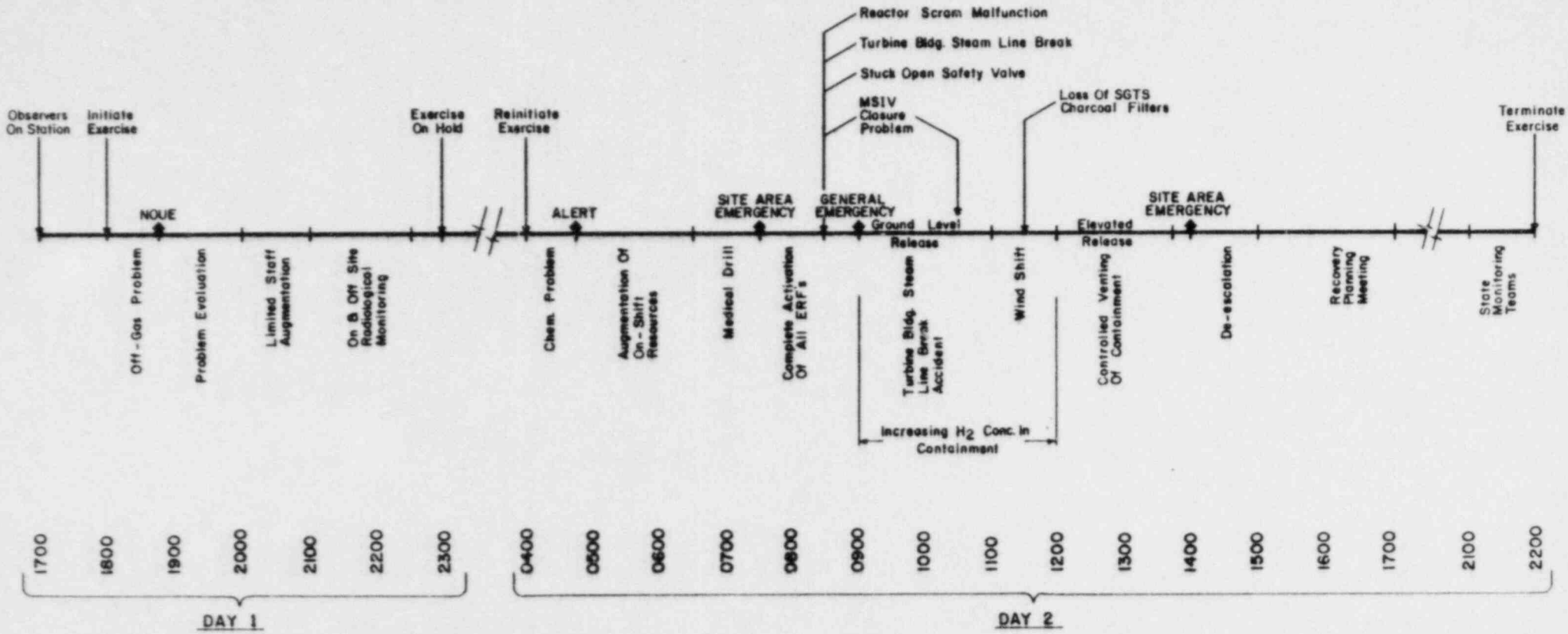
1984 N.P.P.D. EMERGENCY EXERCISE SCENARIO TIMELINE



1984 Exercise Scenario

Overview

The scenario selected for the 1984 Annual Emergency Exercise is a steam line break in the Turbine Building coupled with a Main Steam Isolation Valve (MSIV) closure failure. Hence, an unisolable leak outside of Secondary Containment results. This event is preceded by problems in the Reactor Manual Control System experienced during a power reduction to approximately 60%, conducted for turbine valve testing. Due to the problem experienced while moving Control Rods, the integrity of the clad in several fuel bundles is breached, resulting in the release of fission products to the Reactor Coolant System. Hence, the subsequent off-site release, affecting the population in the direction of Nemaha, Ne., which occurs from the steam line break in the Turbine Building is much more severe due to high activity. After approximately two (2) hours, the release is terminated upon effecting repairs to one of the two MSIVs, and isolation of the break location. A second, but much lower level, radiological release will occur as a result of a controlled vent from containment, conducted to reduce containment H_2 concentration. This release will occur following a windshift and affect the population in the direction of Langdon, Mo. Upon termination of the controlled vent, lasting about two (2) hours, event de-classification should be conducted. The exercise will be terminated following completion of a recovery planning meeting.

Detailed Description

The condition which results in activation of the Emergency Plan through declaration of a NOTIFICATION OF UNUSUAL EVENT (NOUE) is high off-gas activity. Specifically, an increase of 10^5 µCi/sec within a 30 minute period. From an operational perspective, it is unrealistic to expect that the station would be in operation if such a condition existed. Currently, off gas activity is approximately 3×10^3 µCi/sec. If conditions were such that fuel failure occurred, the most sensitive immediate indication available in the Control Room is off-gas radiation levels. As such activity increased, the monitor alarm setpoints would be reached at an activity level corresponding approximately to 1.3×10^4 µCi/sec. By procedure, power level should be reduced so as to clear the alarm. If no action is taken to reduce power and off-gas activity were to continue to increase, an off-gas logic trip point would be reached which causes Off-Gas System isolation, following a 15 minute time delay, at an activity level corresponding to approximately 3.4×10^4 µCi/sec. Hence, it's not unreasonable to assume that prior to reaching an off gas activity level corresponding to the NOUE 'limit' the station would be shutdown and the Off-Gas System isolated. From all appearances, a 'you can't get there from here' situation! But, for scenario purposes a 'need' for continued generation will be defined and authorization 'granted' to continue in power operation for some specified period of time or until the Technical Specification limit of 1 Curie/sec is being approached, whichever occurs first.

As a precautionary measure, the Emergency Director will direct that limited on site and off site radiological monitoring be conducted to assure that no environmental effects due to continued operation with such an activity level can be detected. All of the foregoing activities will be conducted starting after 6 pm on May 15, such that credit can be granted for meeting the off-hours exercise requirement defined by NUREG 0654, Rev. 1.

Sampling of the Reactor Coolant System at a four (4) hour frequency will be established as part of the initial exercise conditions. The basis for this will be the Technical Specification requirement related to exceeding a 20% power escalation within a one (1) hour time frame, which would occur following completion of turbine valve testing. Due to increasing activity levels, equilibrium conditions will not yet be achieved, therefore, sampling will continue to be conducted at 4 hour intervals. Upon recommencement of the exercise early the next morning, the situation will be escalated to an ALERT due to Reactor Coolant gross activity in excess of 310 μCi/gm of dose equivalent I-131. In accordance with Technical Specification requirements, an orderly shutdown should be initiated. Upon declaration of an ALERT, on-shift staffing augmentation should be conducted so as to activate the TSC and OSCs at the minimum staffing levels. Additionally, State EOCs as well as local EOCs are expected to be staffed and activated. Further, General Office and State personnel expected to be stationed in the on-site EOF, upon activation of the EOF at the SITE AREA EMERGENCY level, should be dispatched. Sufficient time has been allocated in the scenario time line to allow for the associated travel times prior to the onset of any significant off-site releases.

The next scenario event to unfold will be an injury to a potentially contaminated individual. The injury will occur to one of two individuals dispatched to investigate a source of water leakage from the top of the Torus. The leakage will be emanating from some non-radioactive source; hence, not be related to the Reactor Coolant System high activity condition. Upon exiting the Torus, following 'isolation' of the source, one of the two individuals will slip and fall on the first landing of the stairway, sustaining some injury; e.g. breaking a leg. A Rescue Team should be formed, dispatched to the scene and the injured individual loaded into the station ambulance. The ambulance will transport the individual to the medical center in Auburn for treatment.

Subsequent to the departure of the station ambulance, some difficulty will be experienced in inserting Control Rods as part of the power reduction, to the extent that several will not move and several others will be able to be repositioned only by increased CRD System Drive Pressure. It is anticipated that an attempt will be made to insert Incore Detectors (TIPS) into selected regions of the core. Limited success will be achieved. As a result, it is anticipated that the conclusion will be reached that the potential exists for a degraded core; hence, a SITE AREA EMERGENCY will be declared. This will precipitate activation of the on-site EOF as well as the General Office Emergency Center (GOEC) in Columbus. Additionally, personnel assigned to the Media Release Center (MRC) in Omaha will be dispatched from Columbus.

The situation may precipitate a discussion amongst key emergency response personnel as to the merits of an immediate trip versus continuing the shutdown in an orderly fashion. Hopefully, the option for continuing in an orderly manner will be selected. If not, the Control Room Observer/Controller will prevent the SCRAM. Then, finally, a transmission system disturbance will cause the generator to trip and result in a coincident reactor trip. But, as a result of the core geometry problem, CRD insertion will not be satisfactory. Power generation will continue, albeit at a much reduced level, resulting in a severe pressure spike. The pressure increase will cause a momentary lift of the safety/relief valves as well as one of the safety valves-presumably a safety valve which required extensive set pressure adjustments during the last test conducted.

The safety valve will then stick open, causing containment pressurization. Further, the pressure spike will presumably be the cause of the steam line break in the Turbine Building. Finally, Main Steam Line isolation will not occur due to a malfunctioning set of MSIVs. Hence, a high level off-site release will be initiated via the Turbine Building Ventilation Exhaust System vents - a ground level, as opposed to elevated release. The release will be in the direction of Nemaha, Ne and will continue on for a period of approximately 2 hours.

Off-site radiological surveys should be conducted by field teams from CNS and the State of Nebraska. Projected doses at various receptor points should be calculated based upon degraded core conditions, radiological release data provided by the high range effluent monitoring system, meteorological data and an assumed release duration of 4 hours. Protective action recommendations provided should result in a simulated evacuation of Nemaha. The protective actions will be based upon the quantity of iodine being released; hence, the release will pose a thyroid problem. The field monitored iodine activity level will be only 1/10 of that predicted by the code since core degradation of from 1-10% is projected. In reality, the deposition of iodine would be expected to be far less, due to the solubility of iodine in water, coupled with the fact that core uncovery does not take place. Meanwhile, the operational response will most likely include actuation of the Liquid Poison System, actuation of safety relief valves to reduce system pressure as quickly as possible and MSIV closure troubleshooting. The release will be terminated by closure of the MSIV located in the steam tunnel, once the problem associated with the valve has been corrected by a Repair Team entry into the steam tunnel.

During the period of time that a release is in progress from the Turbine Building, increasing levels of H_2 will be detected in the Drywell. As a result, the potential need to vent Containment should be projected. A containment atmosphere sample should be obtained; however, the results of the analysis will not be known prior to initiation of venting. Additionally, a flow problem will develop with the Standby Gas Treatment System (SBGTS) train in service, requiring actuation of the other train to maintain Secondary Containment d/p. However, upon actuation of the second train, the charcoal bed heater will malfunction. A repair team will be dispatched to check out the problem with the heaters, but in attempting to determine the nature of the problem, will inadvertently cause the charcoal bed fire suppression system to actuate. Consequently, no credit should be assumed for iodine removal by the SBGTS. Further, a change in wind speed and direction will occur subsequent to termination of the release from the steam line break, but prior to initiation of venting. Hence, upon initiation of venting, the release will be in the easterly direction, with Langdon, Mo. being the primary population center of interest. Protective action recommendations developed prior to initiation of planned venting should be based upon NUREG 0654 guidance for a GENERAL EMERGENCY condition as well as judgment exercised by emergency management personnel. The expected recommendation is precautionary sheltering. This release will be terminated upon completion of an approximate 2 hour venting time frame, which will reduce H^2 concentration inside containment to a satisfactory level. Upon completion of the venting operation, consideration should be given to downgrading the event to a SITE AREA EMERGENCY classification. Further declassification to an ALERT or NOUE category may be effected based upon discussions amongst key emergency management personnel.

The final activity to be conducted as part of the exercise is a recovery planning meeting. Upon completion of the meeting, the exercise will be terminated.