Duquesne Light

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April 15, 1983

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Attn: Mr. Darrell G. Eisenhut, Director
Division of Licensing
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Generic Letter No. 82-33; Supplement 1 to NUREG-0737

Gentlemen:

In response to your letter of December 17, 1982, Generic Letter No. 82-33, attached is the Beaver Valley Unit 1 plant specific schedule for addressing each of the elements for emergency response capability. This schedule has been developed following the guidelines contained in Supplement 1 to NUREG-0737. It is recognized that the elements of emergency response must be integrated in such a fashion to assure adequate support is given to the plant operating staff when called upon to respond to an emergency condition. In recognition of this, Beaver Valley Unit 1 has participated with the INPO sponsored NUTAC on Emergency Response Capability (ERC) and has worked closely with other utilities in preparing an integrated implementation plan which addresses the elements of Supplement 1.

Our plan for integrating these elements will have its focus on utilizing manpower in the most efficient manner and as a result several of the elements will be performed concurrently. Included as Figure 1 is a preliminary integrated implementation plan. This plan was developed by the NUTAC on ERC and must be converted into a plant specific plan. We will use the guidelines developed by this NUTAC to assist us in developing our plant specific integration implementation plan. Included with this submittal is Appendix A which is a summary description of the integration plan developed by this NUTAC. The integration scheme, as developed by this NUTAC, has not been finalized, however, it should be available this June at which time our integrated implementation plan will be drafted.

The Duquesne Light Company welcomes this opportunity to work with the NRC in establishing realistic plant-specific schedules. As indicated in your letter, implementing generic deadlines does not permit a utility to make the most efficient use of its staff when trying to integrate many related tasks. This approach by the NRC is viewed as a positive step which permits both the NRC and the electric utility industry to maximize

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their resources, be responsive to the issue of emergency response capability and improve our ability to get the job done.

The Duquesne Light Company expects to complete those tasks identified in Supplement 1 to NUREG-0737 in accordance with the following schedule:

1.	SPDS Safety Analysis	-	contingent upon NRC issuance of SER on Westinghouse designed SPDS
2.	SPDS operable and operators trained	-	following fifth refueling outage
3.	CRDR Program Plan	-	draft; September 1983
		-	final; date to be provided by September 1983
4.	CRDR Summary Report	-	to be provided with our final program plan submittal.
5.	R.G. - 1.97 Report	-	to be provided with our CRDR Summary Report
6.	EOP Technical Guidelines (Generic)	-	previously submitted by the Westinghouse Owner's Group
7.	EOP Procedures Generation Package	-	June 1, 1984
8.	Implementing EOPs	-	following simulator validation and operator training
9.	ERF fully functional	-	following fourth refueling outage (without SPDS)

If you have any questions regarding this submittal, please contact myself or members of my staff.

Very truly yours,

J. J. Carey

J. J. Carey
Vice President, Nuclear

Attachment

cc: U. S. Nuclear Regulatory Commission
Office of Inspection & Enforcement
Attn: R. C. Haynes, Regional Administrator
Region I
631 Park Avenue
King of Prussia, PA 19406

Mr. W. M. Troskoski, Resident Inspector
U. S. Nuclear Regulatory Commission
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U. S. Nuclear Regulatory Commission
c/o Document Management Branch
Washington, DC 20555

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF BEAVER)

On this 15th day of April, 1983, before me, Sheila M. Fattore a Notary Public in and for said Commonwealth and County, personally appeared J. J. Carey, who being duly sworn, deposed, and said that (1) he is Vice President of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge, information and belief.

Sheila M. Fattore

SHEILA M. FATTORE, NOTARY PUBLIC
SHIPPINGPORT BORO, BEAVER COUNTY
MY COMMISSION EXPIRES SEPT. 16, 1985
Member, Pennsylvania Association of Notaries

ATTACHMENT

Response to Generic Letter 82-33

Program Plan

Duquesne Light Company, Beaver Valley Unit No. 1, will be utilizing Guidelines for an Integrated Implementation Plan which has been developed by the NUTAC on ERC. Included as Appendix A to this attachment is a summarized version of this guideline. This summarized guideline, when used with Figure 1 presents a method of ideal integration for the planning of the elements of Supplement 1 which are:

- Emergency Operating Procedures
- Regulatory Guide 1.97
- Safety Parameter Display System
- Emergency Response Facilities
- Control Room Design Review

When these guidelines are finalized, we will develop our plant-specific integration plan of these elements. The guidelines are scheduled to be available in June of this year.

Proposed Schedules

Much of the work discussed in the following sections will be performed in parallel so that effective integration of these elements can be accomplished. There are many documents providing guidelines being prepared to assist utilities in completing each of these elements. We will utilize these guidelines where appropriate, when evaluating our method of addressing each of the Supplement 1 elements.

- Safety Parameter Display System (SPDS)

  The SPDS selected for Beaver Valley Unit No. 1 is a Westinghouse Electric Corporation design. This SPDS has been purchased and installation of this system has started. It will require two refueling outages to complete all terminations in the plant which serve as inputs to the SPDS. Completion of this work is scheduled to occur during our fourth refueling outage in February 1985. After terminating all inputs, and completing loop calibration following the fourth refueling outage, a complete check-out of the SPDS will be accomplished. Between this outage and the fifth refueling outage, our plant operating staff will become familiar with this system, receive training on the system, and learn how to most effectively make use of this operating aid for responding to emergency conditions.

Procedures that are to be developed or revised will be in place by the end of our fifth refueling outage. Although the SPDS is not expected to be installed in time to be thoroughly reviewed as part of the CRDR, it's location and parameters will be a consideration when performing the Control Room Design Review.

It is our understanding, that the NRC has reviewed the Westinghouse design basis of the SPDS, which includes the basis for parameter selection. Our SPDS will be implemented using the Westinghouse design basis and functional analysis requirements upon which this SPDS has been designed. Upon issuance of a favorable Safety Evaluation Report by the staff, this document will be used as our design basis for parameter selection.

- Control Room Design Review (CRDR)

Beaver Valley, Unit 1, is presently developing a program plan for a control room design review. We plan to follow guidance being developed by the INPO sponsored NUTAC on CRDR. As inputs to this effort, we have developed a questionnaire which has been distributed to the plant operating staff and will serve in part as the operating experience input for the review. Parallel with this task, we will assess past operating events and the operations enforcement history which will also serve as operating experience input and together these will assist in the identification of Human Engineering Discrepancies (HEDs). Our program plan will contain details of these tasks and explain our methodology for assessing this information and categorizing HEDs for resolution. Final guidance in performing a CRDR is expected to be published in May, 1983, and as such, committing to a date for submitting our program plan is not possible at this time. We will, however, commit to providing a draft plan by September of 1983. Our completed program plan will aid us in determining the length of time needed to accomplish each task and provide the methodology for HED resolution which is an input for determining the final resolution of HEDs. Upon completion of these elements of our program plan, we will be able to provide a date for submitting the CRDR summary report.

It is our intent to utilize our first draft of the new EOPs when performing our CRDR. Utilizing these plant-specific documents will most accurately assess the man-machine interface in our control room, and a sound basis for operator actions will exist. We believe this approach to be the most effective use of our resources and will fully satisfy the staff's concerns for integrating the EOPs with the CRDR.

- Regulatory Guide - 1.97

Review of specific Regulatory Guide 1.97 instruments have been in progress since the issuance of revision 2, and positions have been docketed on some generic, instrument related issues. Instrumentation needed to implement emergency operating procedures is being tabulated

and will be compared with the Regulatory Guide. This Regulatory Guide has also been used as a design input to the parameters that will be available in the ERF, therefore, the majority of these parameters will be available to TSC and EOF personnel although we anticipate some exception to the Regulatory Guide. The NUTAC on ERC is developing Guidelines for evaluating Reg. Guide 1.97 instruments. These guidelines are scheduled to be issued in June of 1983 and will serve as an input document in assisting us when performing this evaluation. This task will be performed in parallel with the CRDR effort to assure effective integration of the review of accident monitoring instrumentation with the CRDR and EOPs. We will provide a final report on our evaluation of Regulatory Guide 1.97 instrumentation with the CRDR summary report. Our report will satisfy the staff concerns as documented in Supplement 1.

- Emergency Operating Procedures (EOPs)

Initial drafts of new EOPs are currently being developed based on the Westinghouse Emergency Response Guidelines (ERGs). These guidelines have been previously submitted to the NRC via the Westinghouse Owner's Group, and as such, this submittal satisfies the Supplement 1 request for submitting technical guidelines for NRC review. Work has begun in developing initial drafts for in-house reviews in advance of obtaining the staff's approval of the generic ERGs. The EOPs will not be completed until the NRC staff has issued its SER on these procedures. It is our understanding that the Westinghouse Owner's Group plans to issue a revision to the ERGs in June of 1983. Any revision, and subsequent staff review of these ERGs will be a consideration in the final development of our plant-specific EOPs. It is our intent to utilize the new EOP drafts when performing our CRDR. We will follow the guidelines contained in Supplement 1 to assure effective development of the EOPs and the integration with the other elements. Our preliminary schedule at this time includes utilizing the new EOP drafts for our CRDR in 1984 and completing a validation of our new EOPs on our Unit 1 plant simulator scheduled for operation in 1985. Operator training on the new EOPs will be performed in stages. The operators will become familiar with the new EOPs during requalification training and then receive simulator training using the new EOPs. We will submit the procedures generation package by June 1, 1984 for NRC review. The EOPs will be implemented upon the completion of the simulator validation and training of the operators.

- Emergency Response Facilities

Since the NRC first issued guidance related to establishing a Technical Support Center in NUREG-0578, we have actively pursued the necessary engineering studies to determine the design and optium location of such a facility. In November of 1979, we stated that our goal was to complete the installation of the permanent center, complete with necessary instrumentation and data transmission facilities by January 1, 1981. In early March, 1980, a conceptual design of our TSC was pres-

ented to the NRC while at the same time ground boring and subsurface soil analysis was complete and engineering was finalyzing details which would permit construction to begin. In August of 1980, the staff issued for comment NUREG-0696 which defined the functional criteria for ERFs. Comments were provided on September 26, 1980 and several days later, a revised design concept was submitted which reflected our understanding of the direction the NRC was going with respect to ERF design criteria. From the time the NRC identified the need for an ERF, we endorsed both the desirability and need for these facilities and immediately began the necessary design and construction to support the desired implementation date. We believe this early effort demonstrates our responsiveness and also demonstrates a good faith effort at having an emergency response facility which was being built in close accordance with the then established criteria.

The current schedule for a fully functional ERF is following our fourth refueling outage. The TSC and EOF are located within the site structure referred to as the Emergency Response Facility (ERF). Fully functional means all actions concerning structure, instrumentation, procedures and trained staff to be completed. The following is presented for your review:

Technical Support Center

The permanent TSC is located in the ERF on the site property and is staffed by predesignated technical, engineering, senior management and other personnel as required by our Emergency Preparedness Plan. The design is such that during periods of activation, it will operate uninterrupted to provide plant management and technical support to plant operations personnel.

The TSC has not been located within the protected area. It is our position that the necessary interaction with control room, OSC, EOF and other personnel involved with the emergency can be adequately facilitated with the selected location of the TSC. The interim TSC also is not located within the site protected area and we have adequately demonstrated our ability to provide the necessary interaction of emergency response personnel during a recent full scale drill which was conducted in accordance with 10 CFR 50, Appendix E and found satisfactory during reviews by FEMA and the NRC.

The basis, as per NRC guidance, for establishing a TSC within the site protected area is documented as being as close as possible to the control room because recent events at nuclear power plants demonstrated ineffective methods for providing all of the necessary management interaction and technical information exchange. The interim TSC has been equipped with dedicated communications circuits to permit interfacing of TSC personnel with control room personnel and for retrieval of specific plant data. This is used in conjunction

with closed circuit televisions which provide for an independent method of obtaining specific plant data. As previously stated, we have demonstrated our ability to provide the necessary management interaction between control room personnel and TSC personnel during full scale emergency drills. It has never been necessary for any individual within the TSC to go to the control room for any management interaction, technical information exchange or to obtain data which was unavailable in the TSC.

During the period of time the NRC guidance documents were being reviewed for their impact on our ERF design, we had committed to providing an alternate TSC in the existing conference room located in the Service Building. A description of this alternate TSC was provided in our December 12, 1980 submittal. Our commitment was based on the rigid guidance that the TSC be located within two minutes walking distance of the control room. Upon our further consideration of this commitment, we believe that the establishment of an alternate TSC in the service building will not enhance our capability to perform emergency operations. Therefore, we retract that commitment based upon following:

- our demonstrated proficiency for adequately responding to emergency conditions during full scale emergency drills

- our present Emergency Preparedness Plan requires the TSC to be manned with sufficient personnel to permit overall plant management and technical assistance to the control room personnel, not the alternate TSC.

- the alternate TSC does not have adequate space to permit establishing the appropriate functions necessary to permit overall plant management and technical assistance to the control room personnel.

- attempting to set-up this alternate TSC in conjunction with the permanent TSC would weaken our emergency response posture since key supervisory personnel would be in two separate locations and effective coordination of activities would be jeopardized.

- the alternate TSC does not have a radiologically filtered ventilation system or any shielding to permit an individual to remain in the event that plant conditions deteriorated beyond the plant design basis. Any evacuation from the alternate TSC would therefore weaken our emergency response capability, subsequently, this alternate TSC would not be able to operate uninterrupted as requested in Supplement 1.

- the permanent TSC is being equipped with data collection equipment (SPDS and computer displays of appropriate Regulatory Guide 1.97, Rev. 2 parameters) which will significantly enhance our existing capabilities for obtaining information from control room instrument channels which are the recognized accident monitoring instruments, thereby improving an already adequate method of obtaining plant information. (Note: the SPDS is not considered necessary for a fully functional TSC).

- the habitability, ventilation and shielding, of the permanent TSC is such that evacuation due to any design basis accident would not be necessary, therefore, it will operate uninterrupted for the duration of the emergency.

- the alternate TSC does not have adequate floor space to permit storage of or access to accurate, complete and current plant records essential for evaluation of the plant under accident conditions; however, this is a design feature of the permanent TSC.

- approximately 58 million dollars has been budgeted for the completion of the ERF. This represents a significant capital investment above which we cannot justify additional costs for an alternate facility to meet guidance documents.

- in the event that at some time it would be desirable to go to the control room, the permanent TSC is three minutes driving time and within a short walking distance from the control room. The route between the TSC and Control Room is on company owned roadways, all within the property boundary. The time required to travel from our TSC to the Control Room is reasonable and should not be considered an unacceptable difference from the guidance document.

As previously stated, the permanent TSC will not be fully functional until after the fourth refueling outage. In our submittal of June 8, 1982, response to Generic Letter 82-10, we indicated it would require two refueling outages to complete all construction work associated with providing a reliable data collection system. This schedule is necessary since the tie in and testing of the majority of the circuits between the plant and the ERF can only be performed during an extended outage. Our present schedule is to have available, at the conclusion of the third refueling outage, sufficient information in the TSC to enable emergency support personnel to assist the control room operating staff in evaluating the status of the plant under emergency conditions. Included as TABLE 1 is a list of plant variables which we have determined to be the higher priority inputs to the new data aquisition system. All plant parameters serving as inputs to this new system will be completed during the fourth refueling outage. Completion of this task will result in a fully functional TSC which will have addressed the guidance provided in Supplement 1. In the interim, we will maintain the existing interim TSC located in the Administration Building until the third refueling outage at which time the TSC functions will be relocated to the permanent ERF facility. With respect to provisions for security at the permanent TSC, the same level of security will be maintained for controlling access, during TSC activation as our EPP currently provides for the interim TSC.

In addition to the data acquisition system discussed above, we have also procured another system to be used to monitor the meteorological variables for the site vicinity. This has been previously discussed in correspondence to the NRC staff, specifically, response to Generic Letter 82-10, dated June 8, 1982, whereby we stated our schedule for completing this effort as being December 1983. Completion of this work will permit collection of meteorological data for use in evaluating the offsite consequences of a radiological emergency condition. This computerized meteorogical assessment system will be operable from the TSC, EOF and the Control Room. In the interim, we will continue to access these offsite consequences through the use of our dose projection implementing procedures contained in our Emergency Preparedness Plan.

Operational Support Center

Our present OSC is defined in our Emergency Preparedness Plan and will remain the permanent OSC within the new emergency response framework.

Emergency Operations Facility

The permanent EOF is located in the ERF on the site property and is staffed by predesignated emergency personnel as identified in the EPP to provide overall emergency response, coordination of radiological and environmental assessment, development of recommendations for public protective actions, and coordination of emergency response activities with Federal, State and local agencies. During periods of activation, the EOF will operate uninterrupted to permit continuous dose assessment, communications and decision making. This portion of the ERF has been designed with a protection factor greater than 50 and includes HEPA and charcoal filters in the design of the ventilation system which is capable of operating in a recirculation mode.

Our schedule for having a fully functional EOF is following our fourth refueling outage. This schedule is necessary to permit completion of the work associated with the data acquisition system as discussed in the above section on the TSC. Plant variables which serve as inputs to the data acquisition system will be phased into the system during the third and fourth refueling outages. In addition to this system, we are also installing an interactive graphics terminal and graphics printer connected to the meteorological computer system, as discussed in the above section on the TSC. In the interim, we will maintain the existing interim EOF located in the Administration Building until the third refueling outage at which time the EOF functions will be relocated to the permanent ERF facility. With respect to provisions for security at the permanent EOF, the same level of security will be maintained for controlling access, during EOF activation as our EPP currently provides for the interim EOF.

Upon consideration of the design of the permanent EOF, it is our position that maintaining a back-up EOF for potential activation is not necessary for the following reasons:

- There is no accident condition within our design basis whereby an evacuation of the permanent EOF would necessitate the relocation of personnel.

- There are no activities which would be performed at the back-up EOF which could not be performed in the permanent EOF.

- It is undesirable to provide staffing or equipment to a back-up EOF which cannot contribute to the overall management of an emergency situation.

- Staff guidance in the April 25, 1980 letter stated arrangements should be made to activate an alternate EOF in the event that the nearsite EOF becomes uninhabitable. There is no design basis accident for which our permanent EOF would become uninhabitable.

- Staff guidance has also stated that the location of the EOF, and whether a back-up facility is required, should consider:

  a. whether the location provides optimum functional and availability characteristics for carrying out the functions specified for the EOF and,

  b. whether EOF functions would be interrupted during radiation releases for which it was necessary to recommend protective actions for the public to offsite officials.

  Based on the design of the permanent EOF and our procedures for directing emergency activities, it is concluded that all EOF functions will continue uninterrupted throughout an emergency condition.

- Based on dose calculations for our site, access to the permanent EOF will be available during all design basis accident conditions. This is possible due to the fact that after the first hour of a design basis accident, any release from containment will have stopped due to the return of our subatmospheric containment to a negative pressure. An individual standing outside the ERF for the first hour would not receive a radiation dose in excess of 10 CFR 100 limits. Any time after the first hour of a DBA, the source term will decrease due to the rapid radioactive decay of fission products and depletion of the plume due to normal meteorological processes. This results in postulated doses to individuals outside the ERF becoming less. In the event the emergency organi-

zation would decide to restrict access to the ERF for a short period of time, our emergency procedures will identify alternate steps to be taken. (i.e., a temporary holding location on route to the ERF)

- Due to the unique location of BVPS with respect to having three states within the Emergency Planning Zone, a single back-up EOF beyond the EPZ would significantly delay the staffing of a back-up facility by state and local emergency personnel.

In consideration of the above, we do not consider a back-up EOF as being necessary for the task of emergency management and offsite interface under design accident conditions, and therefore retract our previous commitment to having a back-up EOF after our permanent facility is made operational following our third refueling outage.

TABLE 1

PLANT VARIABLES DISPLAYED IN THE ERF
FOLLOWING THE THIRD REFUELING OUTAGE

Steam Generator 1A Blowdown Isolation Valve Position
Steam Generator 1B Blowdown Isolation Valve Position
Steam Generator 1C Blowdown Isolation Valve Position
Charging Flow
Reactor Coolant Pump 1A Seal Water Flow
Reactor Coolant Pump 1B Seal Water Flow
Reactor Coolant Pump 1C Seal Water Flow
Non-Regenerative Heat Exchanger Letdown Flow
Reactor Coolant Pump 1A Seal Injection Flow
Reactor Coolant Pump 1B Seal Injection Flow
Reactor Coolant Pump 1C Seal Injection Flow
Blender Primary Grade Water Flow (Make-up Flow)
Volume Control Tank Level
Volume Control Tank Pressure
Charging Pumps Discharge Header Pressure
Containment Sump Water Level
Steam Generator 1A Auxiliary Feedwater Flow
Steam Generator 1B Auxiliary Feedwater Flow
Steam Generator 1C Auxiliary Feedwater Flow
Steam Generator 1A Narrow Range Level
Steam Generator 1B Narrow Range Level
Steam Generator 1C Narrow Range Level
Steam Generator 1A Wide Range Level
Steam Generator 1B Wide Range Level
Steam Generator 1C Wide Range Level
Waste Gas Surge Tank Pressure
Waste Gas Decay Tank 1A Pressure
Waste Gas Decay Tank 1B Pressure
Waste Gas Decay Tank 1C Pressure
Containment Hydrogen Concentration
Containment Narrow Range Pressure
Containment Atmosphere Temperature
Steam Generator 1A Steam Pressure
Steam Generator 1B Steam Pressure
Steam Generator 1C Steam Pressure
Main Steam Header Pressure
Main Steam Loop 1A Atmospheric Dump Valve Position
Main Steam Loop 1B Atmospheric Dump Valve Position
Main Steam Loop 1C Atmospheric Dump Valve Position
Main Steam Loop 1A Isolation Valve Position
Main Steam Loop 1B Isolation Valve Position
Main Steam Loop 1C Isolation Valve Position

Neutron Flux Source Range
Neutron Flux Intermediate Range
Refueling Water Storage Tank Level
Chemical Addition Tank Level
Quench Spray Pump 1A Discharge Pressure
Quench Spray Pump 1B Discharge Pressure
Quench Spray Pump 1A Discharge Flow
Quench Spray Pump 1B Discharge Flow
Reactor Coolant Loop 1A Flow
Reactor Coolant Loop 1B Flow
Reactor Coolant Loop 1C Flow
Pressurizer Level
Pressurizer Wide Range Level (Cold Calibration)
Pressurizer Relief Tank Level
Reactor Coolant Pressure (Wide and Narrow Range)
Pressurizer Relief Tank Pressure
Pressurizer Liquid Temperature
Pressurizer Vapor Temperature
Reactor Coolant Auctioneered T_{ave} Temperature
Reactor Coolant T_{ref} Temperature
Reactor Coolant Loop 1A Cold Leg Temperature
Reactor Coolant Loop 1B Cold Leg Temperature
Reactor Coolant Loop 1C Cold Leg Temperature
Reactor Coolant Loop 1A Hot Leg Temperature
Reactor Coolant Loop 1B Hot Leg Temperature
Reactor Coolant Loop 1C Hot Leg Temperature
Reactor Coolant Loop 1A Delta T
Reactor Coolant Loop 1B Delta T
Reactor Coolant Loop 1C Delta T
Reactor Coolant Loop 1A T_{ave}
Reactor Coolant Loop 1B T_{ave}
Reactor Coolant Loop 1C T_{ave}
Pressurizer PORV Common Discharge Line Temperature
Pressurizer Code Safety Valve A Discharge Line Temperature
Pressurizer Code Safety Valve B Discharge Line Temperature
Pressurizer Code Safety Valve C Discharge Line Temperature
Pressurizer Relief Tank Temperature
Pressurizer Code Safety Valve A Position
Pressurizer Code Safety Valve B Position
Pressurizer Code Safety Valve C Position
Reactor Coolant Pump 1A Current
Reactor Coolant Pump 1B Current
Reactor Coolant Pump 1C Current
Degree of Subcooling
Pressurizer Heater Currents
Outside Recirculation Spray Pump 1A Discharge Pressure
Outside Recirculation Spray Pump 1B Discharge Pressure
Inside Recirculation Spray Containment Sump 1A Temperature
Inside Recirculation Spray Containment Sump 1B Temperature

Inside Recirculation Spray Pump 1A Discharge Temperature
Inside Recirculation Spray Pump 1B Discharge Temperature
Outisde Recirculation Spray Pump 1C Discharge Temperature
Outside Recirculation Spray Pump 1D Discharge Temperature
Inside Recirculation Spray Containment Sump 1A Level
Inside Recirculation Spray Containment Sump 1B Level
Reactor Coolant Loop 1A Cold Leg High Head Safety Injection Flow
Reactor Coolant Loop 1B Cold Leg High Head Safety Injection Flow
Reactor Coolant Loop 1C Cold Leg High Head Safety Injection Flow
Reactor Coolant Loop 1A Hot Leg High Head Safety Injection Flow
Reactor Coolant Loop 1B Hot Leg High Head Safety Injection Flow
Reactor coolant Loop 1C Hot Leg High Head Safety Injection Flow
High Head Safety Injection Flow to BIT
Low Head Safety Injection Pump 1A Discharge Flow
Low Head Safety Injection Pump 1B Discharge Flow
River Water Pump 1A Discharge Flow to Recirculation Spray Heat Exchangers
River Water Pump 1B Discharge Flow to Recirculation Spray Heat Exchangers
Condenser Air Ejector Discharge to Containment Trip Valve Position
Primary Plant Demineralized Water Storage Tank Level
480V Emergency Bus 1N Volts
480V Emergency Bus 1N1 Volts
480V Emergency Bus 1P Volts
480V Emergency Bus 1P1 Volts
120 VAC Vital Bus 1 Volts
120 VAC Vital Bus 2 Volts
120 VAC Vital Bus 3 Volts
120 VAC Vital Bus 4 Volts
Incore Thermocouples
Incore T/C Cold Reference Junction Temperatures

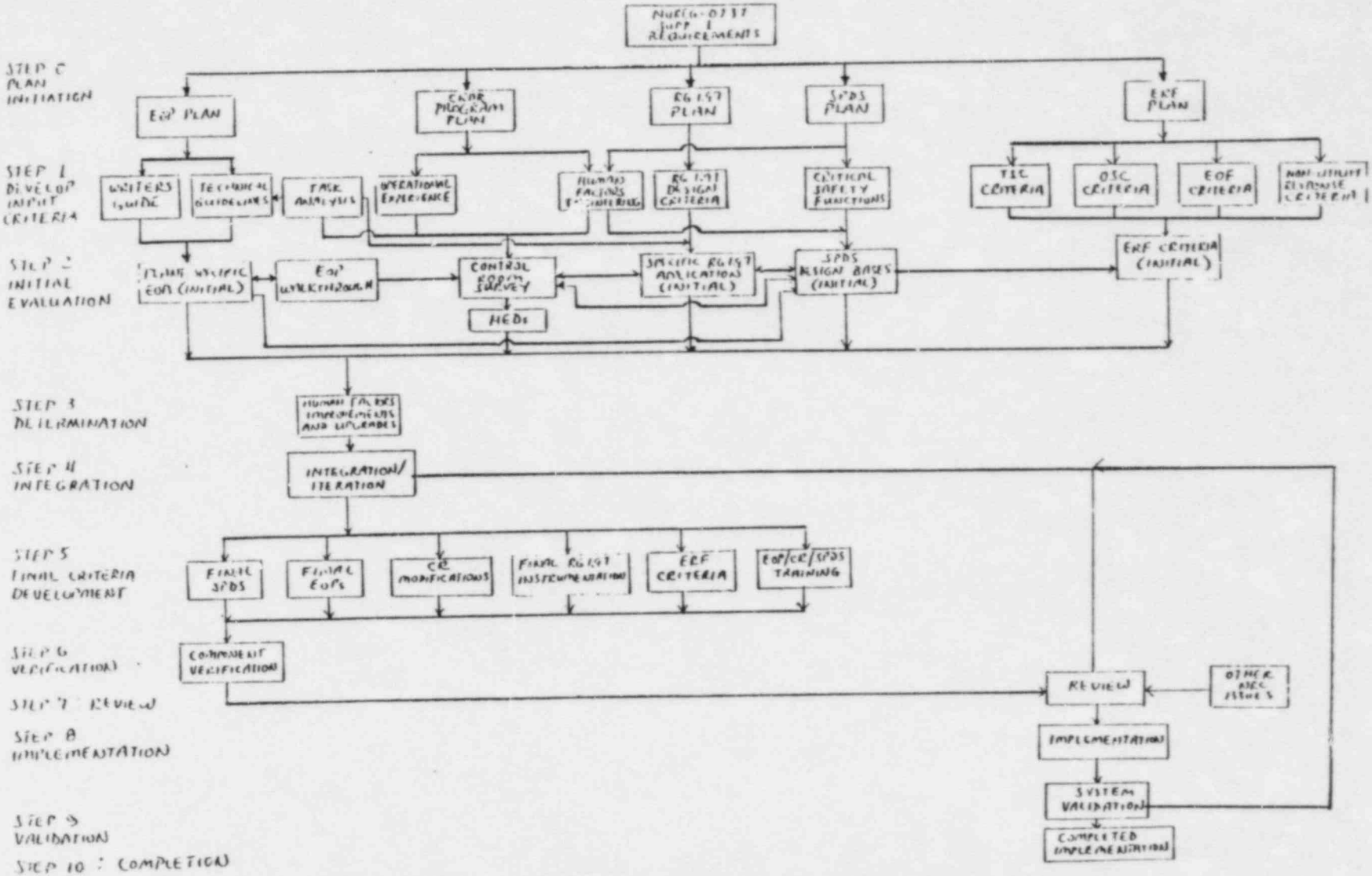
NUREG-0737 SUPP 1 REQUIREMENTS
STEP 0 PLAN INITIATION
STEP 1 DEVELOP INPUT CRITERIA
STEP 2 INITIAL EVALUATION
STEP 3 DETERMINATION
STEP 4 INTEGRATION
STEP 5 FINAL CRITERIA DEVELOPMENT
STEP 6 VERIFICATION
STEP 7 REVIEW
STEP 8 IMPLEMENTATION
STEP 9 VALIDATION
STEP 10 : COMPLETION
EOP PLAN
SPDS PLAN
ERF PLAN
WRITERS GUIDE
TECHNICAL GUIDELINES
TASK ANALYSIS
OPERATIONAL EXPERIENCE
RG 1.97 DESIGN CRITERIA
CRITICAL SAFETY FUNCTIONS
TSC CRITERIA
OSC CRITERIA
EOF CRITERIA
ERF CRITERIA (INITIAL)
EOP (INITIAL)
EOP WALKTHROUGH
CONTROL ROOM SURVEY
HEDs
SPECIFIC RG 1.97 APPLICATION (INITIAL)
SPDS DESIGN BASES (INITIAL)
INTEGRATION/ ITERATION
FINAL SPDS
FINAL EOPs
CR MODIFICATIONS
FINAL RG 1.97 INSTRUMENTATION
ERF CRITERIA
EOP/CR/SPDS TRAINING
COMPONENT VERIFICATION
REVIEW
OTHER NRC ISSUES
IMPLEMENTATION
SYSTEM VALIDATION
COMPLETED IMPLEMENTATION

FIGURE 1

APPENDIX A

GENERIC INTEGRATION SCHEME

INTRODUCTION

A subcommittee of the NUTAC on emergency response capabilities was formed to provide industry guidance to individual utilities for the development of an integrated implementation plan that addresses the provisions of Supplement 1 to NUREG-0737. The method developed to integrate these provisions is shown in Figure 1.

Figure 1 is divided into basis steps that may be considered in the development of an integrated, plant-specific implementation plan. Each step and its relation to previous and succeeding steps is discussed in the following plan descriptions.

EOP PLAN

The EOP plan consists of those tasks that will provide a documented method for developing, utilizing, revising, and controlling emergency operating procedures.

Initial plant-specific EOPs are developed by utilities for the purpose of mitigating the consequences of a broad range of initiating events and subsequent multiple failures or operator errors, without the need to diagnose a specific event. These procedures are function-oriented and written with human factors considerations to improve human reliability. These initial EOPs are based upon a writer's guide and NSSS generic technical guidelines.

Determination of procedure adequacy is dependent upon the trained operator's needs. EOPs should be checked for completeness, understandability, technical correctness, usability, and compatability with the control room. A walk-through of the initial EOPs provides a method of evaluating these criteria. A utility may choose to perform an EOP walk-through in the control room, in a simulator, using a mock-up of their control room, or any combination of the three. Although Figure 1 indicates only one EOP walk-through, this process should be repeated following any major modifications to the EOPs.

Plant-specific EOPs should be incorporated in an iterative process with control room HEDs, specific utility application of RG-1.97 recommendations, SPDS design bases, and emergency response facility criteria. This interactive process should be used to determine what changes can be made easily to the EOPs to accommodate deficiencies in other areas without impacting the effectiveness of the EOPs. For this iterative process to be most effective, all of the elements that impact EOPs should be available at the same time.

CRDR PLAN

The CRDR program plan is the first step toward performing a CRDR and provides a method for performing the entire review.

The operating experience review is performed to identify any operational problems resulting from design discrepancies or to identify any improvements to the control room that would improve the ability of an operator to respond to an emergency condition.

In performing the CRDR, accepted human factors guidelines should be used. Good human engineering practices should be incorporated in any control room design since the operator must interface with this equipment under stressful, as well as normal, conditions.

The control room survey should utilize results from the EOP walk-through, operating experience data, and human engineering criteria, to uncover any control room human engineering discrepancies. This survey should include, among other things, an assessment of control room layout, the control room environment, the usefulness of audible and visual alarms, the readability of displays, the adequacy of instrumentation, and the information recording and recall capabilities.

The results of the EOP walk-through, with consideration given to the operators tasks, must be compared with the available control room instruments and controls during the survey process to determine the adequacy of existing displays or controls.

The operators tasks and informational requirements are validated by the EOP walk-through and provide input criteria to the control room survey process.

Enhancements to the control room should be coordinated with other Supplement 1 elements such as EOPs, RG-1.97, SPDS, and ERF.

RG-1.97 ELEMENT

The RG-1.97 plan provides administrative guidance required to assess and document all aspects of RG-1.97 consideration. A complete set of design criteria is developed from the plan to form a basis for plant-specific instrument selection. Utilizing the design criteria, as well as the post-accident instrumentation requirements identified from the CRDR task analysis, a plant-specific list of accident monitoring instrumentation, qualification criteria and locations is developed. The plant list also provides feedback to the control room survey and SPDS design basis. ERF design criteria provide additional input to the plant list. Once the list is finalized in design, an iterative process occurs to consider changes associated with EOPs, enhancements to the control room, SPDS design, and ERF design.

SPDS PLAN

The SPDS plan describes the tasks that will provide a method for developing, revising, assessing, and implementing the safety parameter display system design bases and a method for documenting these efforts. This plan is plant-specific, though it is developed with cognizance of current NRC and industry guidelines.

A plant-specific list of human factors criteria pertaining to the SPDS should be developed as a basis for developing and assessing plant-specific SPDS designs. This list of criteria may be developed in conjunction with the human factors criteria required as input for the performance of a control room survey.

The EOPs, as a result of the efforts performed by the NSSS owners groups and plant-specific considerations, specify the critical safety functions for a plant. The SPDS design bases should incorporate this information to allow the operator to use the SPDS.

The CRDR/SPDS design basis interface may be classified as one-way or two-way, depending upon the intended use of the SPDS: i.e., the interface becomes two-way if a utility intends to resolve control board HEDs by taking credit for the information displayed by the SPDS or incorporating additional information on the SPDS.

The ERF criteria/SPDS design bases interface is classified as one-way, i.e., the SPDS design bases may be used as input in the ERF design criteria; however, the ERF design should have no direct effect on the SPDS.

The iteration interface is an ongoing process, as long as HEDs exist or design changes that could impact the SPDS are made to any of the other basic Supplement 1 to NUREG-0737 elements. A great deal of coordination is essential to determine modifications to the SPDS effectively, without creating additional discrepancies.

ERF PLAN

The ERF plan consists of those tasks that describe a method for designing, implementing, and utilizing the emergency response facilities. The plan should be plant-specific and developed in cognizance of current NRC and industry guidelines. The following items should be considered in the development of an ERF plan:

- purpose of the TSC, EOF, and OSC
- description of tasks
- source document availability
- project personnel requirements and materials needed
- manpower requirements and restrictions
- description of the design documentation required
- desired date of completion and milestones
- schedule controlling factors
- interfaces with other Supplement 1 to NUREG-0737 elements

A set of criteria that provides a basis for the design or upgrade of the technical support center (TSC), emergency operating facility (EOF) and operational support center (OSC) need to be determined. The bases for this criteria should include 10 CFR 50.47, 10 CFR 50, Appendix E, utility emergency plans, and guidance provided by nuclear industry organizations. Plant-specific criteria should include, but not be limited to, the following information:

- purpose
- location
- required instrumentation (not required for OSC)
- habitability (not required for OSC)
- communications needs
- structural considerations (not required for OSC)
- size
- staffing needs

Guidance produced by the ERC NUTAC should provide assistance in the development of this criteria.

A set of criteria that provides a basis for identifying non-utility or utility off-site interactions that have an impact on the emergency response facilities should be developed to provide the following:

- interactions with state and local government
- communications required between plant and utility headquarters
- resources required from utility headquarters
- emergency capabilities supported by NSSS vendors, A/Es, and medical facilities
- non-utility personnel located in the ERF during emergency conditions.

A set of criteria that provides a basis for ensuring the integration of the TSC, OSC, EOF, and off-site facilities should be developed.

The ERF criteria should be included in an iterative process with other elements of Supplement 1 to NUREG-0737. These include enhancements to the control room, plant-specific EOPs, specific RG-1.97 application and SPDS design. This iterative process should continue until all of the elements associated with ERF criteria have been completed. A final set of criteria used to build or upgrade emergency response facilities should be developed, based on the proceeding considerations.