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SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards response to Generic Ltr 82-33,Suppl 1 to NUREG-0737, "Requirements for Emergency Response Capability," W/one oversize encl.Aperture card is available in PDR.

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Adel: W. Paulson

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Norman W. Curtis
*Vice President-Engineering & Construction-Nuclear*
215 / 770-5381

April 15, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO GENERIC LETTER 82-33
ER-100450 FILE 896
PLA-1621

Docket No. 50-387
50-388

Dear Mr. Schwencer:

On December 30, 1982, Pennsylvania Power & Light Company received NRC Generic Letter 82-33, Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability. PP&L is a participating member of the Nuclear Utility Task Action Committee on Emergency Response Capabilities (ERC NUTAC), which includes over forty utilities and is administratively supported by INPO. Their guidance has been useful in developing our integrated approach described in this letter.

Current Status

PP&L addressed the TMI Emergency Response capability requirements in Chapter 18.0 of the FSAR. These proposals have been reviewed and approved by the NRC and are addressed in the Safety Evaluation Report. With the issuance of Generic Letter 82-33, several NRC requirements have been changed or clarified. Consequently, we have re-examined our plans for emergency facilities and have concluded that several changes are necessary and appropriate.

Before discussing any changes, however, we should review the current status of the major items addressed in Generic Letter 82-33:

(a) The Safety Parameter Display System (SPDS) for SSES will be provided by a consortium of Levy Systems and Simmonds Precision. The system design is presently completed and software development and hardware procurement are in progress. The system was described in detail in PLA-704 to

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ADD:
W. Paulson

B. J. Youngblood from N. W. Curtis dated April 2, 1981. Details of the SPDS are also presented in Chapter 7.0 of the SSES Emergency Plan.

(b) An initial Control Room Design Review was conducted by PP&L with assistance from experienced human factors personnel from General Physics Corporation prior to licensing of SSES Unit 1. The NRC evaluation of that review is contained in Section 22 and Appendix F to the SSES SER. Since the initial review effort, PP&L has established a program for a Detailed Control Room Design Review. This program was submitted to the NRC in PLA-1079 dated June 3, 1982. PP&L has completed the Control Room survey, function and task analysis, Control Room inventory and has assessed the Control Room for Human Engineering Deficiencies (HEDs).

(c) Post-accident monitoring instrumentation was addressed in PLA-965 to Mr. A. Schwencer from Mr. N. W. Curtis dated November 13, 1981. The NRC evaluation of our position is contained in Sections 7, 22 and Appendix D of the SSES SER.

(d) Emergency Operating Procedures based on an early version of the BWR Owners Group Emergency Procedure Guidelines have been reviewed by the NRC. The final version of these procedures, which incorporated NRC comments, was submitted to the NRC in PLA-791 to B. J. Youngblood from N. W. Curtis dated May 15, 1981. The NRC evaluation of those procedures is contained in Section 22.2 (1.C.1) of the SSES SER.

(e) The Emergency Response Facilities (ERF), which include the Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF), are complete and operational. Descriptions of these facilities are provided in Chapter 7.0 of the SSES Emergency Plan. The TSC and EOF are capable of acquisition, collection, evaluation and display of information on conditions in containment, radiological releases and meteorology necessary to determine protective measures. The TSC and EOF are provided with all documents required for their functions. They provide sufficient working area for PP&L, federal, state, and local personnel. Successful emergency drills have been completed and observed by the NRC in March of 1982 and March of 1983. NRC evaluation of these facilities is contained in Section 22.2 (III.A.1.2) and Appendix D to the SSES SER.

The emergency plan and emergency facilities implemented by PP&L provide the capability for timely and adequate response to an emergency.

Changes to the Plan

As a result of the changed requirements in Generic Letter 82-33 and the experience gained in the emergency exercises performed at Susquehanna, we have concluded that several changes in our approach to emergency planning are appropriate. These are identified and discussed in Attachment I.

Schedule

In response to Generic Letter 82-33, we have developed an integrated implementation schedule using appropriate portions of the ERC NUTAC's draft Guideline for an Integrated Implementation Plan as input. This draft guideline is the ERC NUTAC's method of ideal integration of Emergency Operating Procedures (EOP), Control Room Design Review (CRDR), Regulatory Guide 1.97 (RG-1.97), Safety Parameter Display System (SPDS) and Emergency Response Facilities (ERF). Although much of this emergency response capability has already been completed by PP&L, the NUTAC guidance was taken into consideration in the development of our plant-specific input and process criteria for the remaining work. Attachment III contains our proposed integrated schedule for the remaining work.

Integration Plan

Attachment II to this letter is the detailed plan for integration of emergency response capabilities which includes a verification and validation plan.

Summary

This letter provides the necessary details of our existing emergency response program, a description of proposed enhancements and changes and a schedule and plan for integrated implementation. This information is provided in response to Generic Letter 82-33 and forms the basis for your evaluation based on currently established regulatory requirements. We are available to discuss this response with your staff. We are prepared to finalize this plan as soon as possible.

Very truly yours,

Norman W. Curtis

BW:cvc
HB-5

Attachments

PROPOSED CHANGES TO PREVIOUS COMMITMENTS

Prior to Generic Letter 82-33, PP&L made various commitments with respect to emergency planning. These commitments were made based on interpretations of the then existing regulatory guidance. The publication of Supplement 1 to NUREG-0737 along with experience gained through drills exercising our emergency response capability has indicated that certain changes to the existing program would be appropriate. The proposed changes and reasons for them are listed below:

SPDS

The SPDS for SSES will be provided by a consortium of Levy Systems and Simmonds Precision. The system design is presently completed. The system description as presented in PLA-704, dated April 2, 1981, and Chapter 7.0 of the SSES Emergency Plan remains unchanged. Installation of a functional system is scheduled for completion by September 30, 1983. However, operator training must be conducted prior to considering the system operational. Additionally, we feel validation of the system must also be conducted prior to the system being considered operational. User training and validation of the system are presently scheduled for completion by December 30, 1983. However, our current license condition requires SPDS be completed by September 30, 1983. A request for change in licence condition will be submitted to reflect the additional time needed for training and validation.

Manning of the EOF

PP&L committed to having the emergency operations facility functional, including the stationing of a senior manager at the EOF, within approximately one hour of declaration of a site or general emergency. This commitment, although it appeared to be beneficial, has been demonstrated during drills to have the potential for negatively affecting the management of an emergency. In order to accommodate the requirements imposed by this commitment, multiple transfers of authority have occurred at times critical to the successful management of the emergency. The multiple transfers are necessitated by the combination of the obligation to staff within one hour and the Company's desire to apply its best management resources to the emergency. Any transfers of authority should take place at times which more naturally fit the developing management of the emergency and not at artificially predetermined times established to meet an arbitrary requirement. Additionally, the number of transfers of authority should be minimized to avoid loss of continuity. Our experience during drills indicates that TSC personnel can effectively attend to plant safety and manage the off-site protection function until a logical transition to the Recovery Manager's staff can occur. Because of the unique features of off-site radiological monitoring and assessment activities, we have seen the benefit of applying additional dedicated resources to this function as quickly as possible in the EOF. A future revision to Section 6.0 of the

SSES Emergency Plan will be submitted to reflect the following. First, manning of the EOF by radiological monitoring and assessment personnel shall occur within one hour of the declaration of a site or general emergency. This manning will include a senior manager capable of making radiological assessments and protective action recommendations. Secondly, manning of the EOF by the Recovery Manager and his staff should occur on a timely basis, preferably within three hours of the declaration of a site or general emergency.

Emergency Response Computer System

The Emergency Response Computer System, as it was envisioned prior to Generic Letter 82-33, is described in detail in Section 7.0 of the SSES Emergency Plan. The original purpose of ERCS was to provide a seismically qualified, single failure proof, safety grade type system with remote interrogation capability for the acquisition, preparation, and display of Unit 1, Unit 2, and common plant data for the ERF. The overall design was directed toward providing both a dedicated system for the operation of a SPDS, and an integrated system which would tie together the operations of the various ERF. The previously envisioned system went far beyond the requirements of Supplement 1 to NUREG 0737.

Currently, we have installed plant process computer access terminals in the TSC and EOF. Data displays on these terminals were utilized to support emergency management activities during our last NRC observed emergency drills. Prior to our next NRC observed emergency drill, we plan to have a functionally independent SPDS utilizing its own data acquisition, preparation, and display systems. The SPDS is comprised of two subsystems, one providing display to the TSC and control room and the other providing display to the EOF. Based on our successful utilization of the existing System and the status of present requirements, we feel that these systems will satisfy all data requirement in the TSC and EOF. We no longer find it necessary to install a dedicated, independent emergency data acquisition system. A future revision to Section 7.0 of the SSES Emergency Plan will be submitted to reflect this change.

Location of the Backup EOF

PP&L's current emergency planning philosophy includes maintenance of a backup EOF located in Hazleton, Pennsylvania. Although this facility is adequate in every respect, recent experience indicates that the technical support function would be better served by the Allentown General Office. Even though this facility is approximately 50 miles from the site, there are obvious advantages to utilizing it in a technical support roll in the event the primary EOF is evacuated. During the course of any emergency the General Office serves as an extension of our technical support capability and would, therefore, be manned throughout the course of an emergency. All necessary communication facilities are in place and fully functional. Normally, during an emergency there is an established data flow to the

General Office thereby eliminating the potential for losing continuity which could occur should the primary EOF be evacuated under the present scheme. We propose that the backup facility in Hazleton be utilized to maintain PP&L presence in the area near the site in the event of primary EOF evacuation. Functions maintained in this facility would include overall emergency management, radiological assessment, and liaison with off-site agencies. Technical support for the facility would be provided by a combined technical support group located in Allentown. We believe evacuation of the primary EOF has a very low probability of occurring since the facility has a protection factor of at least five, is capable of isolating ventilation, and is equipped with HEPA filters. A future revision to Section 7.0 of the SSES Emergency Plan will be submitted to reflect this change.

## Proposed Integration Plan

PP&L has developed the following plan for integration of Emergency Response Capabilities. The plan assures that efforts toward completing enhanced emergency response capabilities are well coordinated and consolidated. The plan is also responsive to the requirements of Supplement 1 to NUREG-0737.

The plan addresses the following individual Emergency Response capability enhancements:

- Revised Emergency Operating Procedures (EOPs)
- Safety Parameter Display System (SPDS)
- RG 1.97 Instrumentation
- Emergency Response Facilities
- Detailed Control Room Design Review (DCRDR)
- Training on the above capabilities

For the purpose of integration, these individual capabilities were grouped into two distinct systems. System 1 (depicted in Figure 1) can be called the "Accident Mitigation and Prevention System." This system revolves around the control room "operator" and involves the integration of the operating shift, the Control Room (including all enhancements), the emergency operating procedures and operator training.

System 2 (depicted in Figure 2) can be called the "Emergency Plan Response System." This system revolves around the "emergency personnel" and involves the integration of emergency personnel (as per the emergency plan), emergency response facilities (including all enhancements), the Emergency Plan Implementing Procedures (EP-IPs), and emergency plan training. Integration of capabilities within each of these systems is vital and the plan is directed toward validating the effective integration of capabilities within each of these systems. Integrated schedules have been developed separately for each system. Also, separate validation tests will be performed on each system. Validation testing on System 2 will be performed during the yearly full-scale, NRC observed, emergency plan exercises. Validation of System 1 will be performed on the Susquehanna simulator to the maximum extent possible. It is recognized that there is some interplay between the two systems; however, the influence is a second-order effect and can be introduced into the individual system validations without the necessity of testing both systems concurrently.

The integration plan is described in two documents. The first is an integrated schedule of critical activities for System 1 and System 2

(Attachment III to this letter). The salient features represented in this schedule are as follows:

- SPDS will be made "functional" on a schedule independent from and in advance of the schedule for the remainder of System 1.

- SPDS will be declared "operational" following a successful validation of System 1 with the addition of SPDS.

- System 2 will be validated during each yearly full scale exercise. Capabilities exercised for the first time in a given exercise will be considered "operational" if successfully validated during that exercise. (See Table 1 for a proposed timetable for System 2 capability validation.)

- System 1 will be validated in the simulator prior to the first refueling outage on Unit 1.

- All System 1 enhancements will be in place in each unit prior to startup from the first refueling outage for that unit.

- Completion of all activities supports licensing of Unit 2.

The second document is an integrated verification and validation (V&V) plan. There will be three distinct V&V plans for the emergency response capability enchancements. One for the early SPDS implementation, one for the final System 1 configuration, and one for the staged implementation of System 2. Proposals for all three V&V plans are attached (Attachment A).

The integration plan is intended to achieve an optimum integration of emergency response capability and validate that the resultant integrated systems produce the desired increase in ability to mitigate and respond to emergencies at Susquehanna SES.

## Table 1

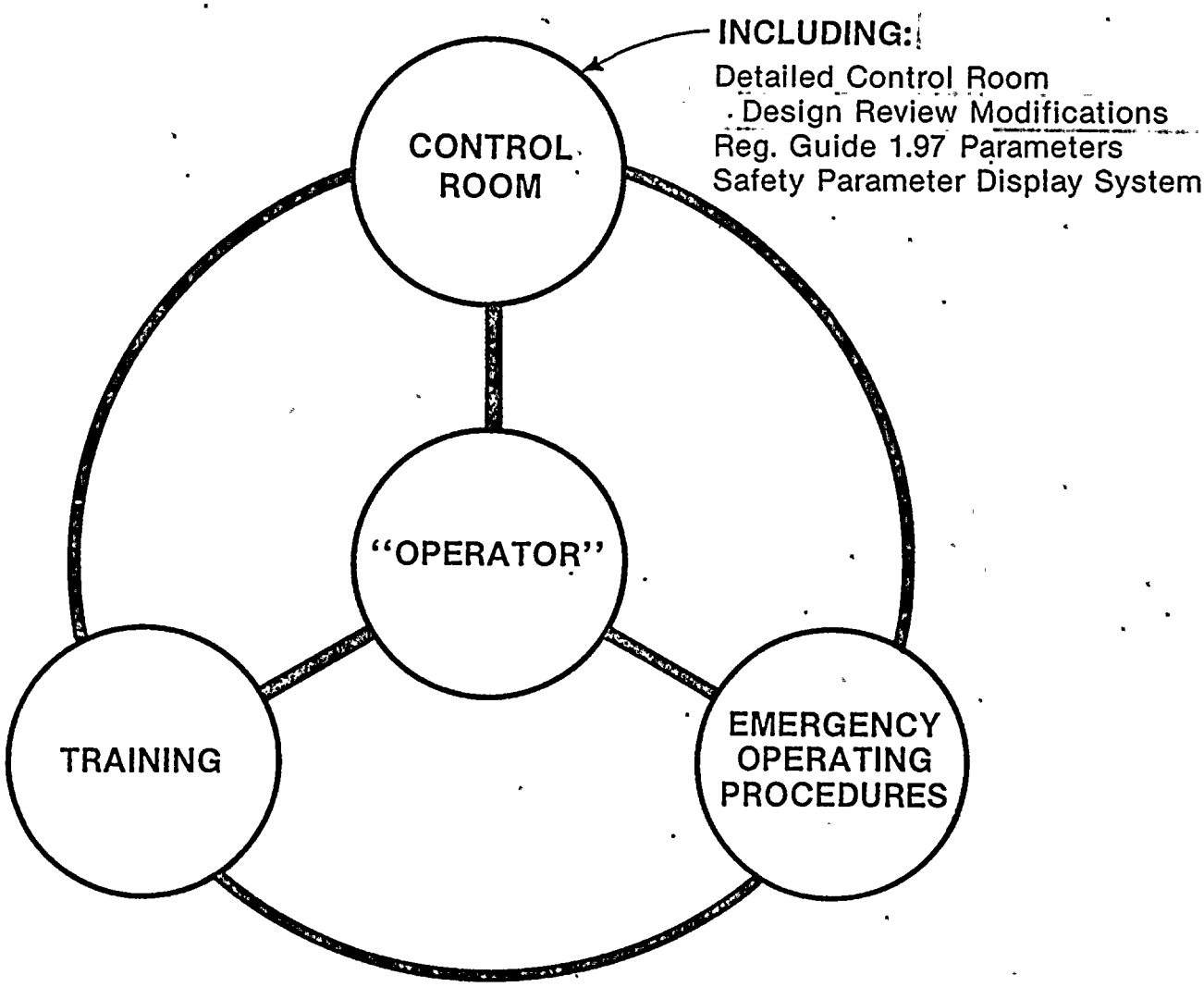
## Proposed System 2 Validation Timetable

| Full Scale Exercise | New* Elements Validated | |
|---|---|---|
| March, 1983 | Facilities | - EOF, Process Computer Terminals, Van Sciver Bldg. |
| | Procedures | - Revised EP-IPs |
| | Personnel | - Inexperienced personnel |
| | Training | - Training performed by Nuclear Training for first time |
| April, 1984 | Facilities | - SPDS (in Control Room, TSC & EOF), OSC |
| | Procedures | - Revised EP-IPs |
| | Personnel | - Inexperienced personnel |
| | Training | - Revised training |
| April, 1985 | Facilities | - Final RG 1.97 Functions |
| | Procedures | - Revised EP-IPs, Revised EOPs |
| | Personnel | - Inexperienced personnel |
| | Training | - Revised training |

* New is defined as changes since the last full-scale exercise.

Figure 1

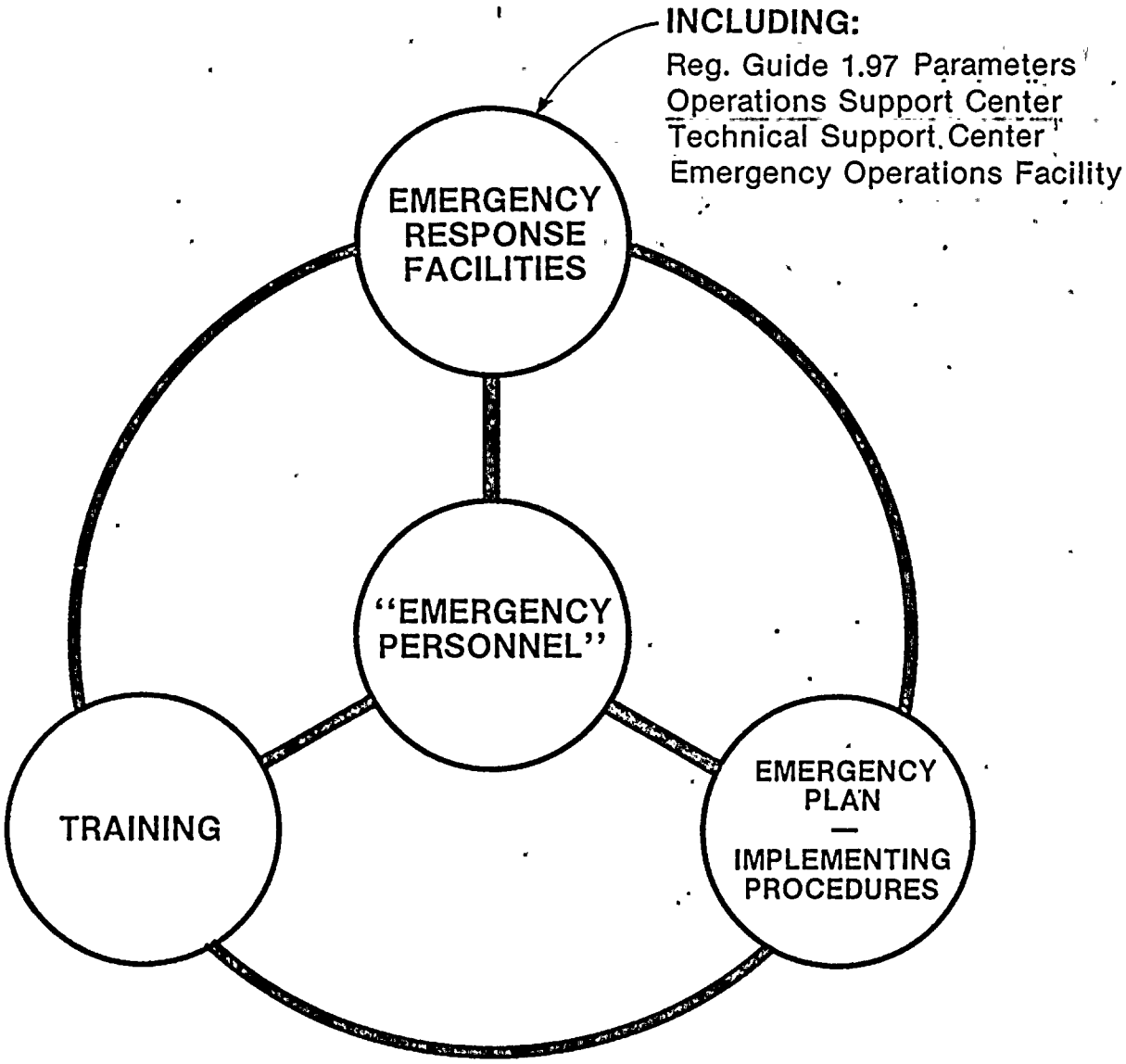
System 1
Accident Mitigation and Prevention




System Validation: Simulator Test

Figure 2

System 2
Emergency Plan Response




System Validation: Full Scale Emergency Plan Drill

# INTEGRATED V&V PLAN FOR EMERGENCY RESPONSE CAPABILITY

## Overview

PP&L has developed an integration plan to address emergency response capabilities. This plan divides emergency response capabilities into two systems. The integration in System 1 is directed toward improving the control room operator's ability under emergency conditions to accomplish the actions needed to mitigate the consequences of the emergency. The integration in System 2 is directed toward improving the ability of emergency plan personnel under emergency conditions to respond to the emergency. An evaluation of the capabilities of these systems is needed to determine if in fact the changes to the systems have improved the response and not degraded emergency response capability. This evaluation is system validation.

Prior to system validation, verification of changes to system components should be completed. Component verification ensures consistency between the system components and appropriate source documents. Source documents are the fundamental documents or records upon which the system components are based. Appropriate source documents are determined by the interfaces of the system components. Each system component should have a source document that describes the component itself and each of its interfaces with the other system components. The objective of verification is to determine if consistency has been maintained between system components and the appropriate source documents.

System validation addresses the workability of the components within the system as they exist at the time of validation. Its objective is to determine if the components are compatible as they interface when the system performs its desired function (i.e., accident mitigation or emergency plan response). Determination of this compatibility implies a dynamic, performance-based evaluation involving all the system components. This evaluation is different than the static, comparative-based evaluation in component verification. However, the combination of the two in a Verification and Validation (V&V) Program provides confirmation that the changes to system components are technically accurate and that the total system is operationally correct.

## PP&L V&V Plan

Verification and validation are inherent in the normal course of business in PP&L. Though not labeled as such document reviews, QA audits, simulator training and many other routine functions are pieces of an ongoing V&V Program. For this reason it is not necessary to create a specific stand-alone V&V Program for Emergency Response Capability. Instead a plan has been developed to assure that all elements of an integrated V&V Program are identified, completed and documented.

The plan is actually three distinct plans. One plan addresses verification and validation of System 1 immediately following installation of SPDS. Since SPDS is being implemented prior to implementation of many of the other System 1 enhancements, this plan only addresses changes in components associated with the addition of SPDS to an existing System 1. The existing System 1 underwent extensive verification and validation during the recently completed preoperational test program, startup test program and operator licensing program.

A second plan addresses verification and validation of System 1 with all components in their final configuration (i.e., all enhancements complete). The integration plan was based on making the validation phase of this plan possible prior to the completed System 1 being "operational." The following strategy was employed to make this possible:

- As many changes as possible to System 1 components will be implemented in the Susquehanna simulator prior to the first refueling outage on Unit 1.

- The System 1 validation will be performed on the Susquehanna simulator prior to the first refueling outage on Unit 1. (Note: this validation is applicable to both Unit 1 and Unit 2.)

- All changes to System 1 components will be implemented in Unit 1 prior to or during the first refueling outage on Unit 1 and in Unit 2 prior to or during the first outage on Unit 2.

- The validated System 1 with all enhancements will be "operational" in both units prior to startup from the first refueling outage on the respective unit.

The third plan addresses verification and validation of System 2. System 2 validation occurs with every Full-scale Emergency Plan Exercise. As component enhancements are complete, this ongoing V&V program will address them.

The specific plans are described in the attached tables. Each plan addresses the following:

<u>For Verification</u>

- The element (component or interface) being addresssed.

- The source document on which that element is based.

- The methodology for verification of that element.

- The method of documenting the verification process and resolution of findings resulting from the verification.

- References describing applicable verification guidance.

- The general objective of verification of the element.

For Validation

- The element (interface or system) being addressed.
- The methodology for validation of that element.
- The method of documenting the validation process and resolution of findings resulting from the validation.
- References describing applicable validation guidance.
- The general objective of validation of the element.

The plans assume the following general principles will be followed in each of individual segments of the V&V plan:

- Objectives of the verification/validation will be established consistent with the plan.
- Specific evaluation criteria will be developed to determine if the objective has been satisfied.
- Adequate preparation will be made prior to performance of the verification/validation to assure adequate resources and specific guidance is available.
- The verification/validation will be conducted using qualified personnel and acceptable practices.
- All findings from the verification/validation will be resolved properly.
- Documentation will be such that there is a clear paper trail for the entire process.

SYSTEM 1 V&V FOR INTRODUCTION OF SPDS

VERIFICATION PLAN
(Verification - Does Element Match its Source Document)

| Element | Source Document | Methodology | Documentation of Verification | Documentation of Resolution | Reference |
|---|---|---|---|---|---|
| SPDS | Design Spec. | Design Review | Levy Reports | Levy Reports | Ref. 1 (below) |
| | (Objective - Hardware & software reflect design guidance) | | | | |
| SPDS-OPERATOR | Design Doc. | HFE Review | Levy Reports | Levy Reports | Ref. 1 (below) |
| | (Objective - HFE considerations for ability of operators to use SPDS) | | | | |
| SPDS-EOPs | Design Doc. | Design Review | Levy Reports | Levy Reports | Ref. 1 (below) |
| | (Objective - Technical content of EOPs correlate with SPDS) | | | | |
| SPDS-TRAINING | Design Doc. | Review of Lesson Plans | Doc. Review | Doc. Review | Ref. 1 (below) |
| | (Objective - Training program accurately reflects SPDS) | | | | |

VALIDATION PLAN
(Validation - Does Element Perform Intended Function)

| Element | Methodology | Documentation of Validation | Documentation of Resolution | Reference |
|---|---|---|---|---|
| SPDS | Factory Acceptance Test | Levy Report | Levy Report | Ref. 1 (below) |
| | (Objective - Hardware & software work as expected) | | | |
| SPDS-OPERATOR | SPDS Demonstration | NT Records | NT Records | Ref. 1 (below) |
| | (Objective - SPDS can be used effectively by the operators) | | | |
| SPDS-TRAINING | (Validated during System 1 validation) | | | Ref. 1 (below) |
| | (Objective - Training program adequately trains the operator to use SPDS) | | | |
| SPDS-EOPs | (Validated during System 1 validation) | | | Ref. 1 (below) |
| | (Objective - SPDS is an aid in performing EOPs) | | | |
| SYSTEM 1 | To be determined | Special Report | Special Report | Ref. 1 (below) |
| | (Objective - SPDS in the Control Room can be used effectively by operators to aid in response to emergencies) | | | |

References

(1) Guidelines for an Effective SPDS Implementation Program January, 1983 (INPO 83-003 (NUTAC)).

SYSTEM 1 V&V FOR COMPLETED SYSTEM

VERIFICATION PLAN

| Element | Source Document | Methodology | Documentation of Verification | Documentation of Resolution | Reference |
|---|---|---|---|---|---|
| EOPs | EPGs | Document Review | Doc. Review Forms | Doc. Review Forms | Ref. 1 (below) |
| (Objective - EOPs reflect guidance in EPGs) | | | | | |
| EOP's-OPERATOR | Writer's Guide | Document Review | Doc. Review Forms | Doc. Review Forms | Ref. 1 (below) |
| (Objective - EOPs reflect HFE considerations in writer's guide) | | | | | |
| EOP's-CONTROL ROOM | Design Document (or Control Room itself) | Document Review (or walkthru) | Doc. Review Forms | Doc. Review Forms | Ref. 1 (below) |
| (Objective - EOPs accurately reflect plant design) | | | | | |
| EOP's-TRAINING | EOPs | Document Review | Doc. Review Forms | Doc. Review Forms | Ref. 1 (below) |
| (Objective - Lesson plans & test accurately reflect EOPs) | | | | | |
| CONTROL ROOM | Design Document | Post Installation Checkout | Work Packages | Work Packages | - |
| (Objective - Control Room enhancements reflect design documents) | | | | | |
| CONTROL ROOM-OPERATOR | HFE Standards | HFE Reviews | DCRDR & HFE Reviews of Changes | DCRDR & HFE Review of Changes | Ref. 2 & 3 (below) |
| (Objective - The Control Room reflects human eng. guidance) | | | | | |
| CONTROL ROOM-TRAINING | Design Document | Document Review | Document Review Forms | Document Review Forms | - |
| (Objective - Lesson plans & tests reflect the as-built plant) | | | | | |
| TRAINING | NTIs | QA Audits (or internal review) | Audits Reports | Audit Closeouts | - |
| (Objective - Training is performed in accordance with established STDs) | | | | | |
| TRAINING-OPERATORS | Training Reqmts. | QA Audits (or internal review) | Audit Reports | Audit Closeouts | |
| (Objective - Operator training fulfills the established requirements) | | | | | |
| OPERATORS | Operating Philosophy | QA Audits (or internal review) | Audit Reports | Audit Closeouts | |
| (Objective - Operator qualifications/staffing meet established criteria) | | | | | |

References


(1) Emergency Operating Procedures Verification Guideline, December, 1982 (Preliminary).
(2) Control Room Design Review Survey Development Guideline (INPO 83-004) Draft (INPO).
(3) Human Factors Principles For Control Room Design Review (Draft) (INPO).

SYSTEM 1 V&V FOR COMPLETED SYSTEM

VALIDATION PLAN

| Element | Methodology | Documentation of Validation | Documentation of Resolution | Reference |
|---|---|---|---|---|
| CONTROL ROOM | Post Installation Testing | Work Package | Work Package | - |
| (Objective - Control Room enhancements function as designed) | | | | |
| EOP'S-OPERATOR | (Validated during System 1 validation) | | | Ref. 1 & 2 below |
| (Objective - Operator can effectively use the EOPs) | | | | |
| EOP's-CONTROL ROOM | (Validated during System 1 validation) | | | Ref. 1 & 2 below |
| (Objective - EOPs accurately reflect plant performance) | | | | |
| EOP'S-TRAINING | (Validated during System 1 validation) | | | Ref. 1 & 2 below |
| (Objective - Training on EOPs is adequate for performance) | | | | |
| CONTROL ROOM-OPERATOR | (Validated during System 1 validation) | | | Ref. 1 & 2 below |
| (Objective - All Control Room equipment can be used effectively by the operator) | | | | |
| CONTROL ROOM-TRAINING | (Validated during System 1 validation) | | | Ref. 1 & 2 below |
| (Objective - Training on Control Room is adequate for performance) | | | | |
| TRAINING-OPERATORS | (Validated during System 1 validation) | | | Ref. 1 & 2 below |
| (Objective - Operator training is sufficient to perform functions) | | | | |
| SYSTEM 1 | Dynamic Simulation | Special Report | Special Report | Ref. 1 & 2 below |
| (Objective - System 1 emergency response capability enhances the capability of the operator to mitigate or prevent emergencies) | | | | |

References

(1) Component Verification and System Validation Guideline, February, 1983 (Draft) (INPO NUTAC).
(2) Emergency Operating Procedures Validation Guidelines, November, 1982 (Draft) (INPO NUTAC).

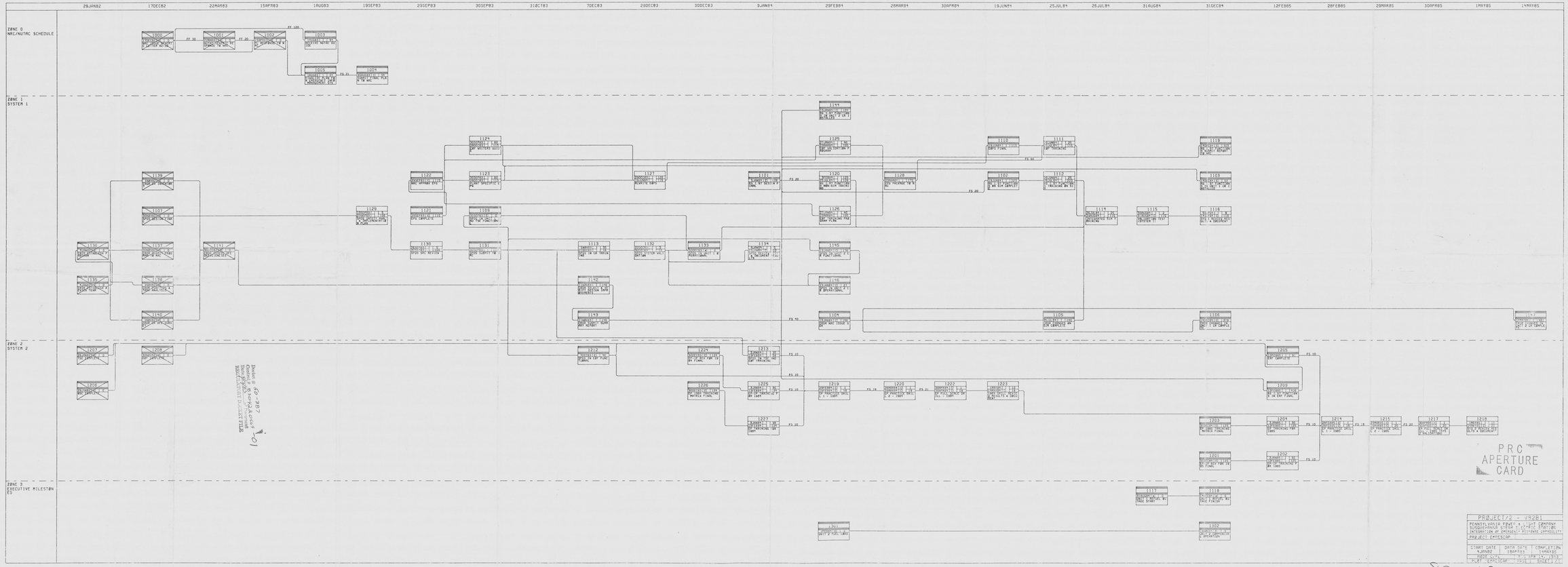
SYSTEM 2 V&V
VERIFICATION PLAN

| ELEMENT | SOURCE DOCUMENT | METHODOLOGY | DOCUMENTATION OF VERIFICATION | DOCUMENTATION OF RESOLUTION |
|---|---|---|---|---|
| EP-IP's | Emergency Plan | Document Review | Doc. Review Forms | Doc. Review Forms |
| (OBJECTIVE - EP-IP's reflect commitments in Emergency Plan) | | | | |
| EP-IP's - Emerg. Personnel | Writer's Guide | Document Review | Doc. Review Forms | Doc. Review Forms |
| (OBJECTIVE - EP-IP's reflect HFE considerations in Writer's Guide) | | | | |
| EP-IP's - ERF's | As Built Facilities | Document Review | Doc. Review Forms | Doc. Review Forms |
| (OBJECTIVE - EP-IP's accurately reflect emergency facilities) | | | | |
| EP-IP's - Training | EP-IP's | Document Review | Doc. Review Forms | Doc. Review Forms |
| (OBJECTIVE - Lesson Plans & Tests accurately reflects EP-IP's) | | | | |
| ERF's | Design Documents | Facility Reviews | Evaluation Report | Punch Lists |
| (OBJECTIVE - ERF's reflect design documents) | | | | |
| ERF's - Emerg. Personnel | HFE Standards | HFE Review | Report | HED's |
| (OBJECTIVE - ERF's reflect Human Engr. guidance) | | | | |
| ERF's - Training | As Built Facilities | Document Reviews | Doc. Review Forms | Doc. Review Forms |
| (OBJECTIVE - Lesson Plans & Tests reflect the as built facilities) | | | | |
| Emergency Plan Training | NTI's | QA Audit (or internal review) | Audit Reports | Audit Closeouts |
| (OBJECTIVE - Training is performed in accordance with established standards) | | | | |
| Training - Emerg. Personnel | Training Matrix | QA Audit (or internal review) | Audit Reports | Audit Closeout |
| (OBJECTIVE - EP Training accomplished established requirements) | | | | |
| Emerg. Personnel | Emergency Plan | QA Audit (or internal review) | Audit Reports | Audit Closeout |
| (OBJECTIVE - Emergency personnel qualifications/staffing meet established criteria) | | | | |

SYSTEM 2 V&V
VALIDATION PLAN

| ELEMENT | METHODOLOGY | DOCUMENTATION OF VALIDATION | DOCUMENTATION OF RESOLUTION |
|---|---|---|---|
| EP-IP's - Emerg. Personnel | (Validated during System 2 validation) | | |
| (OBJECTIVE - Emergency personnel can effectively use the EP-IP's) | | | |
| EP-IP's - ERF's | (Validated during System 2 validation) | | |
| (OBJECTIVE - EP-IP's are consistent with the flow in the ERF's) | | | |
| EP-IP's - Training | (Validated during System 2 validation) | | |
| (OBJECTIVE - Training on EP-IP's is adequate for performance) | | | |
| ERF's - Emerg. Personnel | (Validated during System 2 validation) | | |
| (OBJECTIVE - ERF's are used effectively by emergency personnel) | | | |
| ERF's - Training | (Validated during System 2 validation) | | |
| (OBJECTIVE - Training on ERF's is adequate for performance) | | | |
| Emerg. Personnel - Training | (Validated during System 2 validation) | | |
| (OBJECTIVE - EP training is sufficient for emergency personnel to perform assigned functions) | | | |
| System 2 | Full Scale Exercise | Exercise Records | Critique Records |
| (OBJECTIVE - System 2 emergency response capability enhances the ability of emergency personnel to respond to emergencies) | | | |

ATTACHMENT 3 SCHEDULE



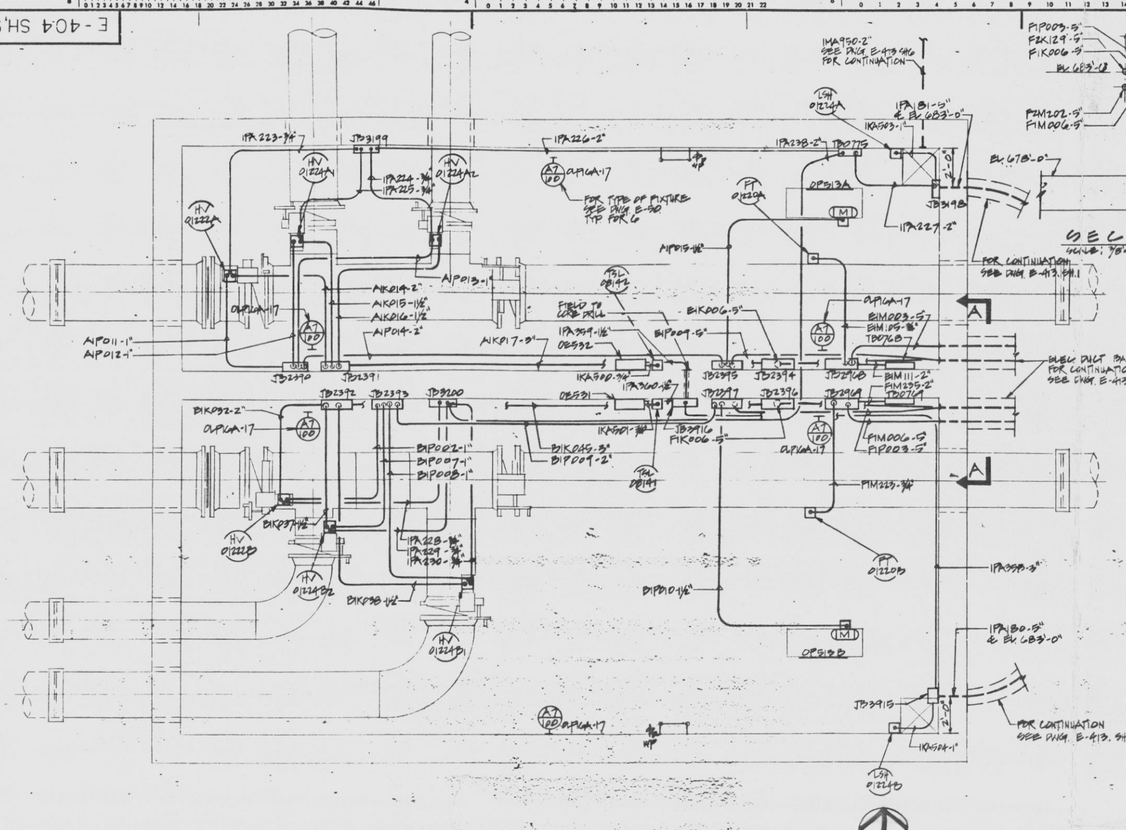

Docket # 50-387
Control # 8304220569
Date 04/14/83
Recipient Document File

8304220569-01

E

E-404 SH.9

SIZE E




NOTES

1. RACEWAY PREFIXED WITH AN ALPHABETIC CHARACTER ARE CLASS 1E. FOR COMPLETE DESCRIPTION OF NUMBERING SYSTEM, SEE DWG. 8856-E-41.
2. FOR CONDUIT AND CABLE TRAY NOTES AND DETAILS, SEE DWG. 8856-E-49.
3. FOR JUNCTION BOX SCHEDULE, SEE DWG. 8856-E-47
4. FOR TERMINAL BOX SCHEDULE, SEE DWG 8856-E-48
5. FOR CONTINUATION OF RACEWAY IN DUCT BANK, SEE DWG. 8856-E-413, SH.1

P.R.C. APERTURE CARD

FIELD INFORMATION ONLY
DELETED RACEWAY
TB1367 2PA078

UNCONTROLLED DOCUMENT FOR REFERENCE ONLY

| REFERENCE DWG'S. | |
|---|---|
| BECHTEL NO. | PL NO. |
| E-417 | A-107190 |
| E-413 | A-107196 |
| E-412 | A-107197 |
| E-411 | A-107198 |
| E-413 SH.1 | A-107206 SH.1 |
| E-404 SH.1 | A-107203 SH.1 |
| E-404 SH.2 | A-107203 SH.2 |

THIS DRAWING IS TO BE USED FOR RACEWAY LAYOUT ONLY
BACKGROUND EQUIPMENT MAY NOT BE CORRECT AS TO LOCATION OR SIZE

| NO. | DATE | REVISIONS | BY | CH'K | ENGR | MGR | PROJ | APP'D |
|---|---|---|---|---|---|---|---|---|
| 19 | 7/24/80 | INCORP PER E-2845 SH.1 & 2046, 2047, 2048, 2049, 2050, 2051 AND 2051 DWG 2052 & 2053 | JK | | | | | |
| 18 | 1/4/80 | INCORP PER E-363, E-1109 & E-1114 AND LOOPING PER 2810 CHANGES | JK | | | | | |
| 17 | 3/14/79 | INCORP PER E-1255 AND REV 2006 AS SHOWN | JK | | | | | |
| 16 | 7/6/79 | INCORP DWG 1 AND REV RACEWAY AS SHOWN ON DWG | JK | | | | | |
| 15 | 4/2/79 | INCORP UNIT 2 AND REV. DWG AS SHOWN | JK | | | | | |
| 14 | 3/7/79 | INCORP PER E-1047 AND DEN #1 AND 2 BAT CONDUITS AS SHOWN | JK | | | | | |
| 13 | 11/3/78 | INCORP PER E-7024 | JK | | | | | |
| 12 | 9/11/78 | INCORP DEN NO 2 PER E-7122 DWG 332 REV. 1 | JK | | | | | |
| 11 | 12/15/76 | INCORP PER E-1411 & 1420 | JK | | | | | |
| 10 | 7/6/76 | INCORP PER E-1420 & E-1580 | JK | | | | | |
| 9 | 3/30/76 | INCORP DWG E-2348 AND PER E-1944 DWG 1190 & 2348 | JK | | | | | |
| 8 | 7/24/75 | INCORP DWG #1 & 3 | JK | | | | | |
| 7 | 11/14/74 | INCORP PER E-1207 & DWG 417 | JK | | | | | |
| 6 | 9/11/74 | PER E-1322, 1324 & 1330 ADDED & CON CONDUITS PER IAP APR 1007 | JK | | | | | |

SCALE 1/8 = 1'-0" DESIGNED JK DRAWN JC

PENNSYLVANIA POWER & LIGHT COMPANY
ALLENTOWN, PENNSYLVANIA
SUSQUEHANNA STEAM ELECTRIC STATION – UNIT 1, UNIT 2

BECHTEL – SAN FRANCISCO

RACEWAY LAYOUT
MISCELLANEOUS VALVE PITS

| JOB No. | DRAWING No. | REV. |
|---|---|---|
| 8856 | E-404 SH.9 | 19 |

E-107553-9

D

Doc'mt # 8504220569-08
Control # of Documents
Date
REGULATORY DOCKET FILE