Perry

January 2001

LICENSEE POST-EXAM COMMENTS

FENOC
First Energy Nuclear Operating Company

Perry Nuclear Power Plant
10 Center Road
P.O. Box 97
Perry, Ohio 44081

24 January 2001

Ann Marie Stone, Chief Examiner
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

SUBJECT: MASTER EXAM(S) AND ANSWER KEY(S) PROPOSED CHANGE

Dear Ann Marie Stone, Chief Examiner,

In accordance with NUREG-1021, ES-401, Section E, I am recommending that SRO Question #71 and RO Question #71 on the Perry SRO and RO Written Examinations administered on January 19th, 2001 be deleted.

Master Question #71 / SRO/RO Question #71

Comment: The question asks for the APRM Upscale Thermal Power Trip Setpoint based on a given set of plant conditions. The question is recommended for deletion since there is no correct answer. It has been determined that the equation used to arrive at Answer B (104.6%) used the RPS APRM Upscale Thermal Power Allowable Value equation (0.628W+63.8%) instead of the RPS APRM Upscale Thermal Power Trip Setpoint equation (0.628W+60.9%). The correct answer should have been 101.6%. The reference source that contains the correct equation is attached for review (PDB-R0001 Attachment 2, Table 1- RPS Trip Setpoint Table). Therefore, per NUREG-1021, ES-403, Section D.1.b, this question should be deleted.

This particular question was discussed with NRC Examiner Mike Bielby during the course of the Written Examination. Based on our discussion, I elected not to make this change to the Master Examinations and answer keys during the post-exam grading process and instead submit a formal comment within the five-day comment period.

As the exam author and proctor, this comment is being submitted separately from the comments made by the applicant's after the Written Examination.

David P Johnson

David P. Johnson
Exam Author/Exam Proctor

Trip Setpoint Tables

TABLE 1 - REACTOR PROTECTION SYSTEM

FUNCTIONAL UNIT	TRIP SETPOINT
1. Intermediate Range Monitor*:	
a. Neutron Flux-High	≤ 120/125 full scale
b. Inoperative	N/A
2. Average Power Range Monitor*:	
a. Neutron Flux-High, Setdown	≤ 15% of RATED THERMAL POWER
b. Flow Biased Simulated Thermal Power-High	
1) During two recirculation loop operation:	
a) Flow Biased	≤ 0.628W + 60.9%(a), with a maximum of
b) High Flow Clamped	≤ 111.0% of RATED THERMAL POWER
2) During single recirculation loop operation:	
a) Flow Biased	≤ 0.628W + 40.6%(a)
b) High Flow Clamped	Not required OPERABLE
c. Neutron Flux-High	≤ 118.0% of RATED THERMAL POWER
d. Inoperative	N/A

(a) The APRM flow biased scram function varies as a function of recirculation loop drive flow W. During single loop operation W is adjusted to account for the difference in indicated drive flow.

* Neutron detectors are exempt from response time testing. Response time shall be measured from the detector output or from the input of the first electronic component in the channel.

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10 Center Road
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January 24, 2001
PY-CEI/OIE-0527L

United States Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351

Attention: Ms. Ann Marie Stone
Chief Examiner

Perry Nuclear Power Plant
Docket No. 50-440
NRC Initial Post-Examination Material

Dear Ms. Stone:

In accordance with NUREG-1021, ES-501, Section C.1, the following items are submitted following completion of the Perry written examinations and operating tests during the period of January 8th-19th, 2001:

1. The graded written examinations (i.e., each applicant's original answer and examination cover sheets) and a clean copy of each applicant's answer sheet.
2. The master examination(s) and answer key(s).
3. Questions asked by and answers given to the applicant's during the written examination.
4. Comments made by the exam proctor during the written examination, including proposed change to the master examination(s) and answer key(s).
5. Comments made by the applicant's after the written examination, including proposed changes to the master examination(s) and answer key(s).
6. The written examination seating chart.
7. Completed Forms ES-403-1, "Written Examination Quality Checklist".
8. The results of the written examination performance analysis.

In addition, per your request, applicant results from their audit exams are also enclosed.

Original Form(s) ES-201-3, "Examination Security Agreement" will be forwarded under a separate cover letter when all post-examination signatures have been obtained.

If you require further clarification on the items submitted or any other additional items, please contact David Johnson at (440) 280-5558 or Rick Collings at (440) 280-5056.

Sincerely,

David P. Johnson
Exam Author

David L. Bauguess
Facility Representative

Rick Collings
Training Manager

FirstEnergy

Memorandum

To: NRC Perry Chief Examiner

From: James B. Kelly **Date:** 1/22/00
Phone: 5776 **Mail Stop:** TEC 214
Subject: License Class 99-01 written examination comments

As required by Nureg 1021, this memo is a listing of questions from both the Reactor Operator and Senior Reactor Operator Examinations that are either described by the facility as having two correct answers or a different correct answers. Also included are references for each answer in question.

SRO question #6 / RO question N/A Answer Key: C

Comments: PEI-Bases clearly states at levels > -42.5" adequate core cooling is assured. The covered portion of the core generates sufficient steam to preclude the peak clad temperature of the hottest fuel rod from exceeding 1800°F.
This leaves a second correct answer (D) since -40" is greater than -42.5" C and D are both correct.

Reference: PEI-Bases (attachment 1)

Students answering D
Morse
Carrier

SRO question #13 / RO question N/A Answer Key: D

Comments: PAP-0201 requires the ATC operator to shutdown the reactor when a scram setpoint is exceeded. This requires ONI-C71-1 entry leaving a second correct answer of (C). The PEI bases discusses and allows use of other instructions with the PEIs. In this case, ONI-C71-1 entry and use is taught and re-enforced in the student's simulator sessions. C and D are both correct.

Reference: PAP-0201/PEI Bases (attachment 2)

Students answering C
Powers
Grabnar
Lausberg
Morse
Carrier

SRO question #18 / RO question N/A Answer Key: D

Comments: PAP-0205 allows the US to waive IV for Alara reasons. The correct answer is therefore B, which allows the US to waive the IV when radiation levels exceed 10 mrem. (Prior to December 12th when a PIC on QAP 14 was approved, the US had been directed not to waive the IV requirements in accordance with the Standing Instruction that was used as the original procedure reference for this question.

Reference: PAP-0205/ QAP-14 (attachment 3)

Students answering B
Powers
Grabnar
Bordley
Morse
Carrier
Brogan

SRO question #23 / RO question NA Answer Key: D

Comments: PEI-B13 flowchart gives -25 to + 100" on conditions greater than 4% power. With level at 115" and reactor power at 10%, level has not been lowered at this point. The last level band given would have been -25 to + 100" thus leaving C as a second correct answer. The student assumes by the information given that he has not met the conditions of the hold step which lowers level and gives as his answer the last possible level band. C and D are both correct.

Reference: PEI-B13 ATWS (attachment 4)

Students answering C
Grabnar
Morse
Bordley

SRO question #65/ RO question #65 Answer Key: D

Comments: ARI subsequent action #1 directs the operator to depress the LEAD button and to confirm the LEAD light is illuminated. According to OAI-0502, control panel controls will be written in capital letters thus (along with the ARI action) leading the candidate to a second correct answer of (C). The candidates assumes the LEAD pushbutton needs to be backlit to be in lead to meet the intent of subsequent action #1 of the ARI. C and D are both correct.

Reference: ARI H13-680-4 / OAI 0502 (attachment 5)

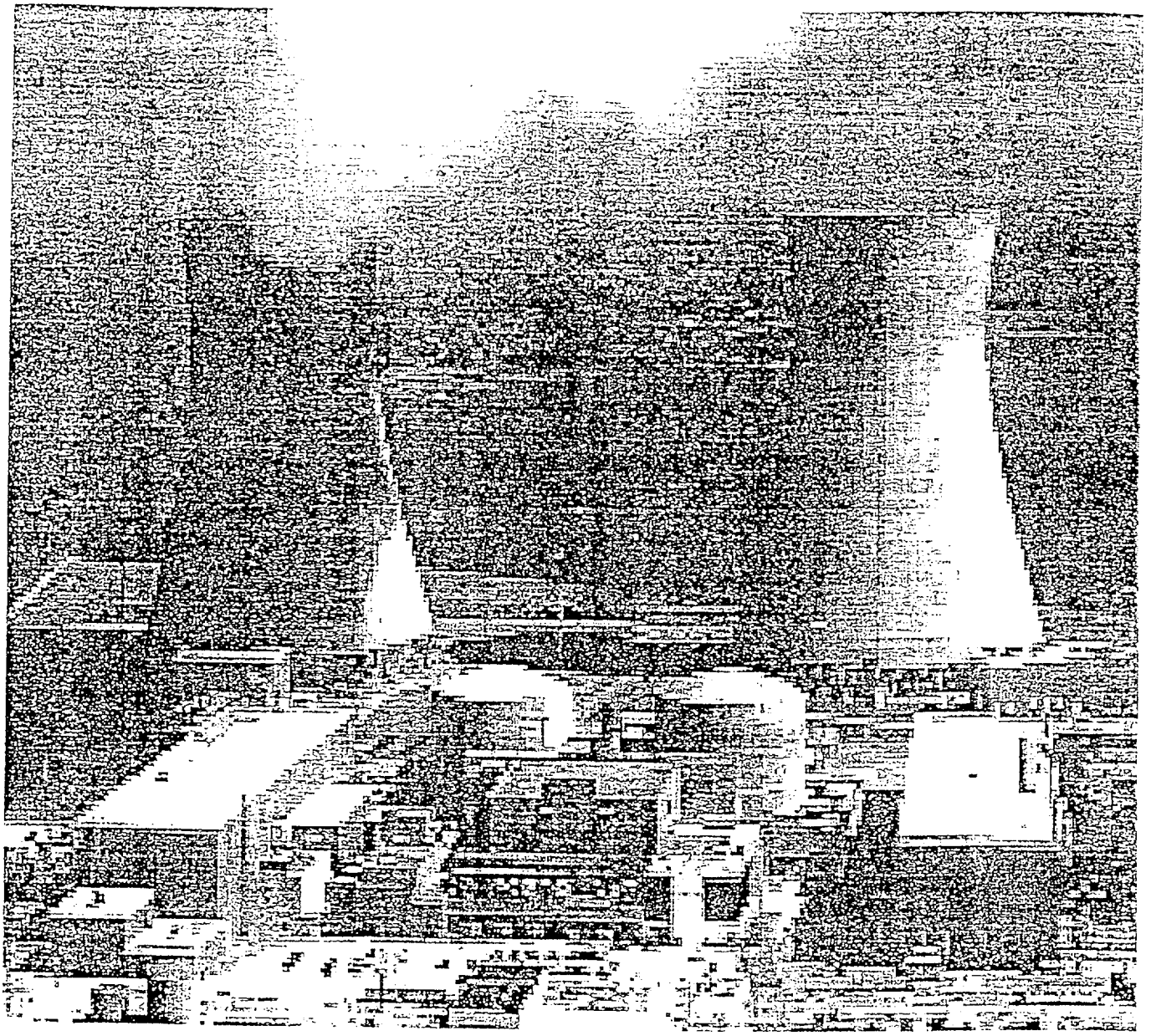
Students answering C
Powers
Morse
Carrier
Grabnar
Bordley
Brogan
Ferrell
O'Connor
Janka

SRO question NA / RO question #17 Answer Key: C

Comments: IOI-9 requires flux level monitored and reactor period during all core alts which could result in adding positive reactivity. In addition PAP-0201, step 6.5.3, clearly states that operation of mechanisms and apparatuses other than Reactivity Control, which may affect the reactivity or power level of the reactor shall only be accomplished with the knowledge and consent of the licensed operator at the controls. This leaves the only correct answer as (A).
Reference: IOI-9/PAP 0201 (attachment 6)

Students answering A
Weston
Bray
Ferrell
O'Connor
Janka

PEI Bases Document



Prepared by: Victor Colacicco Date: 8-1-00

Reviewed by: James B Kelly Date: 9/15/00

Approved by: David L. Dolce Date: 9/19/00

DEFINITIONS AND USAGE OF KEY WORDS

The meaning of the following terms is discussed in the context of their use within the PEIs. This information is provided in order to facilitate a consistent and technically accurate understanding of the entry conditions, operator actions, cautions, and execution of the PEIs.

Adequate Core Cooling

Sufficient heat removal from the reactor is occurring which will prevent rupturing the fuel clad.

Three viable mechanisms of adequate core cooling exist; in order of preference they are:

- Core submergence
- Steam cooling with injection of makeup water to the RPV
- Steam cooling without injection of makeup water to the RPV

Core submergence is the preferred mechanism of core cooling, whereby each fuel element is completely covered with water. Indicated RPV water level at or anywhere above the elevation corresponding to the top of active fuel (TAF) constitutes the principle means of confirming the adequacy of core cooling achieved via this mechanism. Assurance of continued adequate core cooling through core submergence is achieved when RPV water level can be maintained at or anywhere above TAF.

Steam cooling is the mechanism of core cooling whereby steam updraft through the uncovered portion of the reactor core is sufficient to prevent the temperature of the hottest fuel rod from exceeding the appropriate limiting value, which is specific to the mode of steam cooling being employed (Peak clad temperature of hottest fuel rod less than (1) 1500°F. for steam cooling with injection or (2) 1800°F for steam cooling without injection). Both modes of steam cooling are employed in the PEIs. For each mode, the covered portion of the reactor core and lower plenum is the water source for the generation of the steam. A high fuel-to-steam differential temperature is required for the steam cooling method of heat transfer to be effective.

With injection into the RPV established, adequate core cooling exists when steam flow through the core is sufficient to preclude the peak clad temperature of the hottest fuel rod from exceeding 1500°F, (the threshold temperature for fuel rod perforation). This mechanism of core cooling is employed during the RPV flooding evolution when the reactor may not be shutdown, and during the level/power control evolution when RPV water level is controlled below TAF to reduce reactor power. RPV pressure and the number of open SRVs, or RPV water level, provide the means of confirming the adequacy of core cooling achieved via steam cooling with injection. Assurance of continued adequate core cooling is achieved when RPV pressure can be maintained at or above the Minimum Alternate RPV Flooding Pressure or RPV water level can be maintained at or above the Minimum Steam Cooling RPV Water Level (-25 in.).

With no injection into the RPV established, adequate core cooling exists only so long as the covered portion of the reactor core generates sufficient steam to preclude the peak clad temperature of the hottest fuel rod from exceeding 1800°F (the threshold temperature for significant metal-water reaction). This mechanism of core cooling is employed during RPV Control (Non-ATWS) - Level using Steam Cooling steam cooling evolution. Indicated RPV water level at or above the Minimum Zero Injection RPV Water Level (-42.5 in.) is the only means available for confirming the adequacy of core cooling achieved via steam cooling without injection. The transient nature of this method of adequate core cooling prevents any assurance that it can be maintained.

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Plant Administrative Procedure

TITLE: CONDUCT OF OPERATIONS

REVISION: 9 EFFECTIVE DATE: 3-28-95

PREPARED: Gerald Chasko 12-12-94
/ Date

EFFECTIVE PIC's

PIC No.	Type of Change	Effective Date
1	Intent	7-28-95
2	Intent	1-5-96
3	Intent	2-22-96
4	Intent	2-22-96
6	Intent	6-24-96
5	Intent	7-14-96
7	Procedure	2-19-97
8	Procedure	6-11-97
9	Admin	7-31-97
10	Admin	9-10-97

PIC No.	Type of Change	Effective Date
11	Procedure	9-10-97
12	Procedure	1-26-98
14	Admin	4-27-98
13	Procedure	5-7-98
15	Procedure	8-20-98
16	Admin	9-21-98
17	Procedure	3-6-00
18	Procedure	12-11-00

6.4 Reactivity Management

6.4.1 Reactivity Management is the conservative operating philosophy in which reactor safety and core integrity take precedence over power production and all other associated activities. Positive control over core reactivity must be maintained by the operator at all times. The underlying principle of Reactivity Management is to maintain the reactor in the desired condition by properly anticipating, controlling, and responding to the plant's changing parameters.

6.4.2 All on-shift Licensed Operators are responsible for shutting down the reactor when they determine that the safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection setpoints and automatic action has not occurred. All other personnel shall immediately inform the "SO at the Controls, the Unit Supervisor, or the Shift Supervisor if they suspect a problem regarding reactor safety. <F00442>

6.4.3 SRO oversight is required when performing normal SOI manipulation of reactivity controls. Some examples of manipulations that would require oversight are: securing steam loads to limit cooldown rate during low decay heat conditions; operation of safety relief valves; changes in feedwater system configurations; changes in feedwater heater line up; reactor recirculation system; control rod movements. The purpose of the oversight is to ensure that actions are taken to maximize the operator's control and understanding of the evolution and to minimize the possibility or mitigate the consequences of unexpected reactivity events. These actions could include any or all of the following:

1. Ensuring that only one reactivity control evolution is conducted at a time.

2. Emphasizing the importance of questioning any evolution that potentially affects reactivity control systems or components.

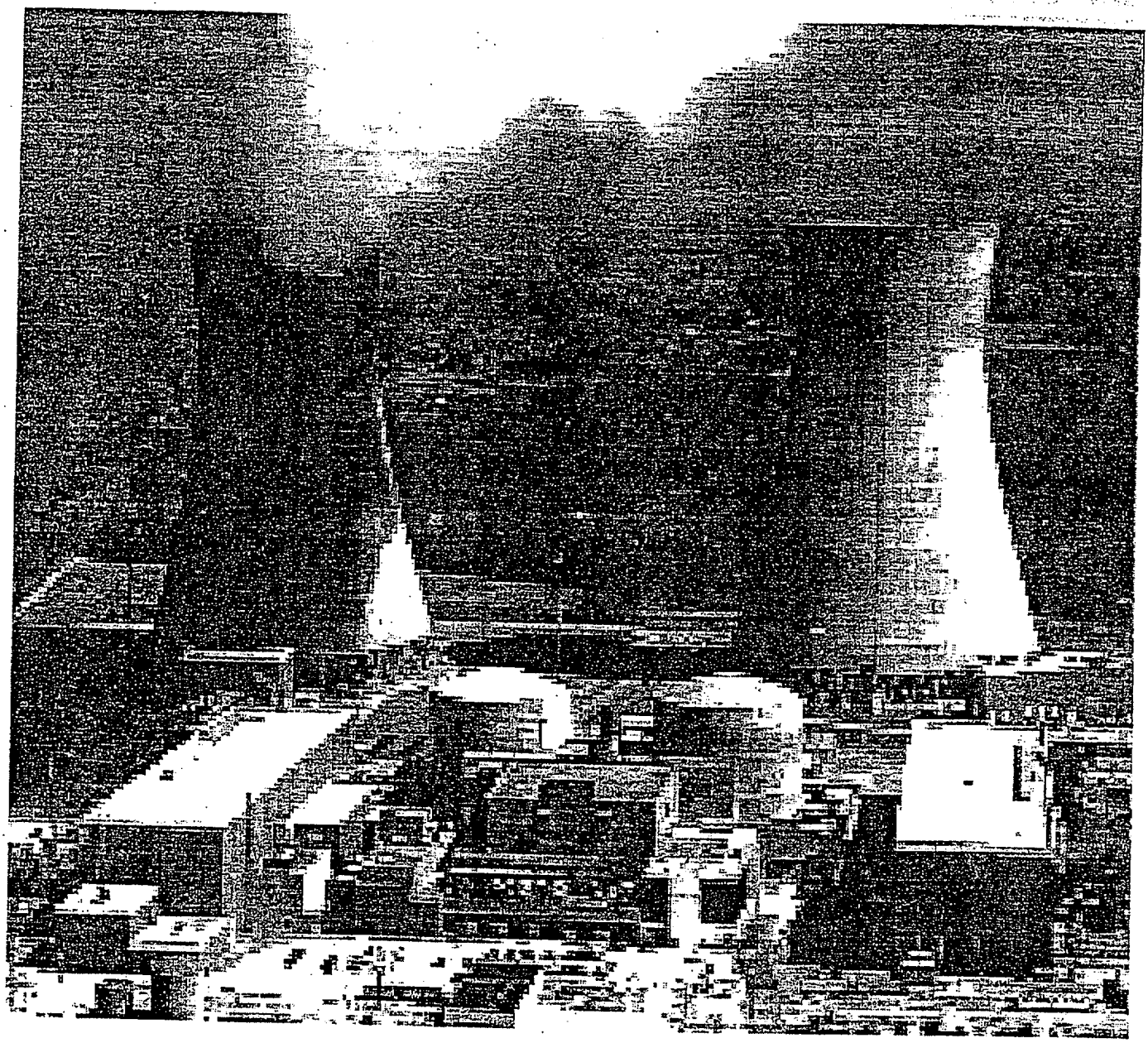
3. Emphasizing the importance of clear responsibilities regarding system or component controls and manipulations.

4. Stressing conservative decision making processes.

5. Ensuring appropriate personnel are stationed at positions to monitor and react to control any unexpected reactivity changes.

6.4.4 Control room activities, such as shift turnover or surveillance testing that could interfere with startup, shutdown, or power changing evolutions, should be avoided or deferred to a later time whenever possible.

PEI Bases Document



Prepared by: Victor Colacicco Date: 8-1-00

Reviewed by: James B Kelly Date: 9/15/00

Approved by: David L. Dolle Date: 9/19/00

FLOWCHART USE

Hierarchy

PEIs can be used in conjunction with any instruction or procedure. However, per Reg. Guide 1.33, the PEIs are the higher tier documents and shall direct the primary activities to ensure safe plant operation when the entry conditions are met during an emergency. The decision to utilize other approved procedures during PEI execution rests with the Unit Supervisor. If other plant procedures are used while executing PEIs, any steps which conflict with PEI steps shall not be performed.

Placekeeping

The flowcharts are laminated for the purpose of placekeeping. Marking the flowcharts with the water soluble pen(s) accomplishes the following two purposes:

- Provides the operator a method to keep track of steps that have been performed.
- Provides other team members a visual method of determining where the user is without interrupting.

The actual method for marking the flowcharts is left to the individual. An exact methodology is not deemed necessary nor desirable. The operators attention and focus is best kept on plant parameters and using the flowcharts as a tool. They should not be distracted by concern about "correctly" marking the chart.

Entry and Re-entry

PEIs need not be entered if the evolution which caused an entry condition to be exceeded was the result of a preplanned evolution and not an emergency. If PEI entry conditions are exceeded and the Shift Supervisor does not enter the PEIs, the reason shall be entered in the Plant Log. (An example would be raising the Suppression Pool water level to 18'6" during a refuel outage. This action was directed by the refuel schedule and is not an emergency. PEIs should not be entered.) Otherwise, occurrence of any entry condition requires entry into the appropriate instruction. Additionally, entry conditions which subsequently occur after an instruction has been entered, require that the instruction be re-entered at the beginning. An entry condition which has cleared and subsequently re-occurs, requires re-entry into that instruction at the beginning. Exceeding entry conditions for more than one PEI requires concurrent entry into and execution of each PEI for which an entry condition has been exceeded. PEI flowpaths that have been exited to another flowpath because actions failed to alleviate the conditions should not be re-entered unless specifically returned from the new flowpath (exit RPV Flooding to Containment Flooding and RPV Control (Non-ATWS) - Pressure at 'A' could have the operator use the override in Pressure Control to send him back to RPV Flooding which would serve no useful purpose).

The Cleveland Electric Illuminating Company

PERRY PLANT

QUALITY ASSURANCE PLAN

SECTION/APPENDIX: FOURTEEN

REVISION: 6

EFFECTIVE DATE: 7 / 13 / 99

TITLE: INSPECTION, TEST, AND OPERATING STATUS

ADMINISTRATIVE REVISION

EFFECTIVE CHANGES

Change No.	Effective Date
1	12-12-00

Change History

QPC Number: 1 Affected Pages: i, iii, 4

Summary of Change:

1. This change implements CRRA 99-1959-001 to revise QA Plan Section 14, "Inspection, Test, and Operating Status" and remove the discrepancy between QA Plan 14, PAP-0205, and PAP-1401 as to when independent verification can be waived due to ALARA concerns. The change is needed to bring the affected documents into agreement.

14.4 RETURN OF EQUIPMENT AND PLANT SYSTEMS TO SERVICE

Shift Supervisor, PNPPD

14.4.1 Equipment ready to be returned to service shall be placed in operation and its functional acceptability shall be verified and documented.

14.4.2 Restoration of equipment to normal service (including removal of jumpers or signals used in maintenance or testing or returning valves, breakers, or switches to proper start-up or operating positions) shall be documented.

14.4.3 Proper alignment of safety-related items or systems shall be independently verified and documented by a second qualified person. This may be accomplished by checking appropriate equipment and controls, by functional testing or by indirect means such as observation of indicators and status lights.

14.4.4 Verification of equipment may be waived if it would result in significant radiation exposure.

14.4.5 Personnel performing verification of correct implementation of equipment control measures or proper alignment prior to returning equipment to service shall be qualified to perform such tasks for the particular system involved and shall possess operating knowledge of the system and its relation to plant safety.

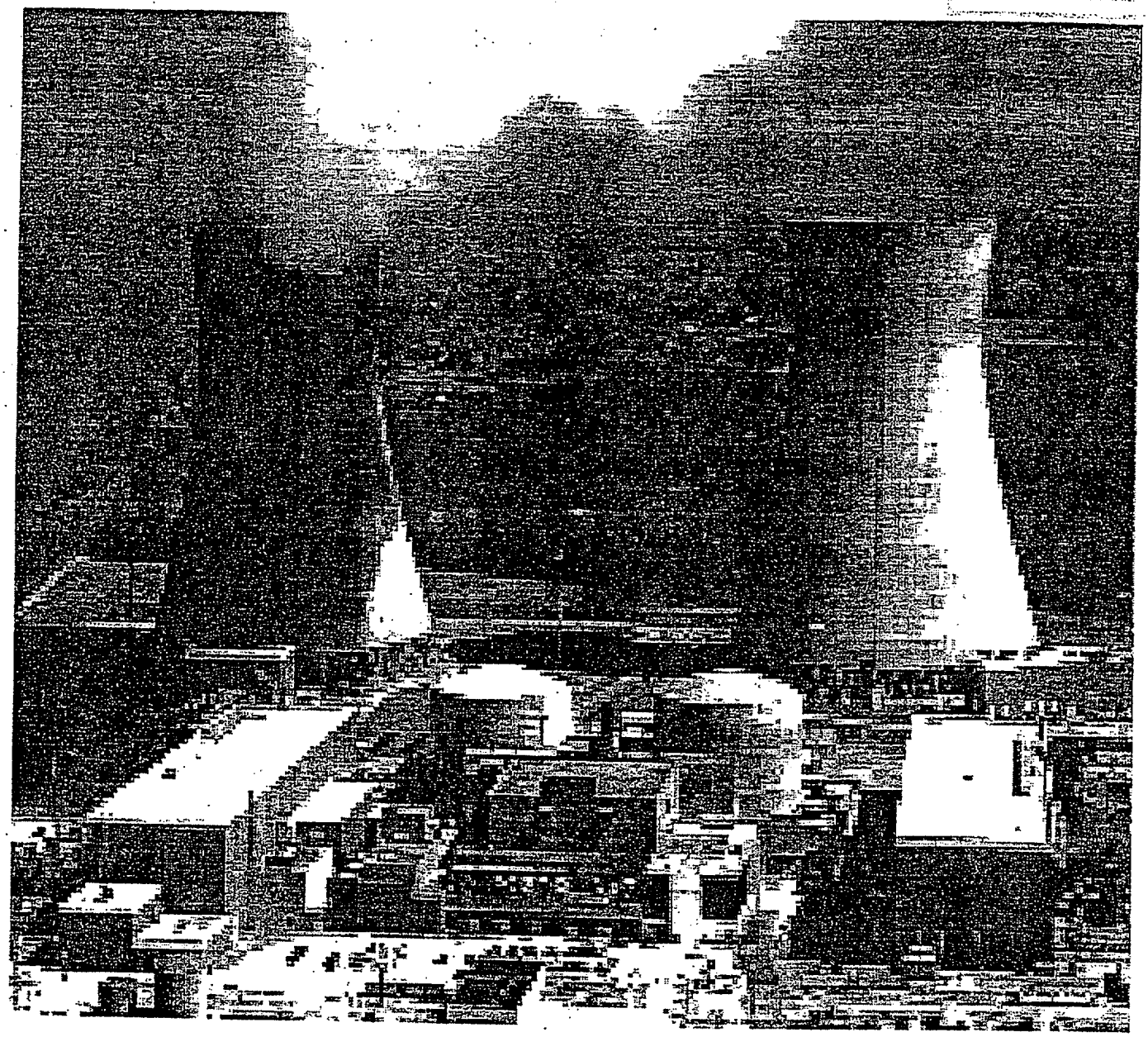
Manager, Work Management Section, PNMD;
Maintenance Staff, PNMD;
Manager, Perry Operations Section, PNPPD;
Manager, Radiation Protection Section, PNSD;
Manager, Plant Engineering Section, PNED

14.4.6 When placed into service, equipment should receive additional surveillance during the run-in period.

Unit Supervisor, PNPPD

14.4.7 Final acceptance of equipment returned to service shall be made by the Unit Supervisor and shall be documented.

PEI Bases Document

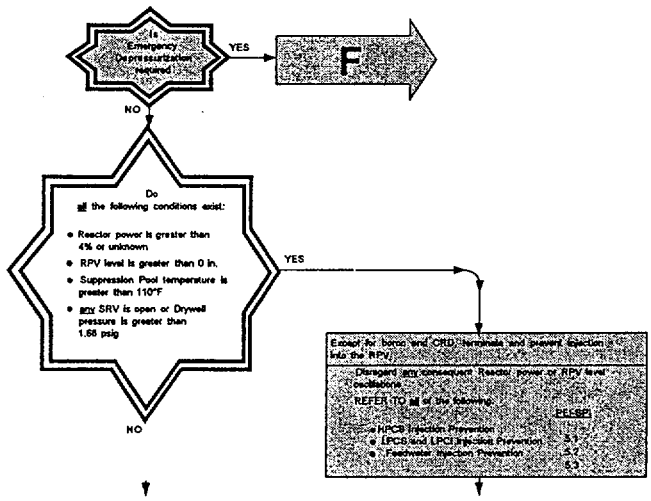


Prepared by: Victor Colacicco Date: 8-1-00

Reviewed by: James B Kelly Date: 9/15/00

Approved by: David Dale Date: 9/19/00

STEP:



DISCUSSION

This override step applies throughout the performance of the remainder of RPV Control (ATWS) - Level.

The concurrent existence of high reactor power (above the APRM downscale trip), RPV water level above 0 inches, high suppression pool temperature (above the boron injection initiation temperature), and an open SRV or high drywell pressure (above the high drywell pressure scram setpoint) is symptomatic of heat being rejected to the suppression pool at a rate in excess of that which can be removed by normal suppression pool cooling systems. Unless actions are taken to mitigate these conditions, ECCS pumps which take suction on the suppression pool could lose adequate NPSH and containment integrity could be lost. This could lead to a loss of adequate core cooling and the uncontrolled release of radioactivity to the environment.

Therefore when these conditions exist concurrently, combined with the inability to shutdown the reactor through control rod insertion (as indicated by the need to enter this flowchart) actions to promptly reduce reactor power, by lowering RPV water level, are required.

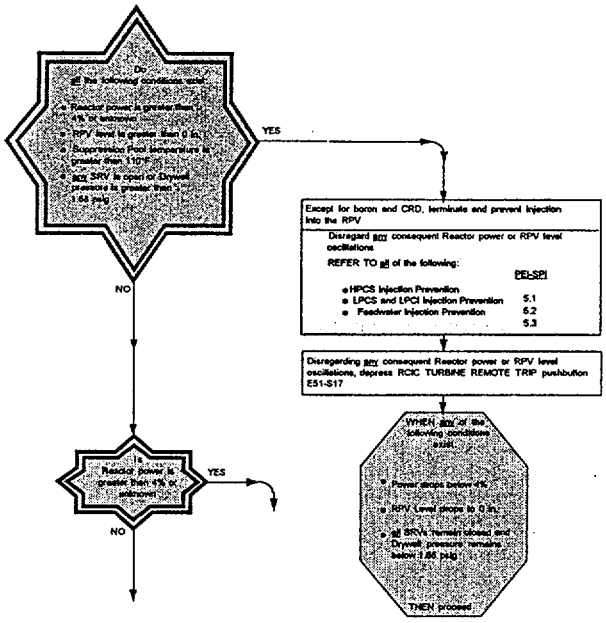
The requirement for RPV water level to be above 0 inches (Top of Active Fuel) is necessary because RPV water level reduction should not result in the uncovery of fuel. The fuel remains covered so that adequate core cooling is assured.

DISCUSSION (Continued)

If all of the stated conditions do not exist, the rate of suppression pool heatup (if occurring) should be within the capacity of the suppression pool cooling system. Therefore, no requirement to promptly reduce reactor power by lowering RPV water level is needed. The operator is directed to continue in this procedure to maintain RPV water level as directed. However, since this is an override step, the operator should continue to monitor the status of the stated conditions and take actions as necessary if all of the stated conditions subsequently occur.

Actions taken in other flowpaths will reject as much heat as possible to the main condenser (RPV Pressure Control), place all available suppression pool cooling into operation (Suppression Pool Temperature Control), and to concurrently inject boron and manually insert control rods (RPV Power Control).

STEP:



DISCUSSION

Lowering RPV water level results in a reduction in reactor power and the subsequent reduction in the addition of heat to the suppression pool. This process occurs as follows:

1. Following the trip of the recirculation pumps (RPV Power Control); the reactor is in a natural circulation mode. The natural circulation driving head is a function of the height of the fluid columns (RPV water level) and the fluid density differences between the regions inside and outside the core shroud (void fraction directly affects the fluid density inside the shroud).

2. As RPV water level is lowered, the height of the fluid columns is reduced, thereby reducing the natural circulation driving head.

3. As the natural circulation driving head is reduced, the flow (due solely to natural circulation) through the core is reduced.

4. The reduced core flow results in a reduced rate of steam removal from the core.

DISCUSSION (Continued)

5. The reduced rate of steam removal results in an increased void fraction inside the Shroud.

6. The increased void fraction adds negative reactivity to the reactor.

7. The negative reactivity drives the reactor slightly subcritical and reactor power begins to decrease.

8. The reduced power results in a reduced steam generation rate.

9. The reduced steam generation rate results in a reduced void fraction.

10. When the void fraction drops to its original value (with some slight adjustment to account for reduced Doppler reactivity), the reactor returns to criticality at a lower power level.

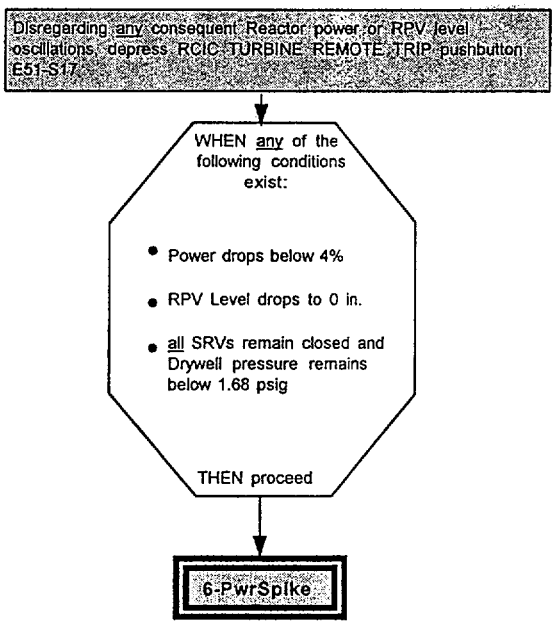
Lowering RPV water level is accomplished by terminating and preventing all injection into the RPV, except for boron and Control Rod Drive (CRD). Injection from these systems may be needed to establish and maintain the reactor shutdown. Furthermore, the injection flow rates from these systems are small compared to those of other systems used to control RPV water level. With essentially no makeup of reactor coolant, RPV water level will then decrease by boiloff.

The statement "Terminate and Prevent Injection" means to take the most direct action which will stop and preclude injection flow into the RPV. This may include, as appropriate, closing the injection valve, tripping the pump, or deenergizing the electrical power supplying system components. System interlocks and plant conditions may dictate that some methods of terminating and preventing injection are more desirable than others for existing conditions.

The PEI-SPIs contain the appropriate methods for terminating and preventing ECCS injection and Feedwater injection. The method used for terminating and preventing RCIC is to depress RCIC Turbine Remote Trip pushbutton, 1E51-S17 on P601. The method used for terminating and preventing Feedwater/Condensate consists of three options.

Power oscillations may occur when RPV water level is lowered significantly below the normal operating range with the reactor still producing power. These oscillations have been analyzed and determined to result in thermal transients well within the design capabilities of the fuel. The oscillations are discussed here to indicate to the operator that they are to be expected, and were considered in developing the steps which require deliberately lowering RPV water level with the reactor still producing power.

STEP:



DISCUSSION

No action to re-establish injection to the RPV is to be taken until any one of the following exist:

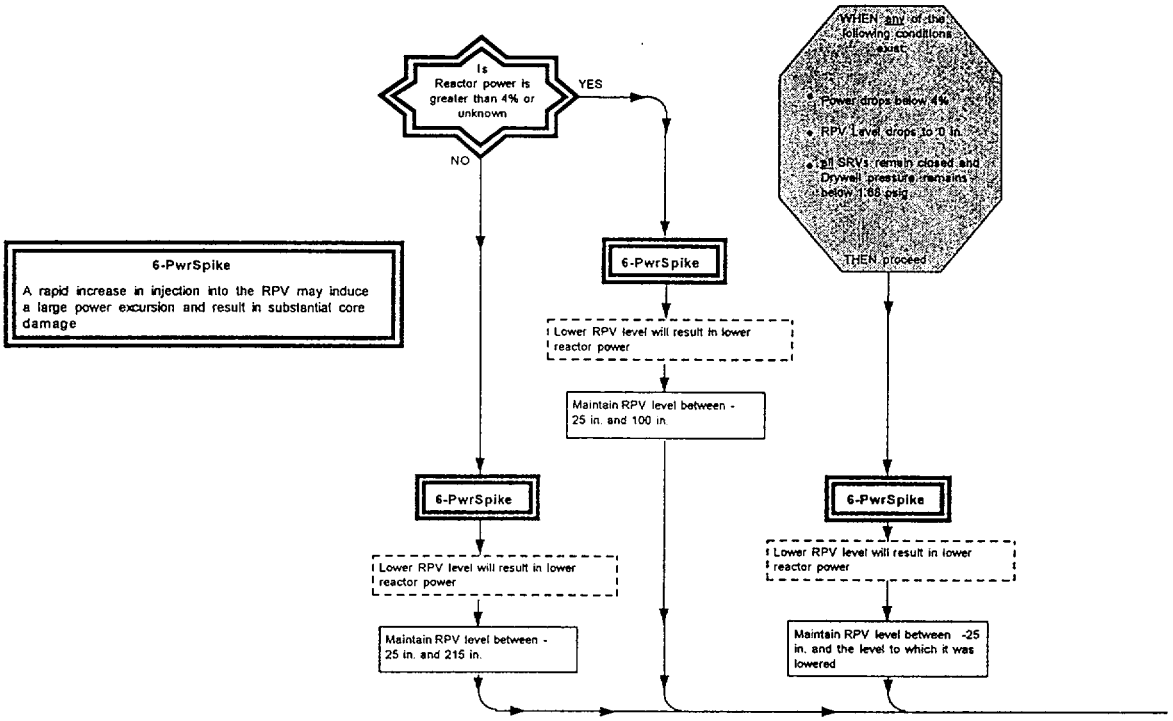
1. Reactor power is below 4%, or
2. RPV water level decreases to 0 inches (Top of Active Fuel), or
3. All SRV's remain closed and drywell pressure remains below 1.68 psig.

Once the Unit Supervisor has entered this HOLD box, instruction progress will be through the HOLD box when any of the bulleted conditions exists. It is not appropriate to return to the previous override once this HOLD box has been entered unless the Suppression Pool temperature condition clears.

If the suppression pool heatup is terminated or heat being rejected to the suppression pool is reduced to near that of decay heat (as indicated by reactor power level below the Average Power Range Monitors (APRM) downscale trip setpoint or the combination of all SRVs closed and drywell pressure below the high drywell pressure scram setpoint), the potential for reaching the high suppression pool temperatures which directly threaten continued adequate core cooling and containment integrity has been substantially reduced. No further reduction in reactor power is required. Injection into the RPV can now be re-established to assure continued adequate core cooling.

Injection into the RPV should also be re-established when RPV water level has dropped to 0 inches to assure continued adequate core cooling through core submergence. This step does not direct the operator to deliberately lower RPV water level below the TAF for the purpose of reducing reactor power.

STEP:



DISCUSSION

If all the conditions of the previous override were not met during instruction progress and Rx Power is greater than 4% Rated Thermal Power, the operator is directed to maintain RPV water level between the (Minimum Steam Cooling RPV Water Level) -25 inches and 100 inches. The systems listed in the following step are preferred because the flowpath is to outside the core shroud. Injection outside the core shroud allows the relatively cold injected water to mix with the warmer water in the downcomer and lower plenum region prior to reaching the core.

If RPV water level was required to be lowered due to the existence of all the conditions in the previous override, the operator is directed to maintain RPV water level between the Minimum Steam Cooling RPV Water Level (-25 inches) and the level to which it was lowered in the previous step (minimum level would be 0 inches, Top of Active Fuel, for the upper value of this range), using only the systems listed. The maximum level will be 100 inches in order to comply with the maximum level established before all the conditions of the previous override were met and to the utilize feedwater pre-heating obtained when RPV level is 2 feet below the feedwater spargers.

Maintaining RPV water level in the specified control band results in continued reduction of reactor power while still maintaining adequate core cooling.

Raising RPV water level is not allowed since this would result in the addition of unborated water into the core area and is not permitted until the reactor is shutdown with all control rods inserted or will remain shutdown under all conditions without boron.

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Alarm Response Instruction

TITLE: ARI-H13-P680-4: RECIRC FLOW CONTROL

REVISION: 3 EFFECTIVE DATE: 6-6-90

TC Revision

Preparer of Previous Revision Dale E. Yeilding

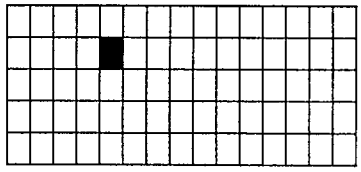
EFFECTIVE PIC's

PIC No.	Type of Change	Effective Date	PIC No.	Type of Change	Effective Date	PIC No.	Type of Change	Effective Date
1	Non-Intent	7-6-90	15	Non-Intent	11-3-94	25	Conditional	7-1-97
4	Conditional	1-16-91	16	Conditional	1-13-95	26	Non-Intent	2-16-98
5	Conditional	1-24-91	17	Conditional	4-3-95	27	Non-Intent	6-19-00
6	Non-Intent	10-10-91	18	Intent	4-24-95	28	Admin	7-5-00
7	Non-Intent	6-19-92	19	Intent	6-26-95			
8	Conditional	10-9-92	20	Non-Intent	1-5-96			
11	Conditional	4-16-93	21	Non-Intent	5-10-96			
12	Conditional	7-20-93	22	Conditional	3-15-96			
13	Conditional	7-17-94	23	Conditional	3-19-96			
14	Non-Intent	9-9-94	24	Non-Intent	1-6-97			

Computer Point ID
None

FCV A
HPU NEEDS
MAINT

B5



1.0 Cause of Alarm

1. Recirculation Flow Control Valve A Hydraulic Power Unit needs maintenance as actuated by 1B33A-K164A.

2. Need for maintenance could be caused by any of the following:
   a. TANK LOW, reservoir level ≤ 70 gallons as sensed by 1B33-N706A
   b. OIL WARM, hydraulic oil temperature ≥ 145°F as sensed by 1B33-N704A
   c. ACTUATOR DRAIN, actuator drain leakage ≥ 0.5 gpm as sensed by 1B33-N718A
      NOTE: Actuator drain leakage may be initially high due to pressure pulse during subloop transfers and should clear within 2 minutes of transfer.
   d. PRESS FILTER, HPU pump discharge filter differential pressure ≥ 35 psid as sensed by 1B33-N700A
   e. RETURN LINE FILTER, return line filter inlet pressure ≥ 45 psig as sensed by 1B33-N714A
   f. Modicon programmable controller battery voltage low

2.0 Automatic Action

1. Standby sub-loop will shift to LEAD on low oil level or high oil temperature.

3.0 Immediate Operator Action

None

4.0 Subsequent Operator Action

1. For the standby sub-loop which has started, depress its LEAD pushbutton and confirm LEAD backlight comes on.
2. Determine if one of the above mechanical malfunctions occurred by checking for the associated light on the front of NSSS Recorder Panel, 1H13-P614.
3. Low modicon program controller battery voltage can be determined by checking the red LED battery status light on the controller inside P614.
4. Contact the I&C for battery replacement or the maintenance for a mechanical failure.

4.1 Technical Specification

None

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Operations Administrative Instruction

TITLE: PREPARATION OF OPERATING INSTRUCTIONS

REVISION: 0 EFFECTIVE DATE: 7-22-92

PREPARED: G. Chasko 5-6-92
/ Date

EFFECTIVE PIC's

PIC No.	Type of Change	Effective Date
1	Non-Intent	12-29-92
2	Non-Intent	12-11-00

that there are no commitments applicable to the instruction (i.e., ONI's should not have an attachment added for the purpose of stating that there are no commitments).

6.2 References

In preparing an instruction the writer shall review the Updated Safety Analysis Report (USAR), Safety Evaluation Report and Supplements, Regulatory Guides (Reg Guides), NUREG's, Commitment Tracking System and any other major reference to ensure the instruction is written as described in the USAR and other guidelines. Piping and Instrument drawings (P&ID's), electrical elementary drawings, specification folders and technical manuals will provide the majority of information for component operation.

6.3 Applicability

Each instruction will be applicable to the operation of the Unit 1 system and those portions of the Unit 2 system that are required for Unit 1 operation. Unit 1 and Unit 2 valves should have the unit designator placed in front of the component MPL to prevent misinterpretation or confusion to the performer. For greater differences, the Unit 2 instructions will be a separate paragraph, a separate section of the instruction, or a separate instruction.

6.4 Writing Style

The sentence structure should be simple, straight-forward, and grammatically correct.

The writer should eliminate unnecessary details that will be a nuisance to the user.

Terminology used must be consistent with that commonly used by the personnel performing the intended actions. Adverbs should be replaced with quantitative values that the operator can readily interpret and act upon.

The number of action requirements within a single step should be limited to two items. This allows for easy comprehension of a complex situation by the operator.

Steps that require an operator to interpret data before performing an action must be presented in units of scale consistent with what the operator can determine from the installed indication. A general rule for reading accuracy is one-half of the minor scale division.

6.5 Use of Names and Component Identification Numbers

Names of valves, equipment, motor control center, etc., shall be taken from existing labels. All equipment with control panel controls will be described by the exact nameplate label written in CAPITAL letters.

Equipment without control panel controls will be described by the component label with the first letter of each word capitalized; the writer may choose to write out abbreviated names for clarity (e.g., Heater 2A Drain to IP Condenser vs. Htr 2A Drn to IP Cndr). The author may refer to a system component that has been introduced in the section by a functionally abbreviated name in a step not requiring action for that component, (e.g., When both Heater 2A drains are closed, ... vs. When both Heater 2A Drain to IP Condenser and Heater 2A Drain to Heater 1A are closed, ...).

6.5.1 Components which lack a GAI-unique MPL number will be identified by their vendor number. When a MPL number is assigned, the instruction will be revised or modified by a Temporary Change Notice to reflect the MPL number.

6.5.2 Panel Names

Panels should be identified in their first usage by name and full panel number such as "ECCS Benchboard, 1H13-P601." Subsequent call outs should be by the P number only, such as "P601", where confusion is not likely.

6.5.3 Electrical Names

Electrical equipment may have two numerical names assigned: the "electrical name" (e.g., F1B08, 100-PY-B) and the MPL number (e.g., 1R42-S001). When a separate "electrical name" exists, the instruction will use this name. The MPL may be used for the purpose of additional identification.

To standardize the use of hyphens in the "electrical name," use the following guide:

1. Hyphens should be used in names of:

Transformers	(100-PY-B, LF-1-B)
Battery chargers	(FD-1-B)
MCC compartments	(F1B08-FF)

2. Hyphens should not be used in names of:

prefix only buses	(L10, EH13)
MCCs	(F1B08)
breakers	(D1B02, L1001)

3. Spaces are not used in typing "electrical names."

6.6 Use of Operating Terms

6.6.1 The following terms are to be used when describing an action:

1. Open: open a valve fully.

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Integrated Operating Instruction

TITLE: REFUELING

REVISION: 7 EFFECTIVE DATE: 9-8-97

PREPARED: Thomas A. Rood 5-6-97
/ Date

EFFECTIVE PIC's

PIC No.	Type of Change	Effective Date
1	Conditional	9-24-97
2	Non-Intent	1-14-99
3	Admin	1-14-99
4	Non-Intent	3-22-99
5	Non-Intent	4-1-99
6	Non-Intent	12-4-00

2.3 Reactivity

1. During rod movements, except those performed under the "one-rod-out" interlock, an inadvertent reactor criticality may result from out of position control rods or out of sequence control rods. A second licensed operator, or other technically qualified member of the unit technical staff, shall verify conformance with the applicable Tech Specs (3.10.2 or 3.10.8) and the test procedure when bypassing control rod sequence constraints. <B00437>

2. Monitor flux levels and reactor period during all Core Alterations which could result in the addition of positive reactivity. If any abnormal increase in flux levels is noted, suspend all evolutions which could affect core reactivity. <B00437>

3. Moderator temperature shall not be permitted to go below 68°F, based on shutdown margin calculations. This limit is applicable to all wetted nuclear fuel at Perry, in the RPV and in Containment storage pools, whether irradiated or new.

4. Fuel shall not be loaded into the core when any control rod is withdrawn. (T.S. 3.9.3)

5. Fuel activities shall be strictly controlled per PAP-0802, Control of Special Nuclear Material, and as follows:

   a. All Core Alterations shall be observed and directly supervised by either a licensed Senior Reactor Operator or licensed Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation. (ORM7.2.1.2)
   b. All fuel movements must be completed and documented in accordance with FTI-D09, Use of Fuel Movement Checklist.
   c. The Refueling Platform and Auxiliary Hoist shall not be left unattended when loaded and over the core.

2.4 Lifting Operations

1. Deleted

2. While lifting Containment East Fuel Prep Machine (FPM) 1F11-E0001B from the Containment Pool to remove or replace the mechanical stop, ensure that the bottom of the FPM is not raised above the top of the fuel racks. This eliminates any concern regarding a heavy load.

   NOTE: Containment West Fuel Prep Machine 1F11-E0001A, was modified to remove the Upper Mechanical Stop and install a Blade Guide Adaptor to the Carriage. This modification will not permit a fuel bundle to be inserted in the machine.

5. Refer to PAP-0204, Housekeeping/Cleanliness Control Program, for Refueling Floor housekeeping/cleanliness requirements. Cleanliness requirements for the Containment, Drywell, and Fuel Handling Building shall be as follows:

   a. Staging of material in the Drywell shall not take place until the drywell sump and suppression pool weir wall areas are covered.
   b. Staging of materials on the Refuel Floor shall be controlled in accordance with PAP-0204.
   c. Just prior to the RPV head lift, the area inside the Reactor Pool handrail shall be established as a Zone 3, with contracted refueling personnel responsible for accountability.
   d. Staging of material in the Containment shall not take place until the suppression pool and containment sump areas are covered.
   e. While handling fuel in the Fuel Handling Building, the area inside the handrail will be maintained as a Zone 3, with contracted refueling personnel responsible for accountability. The balance of the FHB will be maintained as a Zone 4.

6. All objects should be prevented from inadvertently falling into the RPV and Fuel Storage Pools. Tools or equipment that have the potential to be dropped into these pools shall be tied with a lanyard to a sturdy, fixed object or equipped with a flotation device. All loose parts (nuts, bolts, etc.) on a component to be placed in or near the RPV shall be firmly secured prior to use. Additionally, personnel working near or above the RPV or Fuel Storage Pools should have no loose objects (pens, jewelry, glasses, handtools, etc.) which do not have lanyards or flotation devices to prevent them from being dropped into these pools.

7. Water in the Reactor Well and Storage Pools may be contaminated, and should be handled in accordance with Radiation Protection instructions to prevent personnel/equipment contamination.

8. Communications shall be established between the Control Room and Refuel Floor, and tested prior to lifting operations involving vessel components or other heavy loads. Continuous communications shall be maintained between the Control Room and Refuel Floor during Core Alterations and movement of fuel. During in-vessel work continuous communications shall be maintained prior to validation of Control Room water level instrumentation, during reactor water level changes, and when directed by the Control Room Unit Supervisor. <B00085> <L01264>

9. The Unit Supervisor must give permission prior to lifting operations involving vessel components or other heavy loads, commencement of Core Alterations, movement of fuel, and commencement of in-vessel work.

	Initials	Remarks
4. Perform the following SVIs as applicable:		
a. If RHR A is operating in Shutdown Cooling, perform SVI-E12-T2016, Div. I Shutdown Cooling Check Valve Exercise Test.	_____	_____
b. If RHR B is operating in Shutdown Cooling, perform SVI-E12-T2021, Div. II Shutdown Cooling Check Valve Exercise Test.	_____	_____
5. Stop RHR Head Spray operations per SOI-E12, when no longer necessary.	_____	_____
6. Start the Containment Ventilation System in the Refuel Mode per SOI-M14, or take related compensatory measures stated in SOI-M14.	_____	_____
7. Coordinate with Radiation Protection and conduct a Drywell entry.	_____	_____
8. Calibrate and install 1D21-K341, Drywell Area radiation monitor, per PTI-D21-P3001 as directed by Radiation Protection. <F01447, F01448>	_____	_____
NOTE: General Guideline 4.1.13 provides alternative controls which may be implemented.		
9. Calibrate and install D17-K650, Common Refueling Operation Atmosphere radiation monitor, per PTI-D17-P0650, as directed by Radiation Protection. <F01597>	_____	_____
NOTE: General Guideline 4.1.14 provides alternative controls which may be implemented.		
10. Install/establish communications between the Control Room, the Refuel Floor, and the Drywell Access Control Point. <L01264>	_____	_____
NOTE: Refer to PAP-0204, Housekeeping/ Cleanliness Control Program for additional information.		
11. Secure all materials which could inadvertently fall into the RPV, Fuel Pools, or Storage Pools.	_____	_____
12. Isolate the Suppression Pool Make-Up System by performing Inhibiting Automatic System Operation per SOI-G43.	_____	_____

6.5 Operation of Plant Equipment and Reactivity Controls

6.5.1 Operation of Reactivity Controls in the Control Room shall be performed by the Licensed Operator "at the controls," or by another Operator, possessing at least an active operator's license, provided the knowledge and consent of the US and the licensed operator "at the controls" have been obtained. <F00442>

6.5.2 Personnel in accelerated requalification, in restoration of an inactive but current license to active status in accordance with <10CFR55.53>, or in licensed operator training may be allowed to operate Reactivity Controls, when authorized by the US, with the consent of the licensed operator "at the controls," and under the direction and in the presence of an operator possessing an active license.

6.5.3 Operation of mechanisms and apparatuses other than Reactivity Controls, which may affect the reactivity or power level of the reactor, shall only be accomplished with the knowledge and consent of the licensed operator "at the controls." <F00442>

6.5.4 Licensed operator trainees shall be under the direct supervision of a licensed operator whenever the trainee is manipulating plant components, controls and during the performance of operator rounds and surveillances.