

**ATTACHMENT 1**

**EXCELON NUCLEAR LETTER  
OF FEBRUARY 22, 2001**

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Nuclear

February 22, 2001

Mr. Richard J. Conte  
Chief, Operator Licensing - Human Performance Branch  
U.S. NRC Region I  
475 Allendale Road  
King of Prussia, PA 19406

Subject: Submittal of Facility Comments from the February 12, 2001 Exam  
Peach Bottom Atomic Power Station, Units 2 and 3  
NRC Docket Nos. 50-277 and 50-278

Dear Mr. Conte:

On February 12, 2001, the NRC Written Examination was administered at Peach Bottom Atomic Power Station. In accordance with ES-402 of NUREG 1021, Revision 8, "Operating Licensing Examination Standards for Power Reactors", a thorough review of this exam has been completed with the license candidates and station technical staff. This review has indicated the need to comment on Question ID numbers 143 (SRO 10) and 162 (SRO 24, RO 21). Each of the attached comments includes a copy of the question, recommended action, justification, and references.

Please contact Robert G. Birley at (717) 456-4851 for any additional information or clarification.

Respectfully,



John Doering, Jr.  
Vice President, PBAPS

JD/JLB/MJA/RGB/PEN:mda

Enclosure: Facility Comment on Question ID 143  
Facility Comment on Question ID 162

cc: Julian H. Williams, Chief Examiner, Region 1  
Correspondence Control Center, KSA1-N  
PBT-File

CCN-01-14026

# Peach Bottom Atomic Power Station Written NRC Exam Facility Comments February 2001

**Question ID Number: 143 (SRO 10)**

**Recommended Action:**

Change the correct answer to C.

**Justification:**

Amendment 236 of T.S. Section 2.0 became effective on September 28, 2000 and changed the MCPR Safety Limit for the conditions stated in the question from  $\geq 1.10$  to  $\geq 1.09$ . The question was developed and reviewed while the previous limit of  $\geq 1.10$  was in place.

The correct answer to this question based on current Safety Limits is C.

**Attached References:**

Question ID 143

Tech Specification Section 2.0 Safety Limits, Amendment 236,  
effective September 28, 2000

### Question Data for Test: 2001 SRO

Question: 143  
 Unit 2 has been operating at full power when a loss of feedwater heating event occurs. The URO reports that maximum value of MFLCPR from an OFFICIAL 3D P1 edit is 1.19. The current MCPR operating limit from the Core Operating Limits Report (COLR) is 1.30. The scram times are within Technical Specification limits and all other equipment is operating normally.

Use the attached Technical Specifications to determine the correct response for this value of MFLCPR.

- A NO actions are required, MCPR is within limits.
- B Investigate an error with the 3D P1 Program, CPR should not be affected by a loss of feedwater heating.
- C Restore MCPR within limits within two hours OR reduce thermal power to <25% RTP within four hours.
- D Restore MCPR within the safety limit value within two hours AND insert all control rods within two hours.

Explanation of Answer

MCPR LCO

MFLCPR = ----- Therefore, (MFLCPR)(MCPR ACT) = (MCPR LCO)  
 therefore

MCPR ACT

MCPR LCO                      1.30

MCPR ACT = ----- = ----- = 1.09

MFLCPR                      1.19

Exam Level	Cognitive Level	Facility	Materials
SRO	Application	PBAPS	Tech Spec Sections 3.2.2.

#### KA Information

Tier	PWGs	RO Grp:	2	SRO Grp:	2	RO Val:	3.4	SRO Val:	4.1	55.43	✓
System:	Generic	Generic									
KA Group Num:	2.2	Equipment Control									
KA Detail Num:	2.2.22	Knowledge of limiting conditions for Operations and Safety Limits.									

#### Question Source Information

Ques Source:	New	Question Source	
Ques Mod Met			

## References

Reference Title	Facility Ref. No.	Section	Pg #	Rev.	L.O.
Fuel Design, Thermal Limit Applica	PLOT1870	II.D.1.f,g,h	23	4	8

Reference Title	Facility Ref. No.	Section	Pg #	Rev.	L.O.
Fuel Design, Thermal Limit Applica	PLOT1870	II.D.1.f,g,h	23	4	9

Reference Title	Facility Ref. No.	Section	Pg #	Rev.	L.O.
Fuel Design, Thermal Limit Applica	PLOT1870	II.D.1.f,g,h	23	4	11

Reference Title	Facility Ref. No.	Section	Pg #	Rev.	L.O.
Tech Spec COLR		2.0			

## 2.0 SAFETY LIMITS (SLs)

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### 2.1 SLs

#### 2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be  $\leq$  25% RTP.

2.1.1.2 With the reactor steam dome pressure  $\geq$  785 psig and core flow  $\geq$  10% rated core flow:

MCPR shall be  $\geq$  1.09 for two recirculation loop operation or  $\geq$  1.10 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

#### 2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be  $\leq$  1325 psig.

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### 2.2 SL Violations

With any SL violation, the following actions shall be completed:

2.2.1 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.2 Within 2 hours:

2.2.2.1 Restore compliance with all SLs; and

2.2.2.2 Insert all insertable control rods.

2.2.3 Within 24 hours, notify the Plant Manager and the Vice President - Peach Bottom Atomic Power Station.

(continued)

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2.0 SLs

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2.2 SL Violations (continued)

2.2.4 Within 30 days, a Licensee Event Report (LER) shall be prepared pursuant to 10 CFR 50.73. The LER shall be submitted to the NRC, the Plant Manager, and the Vice President—Peach Bottom Atomic Power Station.

2.2.5 Operation of the unit shall not be resumed until authorized by the NRC.

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# Peach Bottom Atomic Power Station Written NRC Exam Facility Comments February 2001

**Question ID Number: 162 (SRO 24, RO 21)**

**Recommended Action:**

Change the correct answer to D.

**Justification:**

The explanation of the answer given on the question is in error when it states that the time delays are not active when the 4KV busses are powered from the Diesel Generators. Although the time delays are different than when powered from offsite power, the Core Spray pumps still have a 6 second time delay for starting under the conditions given in the question.

This fact can be seen in Note 3 on page 1 of the attached SO 14.7.A-2, "Core Spray System Automatic Response During LOCA and Manual System Initiation Upon Automatic Injection System Failure."

The correct answer to this question is D.

**Attached References:**

Question ID 162

System Operating Procedure SO 14.7.A-2, Rev. 4, "Core Spray System Automatic Response During LOCA and Manual System Initiation Upon Automatic Injection System Failure."

## Question Data for Test: 2001 SRO

Question:	Peach Bottom Unit 2 has experienced a Loss of Off-Site Power (LOOP). The Emergency Diesel Generators have all started and are powering their 4KV busses. Due to a lowering reactor water level, the CRS directs you to use the "Arm and Depress" pushbutton to start the Core Spray system.
162	After arming and depressing "CS B INITIATION" pushbutton (14A-S10B), what is the expected response of the Core Spray system?
A	"A", "B", "C", and "D" Core Spray pumps start immediately.
B	"A", "B", "C", and "D" Core Spray pumps start after a time delay.
✓ C	"B" and "D" Core Spray pumps start immediately.
D	"B" and "D" Core Spray pumps start after a time delay.
Explanation of Answer	For Core Spray "B" pushbutton starts ONLY "B" & "D" pumps. (On RHR, all 4 start.) Time delays are not active when the 4 KV busses are powered from the Diesel Generators.

Exam Level	Cognitive Level	Facility	Materials
Both	Comprehension	PBAPS	N/A

## KA Information

Tier	SYS	RO Grp:	1	SRO Grp:	1	RO Val:	3.8	SRO Val:	3.6	55.43
System:	209001	Low Pressure Core Spray System								
KA Group Num:	A4	Ability to manually operate and/or monitor in the control room.								
KA Detail Num:	A4.05	Manual Initiation Controls								

## Question Source Information

Ques Source:	New	Question Source	
Ques Mod Met			

## References

Reference Title	Facility Ref. No.	Section	Pg #	Rev.	L.O.
Core Spray	PLOT-5014	V.B.7	18	0	5.h

Reference Title	Facility Ref. No.	Section	Pg #	Rev.	L.O.
Core Spray Logic	M-1-S-40		2, 3		

PECO Energy Company  
Peach Bottom Unit 2

SO 14.7.A-2 CORE SPRAY SYSTEM AUTOMATIC RESPONSE DURING LOCA AND  
MANUAL SYSTEM INITIATION UPON AUTOMATIC INJECTION  
FAILURE

1.0 PURPOSE

This procedure provides instructions necessary for responding to an automatic initiation of the Core Spray System AND for providing direction to manually start the Core Spray System if the automatic initiation fails.

2.0 PREREQUISITES

2.1 Core Spray System aligned for automatic OR manual initiation in accordance with SO 14.1.A-2, "Core Spray System Alignment for Automatic or Manual Operation".

3.0 PRECAUTIONS

3.1 WHEN operating equipment, IF it does NOT perform as expected, THEN place the equipment in a safe condition AND inform Shift Management.

4.0 PERFORMANCE STEPS

NOTES

1. Core Spray Pumps A AND C AND associated compartment fans start after a 13 second time delay with an initiation signal present AND offsite power available.
2. Core Spray Pumps B AND D AND associated compartment fans start after a 23 second time delay with an initiation signal present AND offsite power available.
3. All Core Spray Pumps start after a 6 second time delay with an initiation signal present AND diesel power available.
4. Either of the following signals automatically initiate the Core Spray System:
  - o Low-low-low reactor water level of -160"
  - o High drywell pressure of 2 psig with reactor pressure less than 450 psig
5. Auto initiation of the Core Spray System trips all Cooling Tower Lift Pumps AND Fans.

\*\*\*\*\*  
\* CAUTION \*  
\* \*  
\* Do NOT secure OR place an ECCS in MANUAL mode unless, \*  
\* by at least two independent indications, (1) misoperation \*  
\* in AUTOMATIC mode is confirmed, OR (2) adequate core \*  
\* cooling is assured. \*  
\*\*\*\*\*

4.1 IF the Core Spray System automatically initiates, THEN:

- 4.1.1 Verify the initiation signal is valid.
- 4.1.2 Verify all Core Spray Pumps are operating by verifying motor current indication OR loop flow indication on Panel 20C003.
- 4.1.3 IF reactor pressure is greater than 345 psig, THEN verify MO-2-14-005, "Min Flow" opens for each Core Spray Pump.
- 4.1.4 IF reactor pressure is less than 450 psig, THEN verify MO-2-14-012A AND B, "Inboard Disch" are open.
- 4.1.5 WHEN injection pressure is reached, THEN verify reactor vessel level is going up as displayed on redundant level indicating systems, as required.
- 4.1.6 WHEN each Core Spray Pump flow is greater than or equal to 2,250 gpm, THEN verify the associated minimum flow valves are closed.

NOTES

1. Steps 4.2, 4.3, and 4.4 shall be performed if the Core Spray System does not automatically start. Only the step needed is to be performed.
2. The following steps can be performed in any order:
  - 4.2, "Core Spray Manual Start with Offsite Power"
  - 4.3, "Core Spray Manual Start with Diesel Power"
  - 4.4, "Core Spray Pushbutton Start"

\*\*\*\*\*  
 \*  
 \* CAUTION \*  
 \*  
 \* Manually starting Core Spray Pumps during load sequencing \*  
 \* of RHR, CS, ESW, and ECW Pumps, and 480 Volt Emergency load \*  
 \* centers, could cause bus and diesel generator overload \*  
 \* conditions. Typically, the automatic load sequencing is \*  
 \* complete with the shutdown of the ECW Pumps at t=45. \*  
 \*\*\*\*\*

4.2 Core Spray Manual Start with Offsite Power

4.2.1 IF the Core Spray System does NOT start with an automatic initiation signal present, THEN turn A and C Core Spray Pump 2AP037 AND 2CP037, Control Switches to "START".

4.2.2 AFTER a ten (10) second time delay from the A AND C Pump start, THEN turn B and D Core Spray Pump, 2BP037 AND 2DP037, Control Switches to "START".

4.2.3 Verify steps 4.1.2 through 4.1.6.

4.3 Core Spray Manual Start with Diesel Power

4.3.1 IF the Core Spray System does NOT start with an automatic initiation signal present, THEN turn each Core Spray Pump control switch to "START" on Panel 20C003.

4.3.2 Verify steps 4.1.2 through 4.1.6.

#### 4.4 Core Spray Pushbutton Start

- 4.4.1 IF the Core Spray System does NOT start with an automatic initiation signal present, THEN arm AND depress the manual initiation switches, 14A-S10A AND B, "CS A/B Initiation" on Panel 20C003.
- 4.4.2 Verify steps 4.1.2 through 4.1.6.
- 4.4.3 Place pushbutton collar 14A-S10A AND B to "DISARMED".

#### NOTE

Prior to removing any ECCS from service, adequate core cooling must be verified by two independent sources.

- 4.5 IF it is necessary to control Core Spray injection flow during RPV level restoration post LOCA, THEN throttle MO-2-14-012(A,B) as required.
- 4.6 WHEN conditions permit, OR as directed by TRIP Procedures, THEN shutdown the Core Spray pumps in accordance with SO 14.2.A-2, "Core Spray System Shutdown Following Initiation".

#### 5.0 CONTROL STATIONS

- 5.1 Panel 20C003, ECCS A(B)

#### 6.0 REFERENCES

- 6.1 P&ID M-362
- 6.2 E-183
- 6.3 GE Drawings M-1-S-40
- 6.4 TRMS 3.11

#### 7.0 TECHNICAL SPECIFICATIONS

- 7.1 Section 3.3.5.1, 3.5.1, 3.5.2

#### 8.0 INTERFACING PROCEDURES

- 8.1 SO 14.2.A-2, "Core Spray System Shutdown Following Initiation"
- 8.2 TRIP Procedures