

June 20, 2001

Mr. R. P. Powers  
Senior Vice President  
Nuclear Generation Group  
American Electric Power Company  
500 Circle Drive  
Buchanan, MI 49107-1395

SUBJECT: D. C. COOK NUCLEAR POWER PLANT -  
NRC INITIAL OPERATOR LICENSE EXAMINATION  
REPORT 50-315/01-301(DRS); 50-316/01-301(DRS)

Dear Mr. Powers:

On May 21, 2001, the NRC completed initial operator licensing examinations at your D. C. Cook Nuclear Power Plant. The enclosed report presents the results of the examination.

NRC examiners administered the written examination on May 21, 2001, and the operating tests during the weeks of May 7 and May 14, 2001. Five reactor operator applicants and 12 senior reactor operator applicants were administered license examinations.

The results of the examinations were finalized on June 8, 2001. Twelve applicants passed all sections of their respective examinations and were issued applicable operator licenses. One senior reactor operator applicant failed the written examination and will not be issued a senior reactor operator license. One reactor operator and three senior reactor operator applicants passed all sections of their examinations; however, due to their written examination results, they will not be issued their respective operator licenses until possible appeals are resolved. As explained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8, Supplement 1, Section ES-501, paragraph D.3.c, the regional office shall delay issuing licenses for those applicants with a written examination passing grade of 81 percent or below until those applicants who failed the examination have had an opportunity to appeal their license denials.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document control system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADQAMS/index.html> (the Public Electronic Reading Room).

R. Powers

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We will gladly discuss any questions you have concerning this examination.

Sincerely,

*/RA/*

David E. Hills, Chief  
Operations Branch  
Division of Reactor Safety

Docket Nos. 50-315; 50-316  
License Nos. DPR-58; DPR-74

Enclosures: 1. Operator Licensing Examination Report  
50-315/01-301; 50-316/01-301(DRS)  
2. NRC Comments and Resolutions  
3. Simulation Facility Report  
4. Written Examinations and Answer Keys (RO & SRO)

cc w/encl 1, 2, & 3: A. C. Bakken III, Site Vice President  
J. Pollock, Plant Manager  
M. Rencheck, Vice President, Nuclear Engineering  
R. Whale, Michigan Public Service Commission  
Michigan Department of Environmental Quality  
Emergency Management Division  
MI Department of State Police  
D. Lochbaum, Union of Concerned Scientists

cc w/encl 1, 2, 3, & 4: B. Wallace, Training Department

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- R. Whale, Michigan Public Service Commission
- Michigan Department of Environmental Quality
- Emergency Management Division
- MI Department of State Police
- D. Lochbaum, Union of Concerned Scientists

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-315; 50-316  
License Nos: DPR-58; DPR-74

Report No: 50-315/01-301(DRS); 50-316/01-301(DRS)

Licensee: American Electric Power Company

Facility: Donald C. Cook Nuclear Power Plant

Location: 1 Cook Place  
Bridgman, MI 49106

Dates: May 7 through 21, 2001

Examiners: H. Peterson, Chief Examiner  
D. McNeil, Senior Operations Engineer  
D. Pelton, Senior Operations Engineer  
R. Morris (Certifying Examiner)

Approved by: David E. Hills, Chief  
Operations Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

ER 05000315-01-301(DRS); 05000316-01-301(DRS), on 05/07-21/2001, American Electric Power Company, D. C. Cook Nuclear Power Plant, Units 1 and 2. Initial Operator License Examination Report.

The announced operator licensing initial examination was conducted by regional examiners in accordance with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8, Supplement 1.

### Examination Summary:

- Five reactor operator applicants and 12 senior reactor operator applicants were administered written examinations and operating tests for initial operator licensing. Twelve applicants passed all sections of their respective examinations and were issued applicable operator licenses. One senior reactor operator applicant failed the written examination and will not be issued a senior reactor operator license. One reactor operator and three senior reactor operator applicants passed all sections of their examinations; however, due to their written examination results being 81 percent or below, they will not be issued their respective operator licenses until possible appeals are resolved (Section 4OA5.1).

## Report Details

### **4. OTHER ACTIVITIES (OA)**

#### 4OA5 Other

##### .1 Initial Licensing Examinations

###### a. Inspection Scope

The NRC examiners conducted announced operator licensing initial examinations during the weeks of May 7 and May 14, 2001. The NRC staff used the guidance established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8, Supplement 1, to prepare the examination outline and to develop the written examination and operating test. The NRC examiners administered the operating test on May 7 through May 18, 2001, and also administered the written examination on May 21, 2001. Five reactor operator applicants and 12 senior reactor operator applicants were examined.

###### b. Findings

###### Written Examination

The NRC developed the written examination. The licensee reviewed the written examination for technical accuracy from April 10 through 12, 2001, during the pre-examination verification and validation week. Examination changes, agreed upon between the NRC and the licensee, were incorporated into the written examination according to NUREG-1021.

The NRC administered and graded the written examination. During the NRC review and grading of the examination, examiners identified technical errors on two reactor operator questions and three senior reactor operator questions. The specific NRC review comments and resolutions were included in Enclosure 2 to this report. In addition, typographical errors with the answer key were also identified. Reactor operator examination question numbers 1, 33, and 82 were incorrectly assigned correct answers of "a." The correct answer was "b" for question 1 and "c" for questions 33 and 82. Senior reactor operator examination question numbers 1 and 33 were incorrectly assigned correct answers of "a," and question number 61 was incorrectly assigned correct answer of "c." The correct answer was "b" for question 1, "c" for question 33, and "d" for question 61. The answer keys were corrected prior to examination grading. Given the changes identified by the NRC examiners, the licensee did not submit any post examination comments.

###### Operating Test

The NRC developed the operating test. The licensee reviewed the operating examination for technical accuracy the week of April 16, 2001, during the pre-examination verification & validation week. Examination changes, agreed upon between

the NRC and the licensee, were made according to NUREG-1021. No post examination comments were submitted by the licensee.

### Examination Results

Five reactor operator applicants and 12 senior reactor operator applicants were administered written examinations and operating tests for initial operator licensing. Twelve applicants passed all sections of their respective examinations and were issued applicable operator licenses. One senior reactor operator applicant failed the written examination and will not be issued a senior reactor operator license. One reactor operator and three senior reactor operator applicants passed all sections of their examinations; however, due to their written examination results being 81 percent or below, they will not be issued their respective operator licenses until possible appeals are resolved.

## .2 Examination Security

### a. Inspection Scope

The examiners reviewed and observed the licensee's implementation of examination security requirements during the examination preparation and administration.

### b. Findings

During administration of the initial operator license examinations, the examiners identified one instance of examination security implementation that impacted the integrity of the NRC examination. Title 10 CFR 55.49 states, in part, "Applicants, licensees, and facility licensees shall not engage in any activity that compromises the integrity of any application, test, or examination required by this part." Contrary to this, during the administration of the operating test on the plant specific simulation facility (simulator), a simulator operator found a document left behind by the previously evaluated crew in an annunciator response book. This was considered a violation of 10 CFR 55.49 because the document would have provided unauthorized information concerning the examination scenario to the new crew that was in the simulator room preparing to take their examination. Since the simulator operator immediately gave the document to the NRC examiners and the simulator operator was on the examination security agreement, this instance did not result in an examination material compromise and was considered a minor violation. A condition report was written for this event and entered into the licensee's corrective actions program. This event constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy.

#### 4OA6 Management Meetings

##### Exit Meeting Summary

The chief examiner presented the examination team's preliminary observations and findings to Mr. L. Weber and other members of the licensee management on May 22, 2001. The licensee acknowledged the observations and findings presented. No proprietary or safeguards information was identified during the exit meeting.

The chief examiner discussed the results of the examination with Mr. R. Brown on June 8, 2001.

## KEY POINTS OF CONTACT

### Licensee

L. Weber, Operations Manager  
B. Wallace, Training Manager  
R. Brown, Operations Training Manager  
R. Bailey, Operations Training Instructor  
R. Anderson, Operations Training Instructor  
R. Gaston, Regulatory Affairs Manager  
R. Meister, Regulatory Affairs/Senior Specialist

### NRC

B. Bartlett, Senior Resident Inspector

## LIST OF ACRONYMS

ADAMS	Agency-Wide Document Access and Management System
CR	Condition Report
DRS	Division of Reactor Safety
EOP	Emergency Operating Procedure
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records

NRC POST WRITTEN EXAM REVIEW AND COMMENTS

The following items are NRC identified post written examination changes.

**RO EXAMINATION:****QUESTION: 076**

The following breaker alignment exists:

CLOSED	OPEN
21AC	T21A10
21A11	21BD
T21D2	21D1
21C1	21B11
T21C4 (T21C3)	T21B3 (T21B4)

Which one of the following statements about the MG sets is correct? (Refer to attached electrical drawing)

- Both have power available
- 2N has power, 2S does not
- 2S has power, 2N does not
- Neither has power available

Answer: c

**NRC REVIEW COMMENT AND RESOLUTION:**

This question initially was technically correct as written. During the pre-exam technical review by the facility licensee it was noted that the applicants were not required to memorize loads on the 600-volt system. NRC accepted a suggestion by the facility to allow the applicants to have an electrical breaker alignment drawing to facilitate in answering the question. The facility technical reviewer provided an electrical drawing from training material, and this drawing was provided to the applicants for the examination. During exam administration, the applicants questioned the information given in the stem of the question as it applied to the drawing. The drawing that was provided did not contain enough information for the applicants to answer the question correctly. The facility technical assistant suggested a change to the stem that would correspond to the drawing. The technical information from the facility changed breaker

identifications of T21C4 to T21C3, and T21B3 to T21B4. Subsequently, it was identified that the given diagram did not include all appropriate breakers. The drawing lead the applicants to answer 'd'. Therefore the answer was changed from 'c' to 'd'.

QUESTION: 079

Reactor power is  $4 \times 10^{-6}$  amps and SUR is 0.17 dpm. How long will it take before a reactor trip occurs if no operator action is taken?

- a. 0.58 minutes
- b. 3.52 minutes
- c. 6.47 minutes
- d. the reactor should have tripped at  $10^{-6}$  amps

Answer: b

**NRC REVIEW COMMENT AND RESOLUTION:**

The question was supposed to determine if the applicant knew the source range trip set point and given plant conditions calculate the time to reach the trip condition. The question originally had the instrument reading as  $10^{-6}$  cps. During the pre-exam technical review by the facility, the reviewer focused on the  $10^{-6}$  cps and noted that the intermediate range instruments read in 'amps' not 'cps'. The reviewer recommended to change the units from cps to amps to make the question correct. Subsequent to the exam administration, the NRC identified that the question should have been  $10^6$  cps and not  $10^{-6}$  cps or amps. Therefore there was no correct answer to the question as it was written and the question was deleted.

**SRO EXAMINATION:****QUESTION: 075**

During the performance of 02-OHP 4023 ES-0.2 "Natural Circulation Cooldown," the following conditions exist:

- RCS cool down is 25°F/hour
- RCS temperature is 450°F
- RCS pressure is 2000 psig
- Both MDAFW pumps are running
- All steam generator (NR) levels are 46% and slowly decreasing
- Condensate storage tank level is 12%
- Pressurizer level is 24% and slowly decreasing

Which one of the following describes the appropriate operator actions?

- a. Transition to ES-0.3 "Natural Circulation Cooldown With Steam Voids in Vessel" and increase the cooldown rate
- b. Stop the cooldown rate and remain in ES-0.2
- c. Maintain the same cooldown rate and remain in ES-0.2
- d. Swap AFW suction to the alternate supply, increase the cooldown rate and remain in ES-0.2

Answer: c

**NRC REVIEW COMMENT AND RESOLUTION:**

This question was from the facility question bank and was considered technically accurate by the facility reviewers. Plant procedure ES-0.2 has continuing operator actions that require immediate actions for specified conditions noted in the foldout page of the procedure. One such operator action was to swap auxiliary feedwater (AFW) suction when condensate storage tank (CST) level was below 14%. During the post exam review, NRC examiners determined that because the CST level given in the question stem was less than 14%, the section of answer 'd' to swap AFW suction to the alternate supply was correct. Procedure ES-0.2 also dictated that cooldown rate be maintained less than 25°F/hour; however, it can be argued that following the swap of AFW suction, cooldown rate would be increased to return the rate to 25°F/hour. Also, without swapping AFW suction, the cooldown rate could not be maintained. Therefore, the correct answer would be a combination of answers 'c' and 'd'. After review of technical references, the NRC concluded that there was a potential for two correct answers and accepted both 'c' and 'd' as correct answers. Furthermore, the NRC determined a question enhancement would be to make one correct answer indicating to swap AFW suction, re-establish cooldown rate of less than 25°F/hour, and remain in ES-0.2.

QUESTION: 077

Unit 2 has experienced a reactor trip. Plant conditions are as follows:

- RCS pressure is 2240 psig and increasing
- Pressurizer pressure and level channel NPP & NLP 151 are failed low
- Pressurizer pressure and level channel NPP & NLP 153 are normal
- RCS loop flow channels NFP 210, 220, 230, and 240 are failed low
- Steam generator pressure MPP 211, 220, 230, and 240 (channel 2) are reading normal
- Spray line loop 4 temperature instrument NTA 164 is failed low
- U-1 West ESW pump has auto started
- Intermediate range N-35 is failed low
- Source range N-32 is reading normal
- Accumulator Tank 1 and 2 level and pressure instruments 110 and 120 are failed low

What will be your actions when you check pressurizer pressure control in accordance with 02-OHP 4023.E-0.1, "Pressure Stable at or trending to 2235 psig?"

- a. Cycling heaters are failed "ON" and can be manually controlled with the breakers, spray valves are closed in "AUTO" and can be manually controlled with the individual controllers, backup heaters are "OFF" and can be manually operated
- b. Cycling heaters are failed "OFF" and can be manually controlled with the breakers, spray valves are open in "AUTO" and can be manually controlled with the individual controllers, backup heaters are "ON" and will operate in auto
- c. Cycling heaters are failed "ON" and can be manually controlled with the breakers, spray valves are open in "AUTO" and will control in auto with the master controller, backup heaters are "ON" and can be manually operated
- d. Cycling heaters are failed "OFF" and can be manually controlled with the breakers, spray valves are closed in "AUTO" and will control in auto with the master controller, backup heaters are "OFF" and can be manually operated

Answer: a

**NRC REVIEW COMMENT AND RESOLUTION:**

The question was based on the failure of CRID 1 power supply; however, the question did not specifically state that this was the condition. During a failure of CRID 1 the Pressurizer pressure channel fails low, this signal would cause the cycling heaters to fail 'ON' and was the basis for answer 'a'. However, the question noted failure of one set of Pressurizer pressure and level channels. During the NRC post exam review, the facility technical reviewer noted that the Pressurizer level instrument also failed low which causes the cycling heaters to fail 'OFF'. When the electrical/logic prints were reviewed, the 'OFF' signal would be the signal that would cause the heater breaker to actuate. Also, depending on which instrument failure was the controlling failure, and not necessarily the failure of CRID 1, the spray valves could be

controlled either in manual or auto. Without the electrical/logic prints for the cycling pressurizer heaters to indicate the controlling alignments, both answers 'a' and 'd' could be argued to be correct. Therefore the NRC concluded to accept either 'a' or 'd' as the correct answer.

QUESTION: 091

Which one of the following statements is correct regarding Acceptors and the use of Partial Release has been started in the Nuclear Clearance Permit system?

- a. The Partial Release is VERIFIED by the SRO before there can be any new Acceptors to the clearance
- b. The Partial Release is VERIFIED by the SRO after all other Acceptors are removed from the clearance
- c. The SRO and all other Acceptors shall perform a walkdown of the equipment/system that are on the Partial Release
- d. The SRO and all other Acceptors must review and walkdown the Partial Release prior to being VERIFIED

Answer: a

**NRC REVIEW COMMENT AND RESOLUTION:**

No pre-exam technical comments were made by the facility technical reviewer. With the question as originally written, the answer was 'a,' according to the Note at the beginning of the procedure describing the use of Partial Release. However, during the NRC post exam review, NRC examiners again reviewed the procedure and discovered that answer 'b,' was also correct based on additional information at the end of the procedure in the section on removal of a Partial Release. The procedure supported the condition that if all Acceptors were removed for the clearance then Partial Release was acceptable. Therefore, both answers 'a' and 'b' are correct.

SIMULATION FACILITY REPORT

Facility Licensee: DPR-58; DPR-74

Facility Docket No: 50-315; 50-316

Operating Tests Administered: May 7 - 18, 2001

The following documents observations made by the NRC examination team during the initial operator license examination. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of non-compliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed:

ITEM	DESCRIPTION
Main Turbine Generator Manual Voltage Regulator	During the performance of a JPM on the Main Turbine Generator, the applicants could not adjust the voltage using the manual voltage regulator as required by procedures. Procedure step 4.4.15d of 2-OHP-4021.050.001 required cycling generator voltage between 114 and 121 volts. Voltage could not be lowered to 114 volts.
Taylor Controllers (Numerous)	The Taylor Controllers used for many system controls, including steam generators and pressurizer, failed to respond during the operating examination. The simulator was left in the isolated condition overnight to assist in examination security. The following day, the computers apparently could not communicate over the network and locked up preventing the Taylor Controllers from operating.

WRITTEN EXAMINATIONS AND ANSWER KEYS (RO/SRO)

RO Exam ADAMS Accession # ML012120391

SRO Exam ADAMS Accession # ML012120398