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AUTH.NAME AUTHOR AFFILIATION
HUNTER,R.S. Indiana & Michigan Power Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards addl info re upgraded senior reactor operator & reactor operator training & training for mitigating core damage in response to 820503 request.Info re hot license (replacement) training in response to Item 1.A.2.1 encl.

"See repts" 1

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INDIANA & MICHIGAN ELECTRIC COMPANY

P. O. BOX 18
BOWLING GREEN STATION
NEW YORK, N. Y. 10004

June 9, 1982
AEP:NRC:0694

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
UPGRADED SRO AND RO TRAINING AND
TRAINING FOR MITIGATING CORE DAMAGE

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

This letter and its attachments are in response to Mr. Varga's letter of May 3, 1982, requesting additional information on Upgraded SRO and RO Training and Training for Mitigating Core Damage. Our letter of April 26, 1982, AEP:NRC:0395B included a copy of our Hot License (Replacement) Training Program which responded to I.A.2.1. This letter provides the additional information requested in Mr. Varga's letter.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

R. S. Hunter
Vice President

RSH/sag
Attachment Nos. 1, 2, 3, 4, 5, 6

A001

cc: Attached

[illegible]

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[illegible] Sec. [illegible] 1, and 50 [illegible]
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Gentlemen:

[illegible] the attached [illegible] [illegible] Jr. [illegible]
[illegible] dated May [illegible], 1966, [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] Dorris. Our letter of
[illegible] 26, 1966, [illegible] [illegible] [illegible] our [illegible] [illegible]
(Dec. [illegible]) [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] letter
provides the additional information [illegible] [illegible] Jr. [illegible] letter.

The documents are being [illegible] [illegible] [illegible] corporate [illegible]
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and [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

Very truly yours,

[illegible]
[illegible]
Vice President

[illegible]
[illegible]

[illegible]

cc: John E. Dolan - Columbus
R. W. Jurgensen
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
Joe Williams, Jr.
NRC Resident Inspector at Cook Plant - Bridgman
Dr. R. T. Liner
Science Applications, Inc.
1710 Goodridge Drive
McLean, Virginia 22102

ATTACHMENT 1

AEP:NRC:0694

Licensing Action Request for Additional Information

Your assumption is correct that our two submittals (letter dated July 25, 1980, D. V. Shaller to Paul F. Collins; and Donald C. Cook Nuclear Plant Licensed Operator Requalification Program, (11 pages, dated July 1980) reflect our current requalification program.

A. Training Program

1) Yes, our initial training program for Reactor Operators and Senior Reactor Operators covers the subject of heat transfer, fluid flow and thermodynamics. Operator Replacement Training Program Revision 1, 11 pages, Licensed Operator Requalification Program dated 7/80 and the Non-Licensed Operator Training Revision 1 6/29/81 are enclosed.

   We do not meet the level of coverage spelled out in the enclosure of the Denton letter. Our review, with Dr. Jim Hayes of Purdue University, determined that some of the references were obsolete as well as being used for doctorate level courses. We do not feel this level of knowledge is required of Reactor Operators or Senior Reactor Operators. The enclosures outline the training we provide in heat transfer, fluid flow and thermodynamics.

2) Yes, the initial training program for Reactor Operators and Senior Reactor Operators covers the subject of using installed plant systems to control or mitigate an accident in which the core is severely damaged. The coverage is to the level of detail spelled out in the enclosure 3 of Denton's letter. The Core Damage mitigation course outline is attached.

3) Yes, the lectures and quizzes on the subject of accident mitigation are given to shift technical advisors and operating personnel from the plant manager through the operation chain to the licensed operators. An organization chart is enclosed. The title of the persons who received this training are:

   Assistant Plant Manager - Operations
   Staff Assistant - Managerial
   Acting Operations Superintendent
   Training Coordinator
   Training Instructor

Production Supervisor - Operations
Shift Supervisor
Assistant Shift Supervisor
Unit Supervisor
Reactor Operator
Production Supv. - Technical
Shift Technical Advisor

4) No, we do not specify 80 contact hours; however, generally more than 80 contact hours are given. We train to meet learning objectives not to minimum hour requirements.

5) We have always emphasized reactor and plant transients. We do not feel that increased emphasis on reactor and plant transients is required. It is and has been our policy and practice to train in the areas of both normal and abnormal (accident) transients prior to Mr. Denton's March 28, 1980 letter.

B. Requalification Program

1) Heat transfer, fluid flow, and thermodynamics are subjects covered in the Licensed Operator Requalification Training Program; however, not necessarily to the depth outlined in the Denton letter. The actual material that is covered and the details of the lectures are determined from the results of the previous year's requalification examination results. Course outlines/ lesson plans are prepared annually as described in the Requalification Training Program, page 8.

2) Item (1.f) is a given category covering normal, abnormal, and emergency operating procedures. The subject of Core Damage Mitigation is covered in appropriate portions within various areas or lectures of the Requalification Training program. The entire Core Damage Mitigation Training program is not covered annually in the training; as was explained in Item B.1 above, lectures vary in content from year to year. Our answer to Item A.2 covers course material availability.

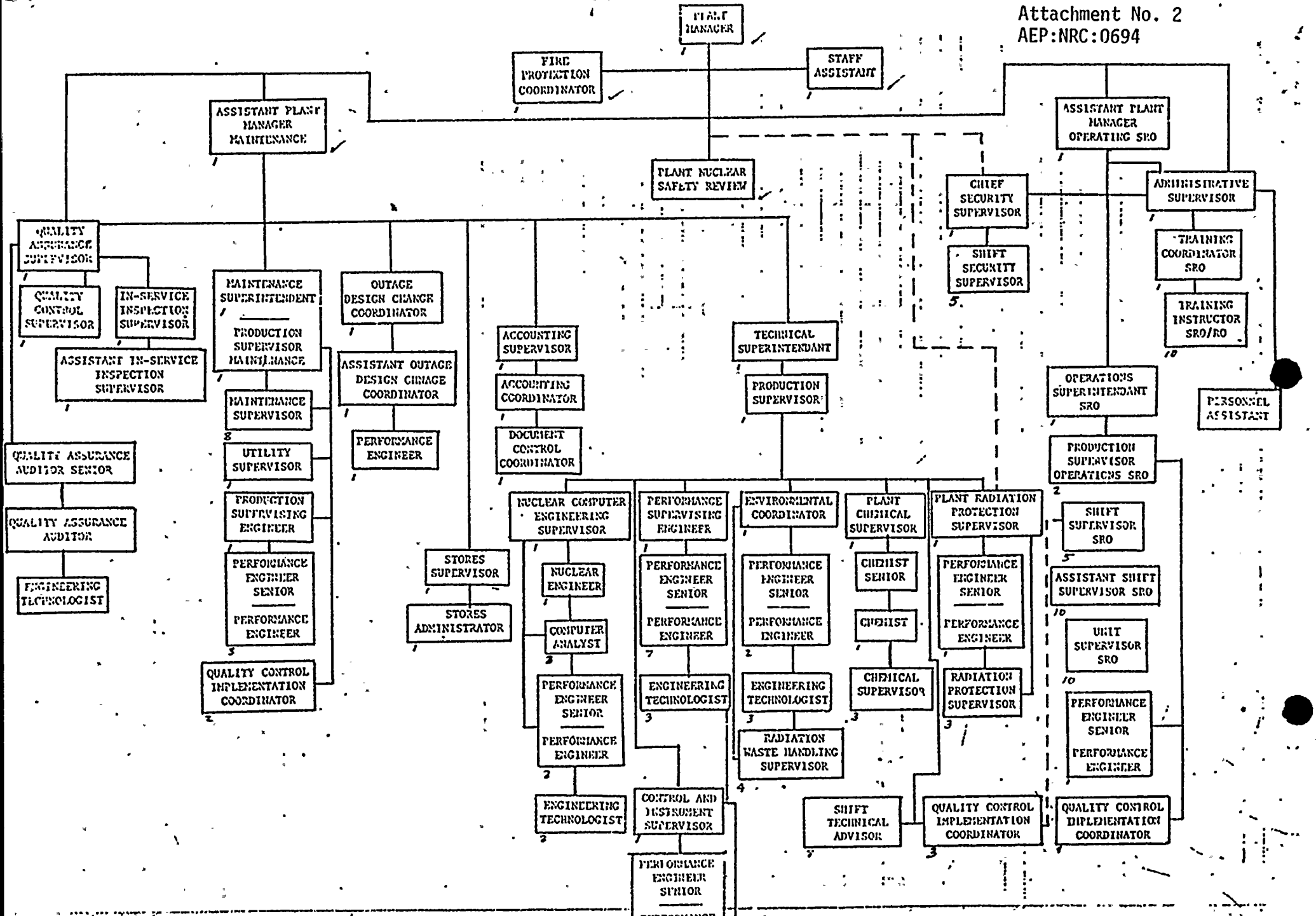
3) Yes, license training instructors attend the same Requalification Training program as do any other licensed operators.

4) No, the list will not be expanded to address Item 8 as called out in enclosure 4 of Denton's letter. Item 8 has a parenthetical statement stating "if simulated plant-specific." The Donald C. Cook Nuclear Plant does not have a plant-specific simulator. Therefore, this Item is not applicable.

5) Our response to this question is the same as our response to Item B.2.

6) Our response to this question is the same as our response to Item A.4, except that 80 contact hours are not normally given during requalification training.

Attachment No. 2
AEP:NRC:0694



Indiana & Michigan Electric Co.
Donald C. Cook Nuclear Plant
March 9, 1982

CORE DAMAGE MITIGATION COURSE OUTLINE: #8206140155

TABLE OF CONTENTS

Mitigating Core Damage
Training Manual
Westinghouse Electric Corporation
Nuclear Service Division
Training Operations
presented at
D. C. Cook Nuclear Plant
prior to October 1981

Attachment No. 4
AEP:NRC:0694

D. C. COOK NUCLEAR PLANT
TRAINING PROGRAMS
REVIEW AND APPROVAL SHEET

NON-LICENSED OPERATOR TRAINING
(Program Name)

.E PREPARED OR REVISED: June 30, 1981.

PREPARED BY: Pamela A. Croy

REVIEWED BY: (Applicable Department Head Minimum) David D. Nelson, Training-Co-ordinator — 7-6-81 Date

C. E. Murphy — 7-27-81 Date

B. A. Svenson — 8/3/81 Date

_____ Date

_____ Date

APPROVED: D. V. Shaller, Plant Manager — 8/7/81 Date

NON-LICENSED OPERATOR TRAINING PROGRAM

The Non-Licensed Operator Training Program prepares new operators for the assumption of Auxiliary Equipment Operator duties in the plant. The program provides Operations Department indoctrination and instruction in plant processes, systems, and operations. Individual check-out, formal classroom instruction, and on-shift training by qualified personnel are utilized. The formal classroom instruction will consist of three phases.

Phase A will include classroom instruction in mechanical descriptions of major plant components, brief descriptions of basic theoretical and mathematical concepts, exposure to a few plant systems, and discussions on plant instructions and procedures.

Phase B will include more in-depth discussion of the theory behind the operation of the plant components and systems. Major topics include: Thermodynamics, Basic Electricity, Radiation Protection, Plant Chemistry, and backgroung mathematics.

In Phase C selected plant systems will be taught, utilizing formal classroom instruction and in-plant study. Systems operated by non-licensed personnel will be taught in-depth from an operational standpoint. Operating procedures will be emphasized. There will also be a classroom instruction on basic plant instrumentation and controls with emphasis on those related to systems which are taught or have been previously covered. Periodic written examinations will be given throughout the program to evaluate trainee performance and program effectiveness.

Instructions in the following procedures, instructions, topics, and systems will be given in the designated phases:

PHASE A

I. Procedures and Instructions

A. Operations Department Head Instructions and Procedures: Review OHI-2010 requirements for procedure adherence, methods and reasons to change procedures.

B. Containment Integrity and Access: PMI-2100.

C. Equipment Control, Clearance Permit System: PMP-2110 CPS.001.

D. Bypass of Safety Functions: OHI-2140.

E. Oral Communications Affecting Plant Activities: OHI-2150.

F. Use of Approved Chemicals and Cleaning Agents: OHI-2160.

G. Maintenance of Operations Department Logs: OHI-2211.

H. Rework Clearance Permit System: OHI-2220.

I. Reporting of Spills (Non-Radioactive): OHI-2230.

J. Fire Protection and Safety Equipment: OHI-2270.

K. Fire Prevention, Control of Ignition Sources: OHI-2275.

L. Job Orders: OHI-2290.

M. Standing Orders: OHI-2300, all Plant Manager Standing Orders and Operations Department Standing Orders.

N. Plant Operations Policy: OHI-4010.

O. Condition Reports: PMP-7030 RPT.001.

P. Special Instructions: OHI-2260.

Q. Control of Combustible Material: PMI-2271.

II. Overview of Nuclear Power

A. Electrical Power Production.

B. Introduction to Nuclear Power Plants.

C. Reactor components:

1. Fuel.

2. Coolant.

3. Moderator.

4. Control Material.

D. Reactor Types.

1. BWR.

2. PWR.

3. Other types.

E. Plant Licensing.

F. Operator Licensing.

G. Fuel Loading.

III. Mathematics

A. Review of Basic Algebra.

B. Mathematical Notation.

C. Scientific Notation.

D. Dimensional Analysis.

E. Ratio and Proportion.

F. Problem-Solving Techniques.

IV. Physics

A. Definition of Physics.

B. The Scientific Method.

C. Combined Fundamental Units.

D. Linear Motion.

E. Atomic Structure.

1. Electrons.

2. Protons.

3. Neutrons.

F. Chart of the Nuclides.

G. Abundance and Enrichment.

H. Newton's Laws.

J. Wave Propagation.

K. Work.

L. Energy.

M. Power.

N. Temperature.

O. Pressure.

P. Volume.

Q. Universal Gas Law.

V. <u>Plant Performance</u>

A. Flow Diagrams.

1. Symbols and Terminology.

2. Uses.

B. Basic Steam Cycle.

C. The Turbine Cycle.

D. Types of Turbines.

1. Impulse Turbine.

2. Reaction Turbine.

E. Condensers.

F. Heat Exchangers.

G. Valves and Pumps (Mechanical Aspects).

1. Valve Components.

a. Seat.

b. Disk.

c. Stem.

D. Packing.

2. Valve Types and Their Uses.

a. Gate.

b. Globe.

c. Butterfly.

d. Diaphragm.

e. Check.

f. Needle.

3. Valve Actuators.

a. Manual Types.

b. Air Operators.

c. Motor Operators.

d. Hydraulic Operators.

e. Failure Modes.

4. Vacuum Pumps.

5. Positive Displacement Pumps.

6. Eductors and Jet Pumps.

7. Centrifugal Pumps.

a. Radial Flow.

b. Axial Flow.

c. Mixed Flow.

d. Multistage.

e. Performance Curves.

f. Methods of Sealing.

VI. <u>Basic Electricity</u>

A. Charges.

B. Electrical Fields.

C. Coulomb's Law.

D. Electric Potential.

E. Magnetism.

F. Conductors.

G. Insulators.

H. Resistors.

I. Ohm's Law.

J. AC and DC Power.

VII. Chemistry

A. Chemical Reactions.

B. Ion Exchangers.

C. Balancing simple chemical reactions.

VIII. Radiation Protection

A. ALARA.

B. Personnel Dosimetry.

1. Ion Chambers.

2. Film Badges.

3. Self-Reading Dosimeters.

4. Thermoluminescent Dosimeter.

C. Protective Clothing: Donning and Removing.

D. Decontamination.

1. Personnel.

2. Equipment.

3. Area.

E. Respiratory Protection.

1. Protection Factors.

2. Air-Purifying Respirators.

3. Air-Line Respirators.

4. Self-Contained Breating Apparatus.

IX. Systems Overview Primary

A. Reactor Coolant System (RCS).

B. Pressurizer and pressurizer relief.

C. Rod Control.

D. Chemical and Volume Control System (CVCS).

E. Residual Heat Removal (RHR).

F. Reactor Protection.

G. Containment.

X. Systems Overview Secondary

A. Steam Generating.

B. Turbine.

C. Condenser.

D. Generator.

E. Electrical Distribution.

XI. Makeup Plant (Demineralizer) System

XII. Fire Protection Systems

A. CO_2.

B. Halon.

C. Water.

PHASE B

A. Math

1. Exponents and Logarithms (Natural and Common).
2. Graphic Presentation.
   a. Slope (Derivative).
   b. Area under a Curve (Integral).
3. Interpolation.
4. Extrapolation.
5. Statistics.
6. Probability.
7. Basic Trigonometry.
   a. Pathagerom's Thereom.
   b. Trigonometry Functions: Sine, Cosine, Tangent.
   c. Sine Wave.

B. Thermodynamics and Plant Performance

1.* Basic Steam Cycle.
2.* Temperature.
3.* Pressure.
4.* Volume.
5.* Universal Gas Law.
6. Heat.
7. Enthalpy.
8. Entropy.
9. Cycle Diagrams.
10. Steam Tables and Mollier Diagram.
11. First Law of Thermodynamics.
12. Potential Energy.

*Brief review of topic.

13. Kinetic Energy.

14. Internal Energy.

15. Fluid Flow.

16. Force of Friction.

17. Flow Work.

18. Mechanical Work.

19. Use of Bernoulli's Equation.

20. Energy Conversion.

21. The Second Law of Thermodynamics and Efficiency.

22. Heat Transfer.

    a. Conduction.

    b. Convection.

    c. Radiation.

23. Heat Transfer Parameters.

    a. Temperature Difference.

    b. Area.

    c. Material.

    d. Flow.

24. Boiling Heat Transfer and Effects of:

    a. Pressure.

    b. Temperature.

    c. Flow.

25. Steam Boiler Characteristics.

26. Reactor Thermal Performance.

    a. Reactor Heat Transfer.

    b. Nucleate Boiling.

    c. Departure from Nucleate Boiling.

    d. Film Boiling.

    e. Critical Heat Flux.

27.* The Turbine Cycle.

28. Critical Pressure Ratio.

29. Orifices.

30.* Types of Turbines.

a. Impulse Turbine.

b. Reaction Turbine.

31. The Superheat Cycle.

32. The Reheat Cycle.

33. Condenser Theory and Cycle Efficiency.

34. Condensate Depression.

35. Condenser Design.

36. Condenser Fouling.

37. Condenser Air Binding.

38. Condenser Air Leakage.

39. Turbine Extration and Feedwater Heating.

40. Hydraulic Systems.

41. Pump Theory.

a.**Positive Displacement Pumps.

b.**Eductors and Jet Pumps.

c.**Centrifugal Pumps.

1) Radial Flow.

2) Axial Flow.

3) Mixed Flow.

4) Multistage.

5) Performance Curves.

6) Methods of Sealing.

d. Net Positive Suction Head.

e. Total Dynamic Head.

42. Steam Cycle Efficiency.

43. Heat Balances - Calorimetrics.

*Brief review of topic, **Theory of Operation.

C. Plant System Related to Thermodynamics

1. Bleed Steam and Heater Drains, or
2. Steam Generation.

D. Electricity

1. Electrical Circuits.
2. Kirchoff's Law.
3. Electrical Measurement.
   a. Galvanometer.
   b. Ammeter.
   c. Voltmeter.
   d. Ohmmeter.
   e. Wheatstone Bridge.
   f. Vacuum Tube Voltmeter.
   g. Electrometer.
4. Laws of Motors.
5. Laws of Generators.
6. Inductors.
7. Capacitors, Diodes.
8. AC Terminology.
9. AC Circuit Components.
10. Power in AC Circuits.
11. AC Generators.
12. DC Generators.
13. Transformers.
14. AC Electrical Measurement.
15. Relays.
16. Breakers.
17. Limit Switches.

18. Motor Control Centers.

19. Reading Elementaries.

E. Electrical Plant System

1. 4160 Volt Distribution, or

2. Main Generator.

F. Nuclear Physics I

1. Radioactivity.

2. Radiation.

   a. Alpha.

   b. Beta.

   c. Gamma.

   d. Neutron.

3. Decay Chains.

4. Interactions of Radiation with Matter.

5. Ranges of Radiation in Matter.

6. Basic Shielding.

7. Shielding Calculations.

8. Activity.

9. Specific Activity.

10. Half-Life.

G. Radiation Protection

1.* ALARA.

2. Cellular Damage.

3. Whole Body Dose: Acute and Chronic.

4. Effects of Contamination.

5. Exposure and Dose Units.

6. Activity Units.

7. Modifying Units.

8. Radiation Limits and Guides.

*Brief review of topic.

9. Contamination Limits.

10. Maximum Permissible Concentrations (MPC).

11. Time, Distance, Shielding.

12. Dose Calculations.

13. Contamination Control.

    a. Design Features.

    b. Plant Procedures.

    c. Common Sense Rules.

14.* Respiratory Protection.

    a. Protection Factors.

    b. Air-Purifying Respirators.

    c. Air-Line Respirators.

    c. Self-Contained Breathing Apparatus.

15.* Protective Clothing: Donning and Removing.

16. Radiation Detection.

    a. Basic Circuit.

    b. Six-Region Curve.

    c. Detector Types and Characteristics.

17. Scintillation Detectors.

18. Simiconductor Detection Systems.

19. Neutron Detection.

20.* Personnel Dosimetry.

    a. Ion Chambers.

    b. Film Badges.

    c. Self-Reading Dosimeters.

    d. Thermoluminescent Dosimeter.

21. Physical Discrimination.

22. Electronic Discrimination.

*Brief review of topic.

23. Surveys.

    a. Radiation.

    b. Contamination.

    c. Airborne Contamination.

24. Portable Radiation Monitors.

25. Area Radiation Monitors.

26. Continuous Air Monitors.

27. Gaseous Process Monitors.

28. Liquid Process Monitors.

29. Ge-Li Detector.

30.* Decontamination.

    a. Personnel.

    b. Equipment.

    c. Area.

31. Radioactive Waste.

    a. Sources.

    b. Processing.

    c. Handling.

32. Radioactive Releases.

33. Atmospheric Dispersion Calculations.

34. Siting Criteria.

35. Environmental Surveillance.

36. Emergency Planning.

37. Protective Action Guides.

H. <u>Plant Chemistry</u>

1. Purposes of Chemical Control.

2. General Corrosion.

3. Crud.

*Brief review of topic.

4. Oxygen Control.
5. Hydrogen Control.
6. pH Control.
7. Temperature Effects.
8. Corrosion Inhibitors.
9. Chloride Stress Corrosion.
10. Caustic Embrittlement.
11. Galvanic Corrosion.
12. Crevice Corrosion.
13. Pitting Corrosion.
14. Radiation Chemistry.
15. Radiolytic Decomposition and Recombination of Water.
16. Nitrogen Reactions.
17. Deposition of Solids.
18. Activation of Corrosion Products.
19. Other Activation Products.
20. Fission Product Control.
21. Reactor Coolant System Chemistry Limits and the Bases for these Limits.
22. Decontamination Factors.
23. Dissolved Gas Control.
24. Chemical Additions.

I. <u>Plant Primary and Secondary Sampling Systems</u>

PHASE C

A. Overview of Technical Specifications

1. Purpose and Origins.
2. Categories of Limits.
3. Contents of the Technical Specifications.
4. Definitions.
5. Safety Limits.
6. Limiting Safety System Settings.
7. Limiting Conditions for Operation.
8. Surveillance Requirements.
9. Design Features.
10. Administrative Controls.
11. Environmental Technical Specifications.
12. Violations.

B. Instrumentation and Control Systems

1. Passive Functions.
2. Active Functions.
3. Protective Functions.
4. Pressure Detection.
   a. Bourdon Tube.
   b. Diaphragm Gauge.
   c. Bellows Gauge.
5. Level Detection.
   a. Gauge Glass.
   b. Float Gauge.
   c. Differential Pressure Gauge.

6. Flow Detection.
   a. Rotometer.
   b. Manometer.
   c. Differential Pressure Cell.
   d. Orifice.
   e. Venturi.
   f. Elbow.
7. Temperature Detection.
   a. Liquid-Filled Thermometers.
   b. Dial Thermometer.
   c. Filled Thermal System.
   d. Bi-Metallic Thermostat.
   e. Resistance Temperature Detector.
   f. Thermocouple.
8. Signal Transmission.
   a. Mechanical.
   b. Pneumatic.
   c. Electrical.
9. Digital Signals.
10. Analog Signals.
11. Recorders.
12. Control Loops.
13. Set Points.
14. Deadband.
15. Proportional Control.
16. Reset Control.
17. Rate Control.
18. Manual Control.
19. Automatic Control.

20. Bumpless Transfer.

21. Switches and Logic Concepts.

22. Bistables.

23. Transducers.

C. Plant Systems

1. Reactor Core.

2. Reactor Coolant System.

3. Electrical Distribution - AC and DC.

4. Emergency Diesel Generator.

5. Waste Disposal System - Liquid and Gaseous.

6. Demineralized Makeup Water System.

7. Chemical and Volume Control System.

8. Main Steam and Steam Generating.

9. Auxiliary Steam and Plant Heating Boiler.

10. Gland Seal and Exhaust Systems.

11. Main Turbines and Auxiliary Systems.

12. Main Generators and Auxiliary Systems.

13. Main Feed Systems.

14. Auxiliary Feed Systems.

15. Condensate Systems.

16. Circulating Water Systems.

17. Essential Service Water Systems.

18. Compressed Air Systems.

19. Fire Protection Water, Carbon Dioxide and Halon.

20. Blowdown and Blowdown Treatment Systems.

21. Ice Condenser and Refrigeration System.

22. Emergency Core Cooling System.

23. Control Room Ventilation System.

24. Non-Essential Service Water Systems.

25. Component Cooling Water Systems.

26. Spent Fuel Pit (includes cooling and cleanup).

Between Phase A and B and between Phase B and C of classroom instruction, the new operators will spend time in the plant on-shift as on-the-job trainees (Utility Operators). During on-shift training, the new operator will complete portions of OHI-2070, Attachment #2 and #3. Portions of OHI-2070, Attachment #3 may be covered in formal classroom sessions. Further development of job proficiency will be accomplished through continuous on-the-job training. As qualification is demonstrated, it will be documented on OHI-2070, Attachment #3. Upon successful completion of these prerequisites, the Utility Operator will be evaluated for promotion to Auxiliary Equipment Operator. OHI-2070, Attachment #3 must be successfully completed prior to such promotion.

NON-LICENSED OPERATOR TRAINING

The following instructions and procedures contain important information. The SOE/OE/Training Coordinator shall, to his satisfaction, see that they are read and/or discussed with each new employee to the extent applicable to the new employee's duties.

1. Operations Department Head Instructions and Procedures. Review OHI-2010, requirements for procedure adherance, methods, and reasons to change procedures. _____ Date
2. Containment integrity and access. Review PMI-2100. _____ Date
3. Equipment Control Clearance Permit System. Review PMP-2110 CPS.001. _____ Date
4. Bypass of Safety Functions. Review OHI-2140. _____ Date
5. Oral Communications Affecting Plant Activities. Review OHI-2150. _____ Date
6. Use of Approved Chemicals and Cleaning Agents. Review OHI-2160. _____ Date
7. Maintenance of Operations Department Logs. Review OHI-2211. _____ Date
8. Rework Clearance Permit System. Review OHI-2220. _____ Date
9. Reporting of Spills (Non-Radioactive). Review OHI-2230. _____ Date
10. Fire Protection and Safety Equipment. Review OHI-2270. _____ Date
11. Fire Prevention Control of Ignition Sources. Review OHI-2275. _____ Date
12. Job Orders. Review OHI-2290. _____ Date
13. Standing Orders. Review OHI-2300, all PMSO's and OSO's. _____ Date
14. Plant Operations Policy. Review OHI-4010. _____ Date
15. Condition Reports, PMP-7030 RPT.001. _____ Date
16. Special Instructions. Review OHI-2260, Special Instructions _____ Date
17. Control of Combustible Material. Review PMI-2271. _____ Date

I have reviewed and understand the above instructions.

_____ _____
Employee Signature Date

_____
SOE/Training Coordinator Signature

NON-LICENSED OPERATOR CHECK-OFF SHEET

NAME_____

ITEM	*OBSERVED BY - DATE	**APPROVED BY - DATE (SUPERVISOR)
Start up the Heating Boiler		
Shutdown the Heating Boiler		
Regenerate a Demineralizer Water Bed		
Liquid Waste Release (At Least Two [2])	1.	
	2.	
	3.	
	4.	
Waste Gas Release		
Start up Boric Acid Evaporator		
***Shutdown Boric Acid Evaporator		
Start up Waste Evaporator		
***Shutdown Waste Evaporator		
Clearance Permit (At Least Two [2])	1.	
	2.	
	3.	

*The person that signs Observed By shall be present when the trainee performs the requirement.

**Approved By signifies the trainee is qualified to perform the evolution. The person that signs "Approved By" shall be a Supervisor.

***Cooldown and Pump Out is acceptable.

AUXILIARY EQUIPMENT OPERATOR TRAINING

NAME _____

DATE STARTED _____

DATE COMPLETED _____

VERIFIED COMPLETED _____
SOE

SPECIAL PRECAUTIONS IN OPERATION OF EQUIPMENT (INSTRUCTOR: DISCUSS IN MORE DETAIL)

Precautions	Instructor Initials*
1. Warming and pressurizing cold steam line - Consider: Temps, Drainage, Water Hammer, Venting, Source Supply, Leaks, Instrumentation.	_____
2. Pressurizing empty vessel or line - Consider: Press, Temp, Venting, Leaks, Instrumentation.	_____
3. Draining tanks or piping - Consider: Venting, Drain Path	_____
4. Any pump, before it is started and during the running period must have at least a minimum flow through it to prevent it from burning up. The person giving the OK to run the pump is responsible for insuring proper valving and minimum flow.	_____
5. Opening drain valves. Sometimes the valve can be plugged and the plug can break loose suddenly, releasing hot steam or water. Be careful of this.	_____
6. Be aware of CO_2 fire equipment in closed rooms; be familiar with the isolation procedure.	_____
7. Never change any valve position unless you know for sure what you are going to affect. (ASK QUESTIONS).	_____
8. Do not stand close to motors when they are starting.	_____
9. Do not accept responsibility to do a job unless you feel capable of doing that job.	_____
10. Hazards of H_2, CO_2, N_2.	_____
11. Hazards of Acid and Caustic.	_____
12. Steam Leaks and Hazards.	_____
13. Idle equipment can be started at any time without notice. Be aware of this.	_____
14. Hazards and proper valving of chlorine.	_____
15. Use of issued safety equipment - hard hat, flashlight, ear plugs and gloves.	_____
16. Uses and abuses of valve persuaders; how and when to use.	_____
17. Operation of:	
a) Turbine Room Sump	_____
b) Screen Wash System and Basket Cleaning	_____

*EO/Unit Supervisor/OE/SOE

The SOE/OE shall assure that the operator has demonstrated sufficient knowledge of the location and function of equipment, can identify normal and abnormal operating indications, and make the required checks and readings to satisfactorily complete each tour section as detailed in OHP 4030.001.001.

ATTACHMENT #1 COMPLETED	_____ SOE/OE/TC	_____ Date
OUTSIDE PLANT TOUR	_____ SOE/OE	_____ Date
ATTACHMENT #2 COMPLETED	_____ SOE/OE	_____ Date
TURBINE BUILDING TOUR	_____ SOE/OE	_____ Date
AUXILIARY BUILDING TOUR	_____ SOE/OE	_____ Date
UTILITY EQUIPMENT OPERATOR TRAINING COMPLETED SAT UNSAT (Circle One)	_____ SOE/OE/TC	_____ Date
UTILITY OPERATOR ELIGIBLE FOR PROMOTION TO AUXILIARY EQUIPMENT OPERATOR	_____ SOE/OE	_____ Date
RECOMMENDED FOR PROMOTION TO AUXILIARY EQUIPMENT OPERATOR	_____ SOE/OE	_____ Date

REFERENCES AND TIME ALLOCATIONS FOR NON-LICENSED OPERATOR TRAINING PROGRAM

The following is an outline of the major topics for the Utility Operator Training Program which follows the Training Program description. References are limited to the texts and books stored in the Training Department's audiovisual aids rooms ("H" rooms). The class times indicated are those used in past classes for the major topics covered. This is to be used as a guide only.

ONE CLASS PERIOD EQUALS 4 HOURS CLASSROOM INSTRUCTION

PHASE "A"

I. Procedures and Instructions

A. Time:

1. Two class periods for reading.
2. One class period for discussion.

B. References (OHI-2070 Attachment #1):

1. OHI-2010, PMI-2100, PMP-2110 CPS.001.
2. OHI-2140, OHI-2150, OHI-2160, OHI-2211.
3. OHI-2220, OHI-2230, OHI-2270.
4. OHI-2275, OHI-2290, OHI-2300, OHI-4010.
5. PMP-7030 RPT.001, OHI-2260, PMI-2271.

II. Overview of Nuclear Power

A. Time: 3 class periods.

B. References:

1. NET 1-1 through NET 1-3.
2. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 1 and 2.

III. Mathematics

A. Time: 2 class periods.

B. References:

1. Basic Technical Mathematics with Calculus.

2. NET 2-1.

3. Academic Program for Nuclear Power Plant Personnel, Volume 1, Mathematics.

IV. Physics

A. Time: 4 class periods.

B. References:

1. Academic Program for Nuclear Power Plant Personnel, Volume II, Physics.

2. NET 2-5.

3. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 3, 4, 5, and 6.

V. Plant Performance

A. Time: 3 class periods.

B. References:

1. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 15, 16, 17, 18, 19, 21, 22, and 29.

2. Academic Program for Nuclear Power Plant Personnel, Volume III.

3. NET 4.

4. NET 7-7.

VI. Basic Electricity

A. Time: 4 class periods.

B. References:

1. Electricity One and Seven.

2. Training Files on Electricity.

3. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 3.

VII. Chemistry

A. Time: 1 class period.

B. References:

1. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 1.

2. Nuclear Power Plant Steam and Mechanical Fundamentals, Section 20.

VIII. Radiation Protection

A. Time: 3 class periods.

B. References:

1. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 2.

2. NET 5.

3. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 7, 27, and 28.

IX. Systems Overview Primary

A. Time: 1 class period.

B. References:

1. Nuclear Systems Volumes I and II, Cook Training Articles.

2. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 13 and 14.

X. Systems Overview

A. Time: 1 class period.

B. References:

1. Power Generation Systems Volumes I and II, Cook Training Articles.

2. Nuclear Power Plant Steam and Mechanical Fundamentals, Section 12.

XI. Makeup Plant (Demineralizer) System

A. Time: 1 class period.

B. References:

1. Auxiliary System 4, "Demineralized Water", Cook Training Articles.

2. D. C. Cook Nuclear System Description, DCC-CH103, Makeup Water System.

XII. Fire Protection Systems

A. Time: 1 class period.

B. References:

1. Auxiliary System 17, "Water Fire Protection", Cook Training Articles.

2. Auxiliary System 18, "Carbon Dioxide Fire Protection", Cook Training Articles.

3. Auxiliary System 19, "Miscellaneous Fire Protection", Cook Training Articles.

PHASE "B"

A. Math

1. Time: 4 class periods.

2. References:

a. Basic Technical Mathematics with Calculus.

b. NET 2-2 through NET 2-4.

c. Academic Program for Nuclear Power Plant Personnel, Volume 1, Mathematics.

B. Thermodynamics

1. Time: 7 class periods.

2. References:

a. Academic Program for Nuclear Power Plant Personnel, Volume III.

b. NET 4.

C. Plant System Related to Thermodynamics

1. Time: 1 class period.

2. References:

a. D. C. Cook Training Articles.

D. Electricity

1. Time: 6 class periods.

2. References:

a. Electricity One and Seven.

b. Training Files on Electricity.

c. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 3.

E. Electrical Plant System

1. Time: 1 class period.

2. References:

a. D. C. Cook Training Articles.

F. Nuclear Physics

1. Time: 1 class period.

2. References:

a. NET 2-7 and NET 2-8.

b. Academic Program for Nuclear Power Plant Personnel, Volume II.

c. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 6, 7, and 8.

G. Radiation Protection

1. Time: 7 class periods.

2. References:

   a. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 2.

   b. NET 5.

H. Plant Chemistry

1. Time: 3 class periods.

2. References:

   a. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 1.

   b. NET 6-1 through 6-5.

I. Plant Primary and Secondary Sampling Systems

1. Time: 1 class period.

2. References:

   a. D. C. Cook Training Articles.

PHASE "C"

A. Overview of Technical Specifications

1. Time: 2 class periods.

2. References:

   a. D. C. Cook Nuclear Plant Unit 1 Technical Specifications, Appendices "A" and "B" to License No. DPR-58.

   b. D. C. Cook Nuclear Plant Unit 2 Technical Specifications, Appendices "A" and "B" to License No. DPR-74.

B. Instrumentation and Control Systems

1. Time: 2 class periods.

2. References:

   a. Training Files on Electricity.

b. Academic Program for Nuclear Power Plant Personnel, Volume IV, Chapter 4.

c. NET 7.

d. Nuclear Power Plant Steam and Mechanical Fundamentals, Sections 24, 25, and 26.

C. Plant Systems

1. Time: Variable (Approximately one system per class period).

2. References:

a. D. C. Cook Plant Training Articles.

INDIANA & MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

Instruction or Procedure Temporary Sheet

This temporary sheet applies to Training (AEO's)
Instruction or Procedure No. OHI-2070
Revision No. 2

TEMPORARY SHEET NO. X1 DC

The following change ( ) new requirement (X) shall be instituted effective (Date) March 20, 1981.

Under Section "C" add third paragraph as follows:

The training required by the Auxiliary Equipment Operator will consist of partly "On The Job" training. This will be the study and understanding of the 34 systems addressed in the D. C. Cook Operator's Training Manual.

These systems "check off" must be completed prior to going into formal classroom training.

When the AEO is ready to checkout on one of the systems, he will contact a supervisor who will determine the AEO's knowledge level of that system by a written or oral examination.

The AEO's knowledge shall be documented on Attachment #6. This signed attachment and any written exam shall be forwarded to the Operations Supervisor. The Operations Supervisor will keep a record of the AEO's progress and forward all exams to the Training Department.

AEO Systems Checkoff (Attachment #6) is attached to this TP Sheet.

THIS WILL BE AN ADDITION TO THE PROCEDURE.

This change should be made a permanent revision to the Instruction or Procedure:

☒ YES ☐ NO ☐ NOT KNOWN, additional review required

Expiration Date: Procedure Revision
Originator: David Campbell
Management Staff: [illegible]
Senior Reactor Operator: C. E. Murphy
PNSRC [illegible] Date 24 MAR 81
Plant Manager [illegible] Date 24 MAR 81

Standard Dist. List No.:
Distribution:

OPERATIONS DEPARTMENT
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FORM NO. PMI 2010-4 REV. 2

INDIANA & MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT

DEPARTMENT HEAD INSTRUCTION COVER SHEET

Instruction No.	OHI-2070
Revision No.	2

TITLE TRAINING

SCOPE OF REVISION

Rev. 1 - Revised to incorporate requirements of PMI-2070, Revision 2. Major revisions required throughout, therefore, no marginal markings are entered.

Rev. 2 - Update Training Program with Existing Training Program.

OPERATIONS DEPARTMENT

Controlled Copy No. 9

SIGNATURES	Rev. 1	Rev. 2	Rev. 3	Rev. 4
PREPARED BY	J. M. Randolph	J. A. Sipkema		
INTERFACING DEPARTMENT HEAD CONCURRENCE		[illegible]		
		NA		
		NA		
QUALITY ASSURANCE REVIEW	[illegible]	[illegible]		
DEPARTMENT HEAD APPROVAL	[illegible]	[illegible]		
PLANT NUCLEAR SAFETY COMMITTEE	[illegible]	[illegible]		
PLANT MANAGER APPROVAL	[illegible]	[illegible]		
DATE OF ISSUE	10-11-77	11-13-80		

FORM NO. PMI 2010-3 REV. 5

INDIANA & MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT

DEPARTMENT HEAD INSTRUCTION COVER SHEET

Procedure No.	OHI 2070
Revision No.	0

TITLE TRAINING

SCOPE OF REVISION

SIGNATURES	ORIGINAL	Rev. 1	Rev. 2	Rev. 3
PREPARED BY	[signature]			
INTERFACING DEPARTMENT HEAD CONCURRENCE	[signature]			
	NA			
	NA			
QUALITY ASSURANCE REVIEW	[signature]			
DEPARTMENT HEAD APPROVAL	[signature]			
PLANT NUCLEAR SAFETY COMMITTEE	[signature]			
AEPSC NUCLEAR SAFETY & DESIGN REVIEW COMMITTEE	NA			
PLANT MANAGER APPROVAL	[signature]			
DATE OF ISSUE	2-18-75			

FORM NO. PMI 2010-3 REV. 4

LIST OF EFFECTIVE PAGES

Pace Number	Revision Number and Date
Page 1 of 6	Revision 2 - 11/13/80
Page 2 of 6	Revision 2 - 11/13/80
Page 3 of 6	Revision 2 - 11/13/80
Page 4 of 6	Revision 2 - 11/13/80
Page 5 of 6	Revision 2 - 11/13/80
Page 6 of 6	Revision 2 - 11/13/80
Attachment #1 Page 1 of 1	Revision 2 - 11/13/80
Attachment #2 Page 1 of 1	Revision 2 - 11/13/80
Attachment #3 Page 1 of 3	Revision 2 - 11/13/80
Attachment #3 Page 2 of 3	Revision 2 - 11/13/80
Attachment #3 Page 3 of 3	Revision 2 - 11/13/80
Attachment #4 Page 1 of 1	Revision 2 - 11/13/80
Attachment #5 Page 1 of 1	Revision 2 - 11/13/80

INDIANA AND MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT

Training

OBJECTIVE

To establish a training program for the Operations Department to ensure that all personnel develop and maintain job proficiency within their area of responsibility.

BACKGROUND

ANSI-N18.1 - 1971 Standard for Selection and Training of Personnel for Nuclear Power Plants and PMI-2070 require the establishment of a training program to initially develop and to maintain an organization fully qualified to be responsible for the operation, maintenance, and technical aspects of the plant. 10CFR55 requires that applicants for reactor operator and senior reactor operator licenses meet certain minimum requirements of training and experience.

DETAILS

The Operations Department training program has six primary functions: 1) Indoctrination, to familiarize new employees with the plant and applicable codes, standards, regulations and policy; 2) Non-licensed Operator Training, to familiarize the new employee with the plant and its policies through formal classroom training; 3) On-The-Job Training, to maintain familiarity with the above by individual study, group discussions and plant experience; 4) Operator Replacement Training, to prepare non-licensed operators for the NRC Reactor Operator examination; 5) Upgrade RO to SRO, to prepare the licenced operator for the NRC Senior Reactor Operator examination; and 6) Requalification Training, to maintain the proficiencies of the licensed operator per 10CFR55 Appendix A.

Indoctrination

All new employees assigned to the Operations Department shall receive training in each of the following areas.

*1. Applicable Plant Manager Instructions

*2. Quality Assurance Program Indoctrination

*3. Radiation Protection/Health Physics

*4. Industrial Health and Safety

*5. Security Program and Procedures

*6. Plant Emergency Plan and Implementing Procedure

*7. Fire Fighting and Prevention

8. Applicable Operations Head Instructions

9. Applicable Operations Standing Orders

10. Applicable Plant Managers Orders, Instructions, and Procedures (Attach. #1)

Items preceded by an asterisk should normally be completed within the first two weeks of employment. If conditions prevent completion within the first two weeks of employment, the Operations Superintendent will establish the schedule for completion. This will be accomplished by the Training Department's General Employee Training Program. Each new employee will normally report to the Training Department for this training before being assigned to a shift. After shift assignment, the Shift Operating Engineer/ Operating Engineer will be responsible for ensuring the remaining indoctrination is completed and signed off on Attachment #1 to this instruction and forwarded to the Training Department for filing in the employee's training record folder. This training should be accomplished within 90 days after shift assignment.

Update training will be conducted in accordance with a schedule commensurate with pertinent interest and specific problem areas with the exception of Radiation Protection and Health Physics which shall be conducted twice yearly and the Emergency Plan which shall be conducted once a year.

Non-Licensed Operator Training

The Non-Licensed Operator Training Program prepares the new operator for the assumption of Utility Operator duties in the plant. The program provides Operations Department Indoctrination and instruction in plant process, systems, and operation. Individual check-out, formal classroom instruction, and on-shift training by qualified personnel are utilized.

The above training is accomplished by the Operations and Training Departments.

During the Non-Licensed Operator Training segment the trainee will complete Attachment #2.

On-The-Job Training

Continuous training will consist of a combination of special training sessions, classroom lectures, group discussions, individual study and review, as well as actual plant experience. The purpose of this training is to ensure all personnel develop and maintain job proficiency within their area of responsibility; keep abreast of current procedures, regulations and policy; and accomplish periodic

reviews in accordance with a schedule commensurate with policy, pertinent interest and the identification of specific problem areas.

This training will be accomplished through all, but is not limited to, the following:

A. Shift Safety Meetings

Shift Safety Meetings will be held monthly by each shift and attended by all members of the shift. A schedule shall be prepared on an annual basis of the required safety meeting topics and the person responsible for the instruction when they are known. The topics may include those requiring periodic review:

1. Emergency Plan and Procedure - Annually

2. Radiation Protection - Twice Annually

3. Industrial Safety - Semi-Annually

4. Clearance Permit System - Annually

Other topics will be included as needed. Accurate minutes of each meeting shall be recorded on Attachment #4.

B. Individual Review

Items of current importance that need to be brought to each operator's attention will be attached to review sheets and distributed for individual study and sign-off. Some examples of items that could be reviewed in this way are: changes to procedures; changes in facility license or design; and operating problems or abnormal occurrences at this or similar plants.

C. Special Training Sessions

Specific Fire Fighting Training will be conducted each calendar year. All Operations Department personnel will participate, when practical, in this training.

A program consisting of a series of standard Red Cross first aid training courses will be given each calendar year. PMI-2070 requires, as a minimum, all on-shift licensed operators maintain first aid certification. Additionally, other personnel will normally be offered this training as an option. Other special training sessions will be held as the need or opportunity arises. Approval and scheduling of attendance at special training will be through the Training Coordinator and the Operations Superintendent or Production Supervisor for Operations.

D. Non-Licensed Operator Training

The Non-Licensed Operator Training program provides the Utility Operator with the knowledge and skills necessary to be promoted to Auxiliary Equipment Operator.

Attachment #3 explains the requirements that must be met by the Utility Operator. This Attachment shall be completed before the Utility Operator is promoted to Auxiliary Equipment Operator. Upon completing Attachment #3 it should be forwarded to the Training Department to be filed in the trainee's training folder.

Operator Replacement Programs

This training program is designed to provide nuclear power plant operating personnel with training in: a) basic nuclear physics and reactor theory; b) radiation protection and plant chemistry; c) technical and practical knowledge required for reactor and plant operation; d) actual operating experience manipulating the reactor controls and related systems (Attachment 5); and e) operating experience associated with the turbine-generator and associated systems.

This training program supplies operating personnel with the necessary background and experience for safe and reliable operation of the plant and prepares them for the NRC Reactor Operator licensing examinations.

Upgrade Reactor Operator - Senior Reactor Operator License Training

This provides licensed Reactor Operators with training in limitations in the facility license, technical specifications, procedures, limitations involved in refueling, and procedures for handling and disposal of radioactive materials and effluents. This also supplies selected personnel with the necessary background and experience to direct the licensed activities of personnel assigned to them and prepares them for the NRC Senior Reactor Operator licensing examinations.

Licensed Operator Requalification Program

The licensed operator requalification program is designed to maintain a continuing high degree of knowledge and proficiency as required by 10CFR50 and 10CFR55, Appendix A. It will apply to all Operations Department personnel that are licensed operators or senior licensed operators.

The licensed operator requalification program will be conducted on a two-year cycle.

The requalification program shall consist of:

1. Formal classroom lectures
2. On-the-job training
3. An annual evaluation
4. Training documentation

Exams will be given throughout the various training programs. The results of these exams may determine the rate at which the employee will advance and if he is qualified to continue in his assigned duties.

The Training Coordinator shall maintain training records of all Operations Department personnel.

TEMPORARY EMPLOYEE TRAINING

Temporary employees whose only assignment will be in the office building and service building will receive the following training:

A. Emergency Plan Training to the extent that they will recognize the sounding of the Nuclear Emergency Alarm and routes to follow to the office building basement area.

B. Emergency reporting such that they will be prepared to report a fire or other emergency to the Shift Operating Engineer.

C. Plant Security procedures applicable to the area they will be working in.

Temporary employees whose work requires access to all areas of the plant must receive the same general indoctrination training as permanent employees for the work to be accomplished.

RESPONSIBLITY

The Operations Superintendent is responsible for assuring that the Operations Department employees obtain the required training.

According to PMI-2070, the Training Department shall be directly responsible for developing and administering training programs for licensed and unlicensed operators. The Operations Superintendent shall assist in the development and administration of these programs. The training program shall be kept up to date to reflect plant modification and changes to procedures.

MANAGEMENT REVIEW

According to PMI-2070, the Plant Training Coordinator will annually review the Operations Department's training program and provide a written report to the Operations Superintendent and the Plant Manager of his findings and recommendations.

INTERFACES

The Administrative Supervisor is interfaced by this instruction since the Training Department is under his supervision.

DISTRIBUTION

In accordance with OHI-2010.

REPORTING

Training programs applicable to licensing, quality assurance, and nuclear safety shall be reviewed and approved by the Plant Manager, the Training Coordinator and the Operations Superintendent.

The Training Coordinator through testing programs shall establish a continuing audit of NRC licensed personnel and will provide a written report to the Plant Manager and Operations Superintendent on an annual basis.

SCHEDULE

The training programs required by this instruction shall be implemented within thirty days of this instruction.

NON-LICENSED OPERATOR TRAINING

The following instructions and procedures contain important information. The SOE/OE/Training Coordinator shall, to his satisfaction, see that they are read and/or discussed with each new employee to the extent applicable to the new employee's duties.

1. Operations Department Head Instructions and Procedures. Review OHI-2010, requirements for procedure adherance, methods, and reasons to change procedures. _____ Date
2. Containment integrity and access. Review PMI-2100. _____ Date
3. Equipment Control Clearance Permit System. Review PMP-2110 CPS.001. _____ Date
4. Bypass of Safety Functions. Review OHI-2140. _____ Date
5. Oral Communications Affecting Plant Activities. Review OHI-2150. _____ Date
6. Use of Approved Chemicals and Cleaning Agents. Review OHI-2160. _____ Date
7. Maintenance of Operations Department Logs. Review OHI-2211. _____ Date
8. Rework Clearance Permit System. Review OHI-2220. _____ Date
9. Reporting of Spills (Non-Radioactive). Review OHI-2230. _____ Date
10. Fire Protection and Safety Equipment. Review OHI-2270. _____ Date
11. Fire Prevention Control of Ignition Sources. Review OHI-2275. _____ Date
12. Job Orders. Review OHI-2290. _____ Date
13. Standing Orders. Review OHI-2300, all PMSO's and OSO's. _____ Date
14. Plant Operations Policy. Review OHI-4010. _____ Date
15. Condition Reports, PMP-7030 RPT.001. _____ Date
16. Special Instructions. Review OHI-2260, Special Instructions _____ Date
17. Control of Combustible Material. Review PMI-2271. _____ Date

I have reviewed and understand the above instructions.

_____ _____
Employee Signature Date

_____
SOE/Training Coordinator Signature

NON-LICENSED OPERATOR CHECK-OFF SHEET

NAME_____

ITEM	*OBSERVED BY - DATE	**APPROVED BY - DATE (SUPERVISOR)
Start up the Heating Boiler		
Shutdown the Heating Boiler		
Regenerate a Demineralizer Water Bed		
Liquid Waste Release (At Least Two [2])	1.	
	2.	
	3.	
	4.	
Waste Gas Release		
Start up Boric Acid Evaporator		
***Shutdown Boric Acid Evaporator		
Start up Waste Evaporator		
***Shutdown Waste Evaporator		
Clearance Permit (At Least Two [2])	1.	
	2.	
	3.	

*The person that signs Observed By shall be present when the trainee performs the requirement.

**Approved By signifies the trainee is qualified to perform the evolution. The person that signs "Approved By" shall be a Supervisor.

***Cooldown and Pump Out is acceptable.

AUXILIARY EQUIPMENT OPERATOR TRAINING

NAME _____

DATE STARTED _____

DATE COMPLETED _____

VERIFIED COMPLETED _____
SOE

SPECIAL PRECAUTIONS IN OPERATION OF EQUIPMENT (INSTRUCTOR: DISCUSS IN MORE DETAIL)

Precautions	Instructor Initials*
1. Warming and pressurizing cold steam line - Consider: Temps, Drainage, Water Hammer, Venting, Source Supply, Leaks, Instrumentation.	_____
2. Pressurizing empty vessel or line - Consider: Press, Temp, Venting, Leaks, Instrumentation.	_____
3. Draining tanks or piping - Consider: Venting, Drain Path	_____
4. Any pump, before it is started and during the running period must have at least a minimum flow through it to prevent it from burning up. The person giving the OK to run the pump is responsible for insuring proper valving and minimum flow.	_____
5. Opening drain valves. Sometimes the valve can be plugged and the plug can break loose suddenly, releasing hot steam or water. Be careful of this.	_____
6. Be aware of CO_2 fire equipment in closed rooms; be familiar with the isolation procedure.	_____
7. Never change any valve position unless you know for sure what you are going to affect. (ASK QUESTIONS).	_____
8. Do not stand close to motors when they are starting.	_____
9. Do not accept responsibility to do a job unless you feel capable of doing that job.	_____
10. Hazards of H_2, CO_2, N_2.	_____
11. Hazards of Acid and Caustic.	_____
12. Steam Leaks and Hazards.	_____
13. Idle equipment can be started at any time without notice. Be aware of this.	_____
14. Hazards and proper valving of chlorine.	_____
15. Use of issued safety equipment - hard hat, flashlight, ear plugs and gloves.	_____
16. Uses and abuses of valve persuaders; how and when to use.	_____
17. Operation of:	
a) Turbine Room Sump	_____
b) Screen Wash System and Basket Cleaning	_____

*EO/Unit Supervisor/OE/SOE

The SOE/OE shall assure that the operator has demonstrated sufficient knowledge of the location and function of equipment, can identify normal and abnormal operating indications, and make the required checks and readings to satisfactorily complete each tour section as detailed in OHP 4030.001.001.

ATTACHMENT #1 COMPLETED	SOE/OE/TC	Date
OUTSIDE PLANT TOUR	SOE/OE	Date
ATTACHMENT #2 COMPLETED	SOE/OE	Date
TURBINE BUILDING TOUR	SOE/OE	Date
AUXILIARY BUILDING TOUR	SOE/OE	Date
UTILITY EQUIPMENT OPERATOR TRAINING COMPLETED SAT UNSAT (Circle One)	SOE/OE/TC	Date
UTILITY OPERATOR ELIGIBLE FOR PROMOTION TO AUXILIARY EQUIPMENT OPERATOR	SOE/OE	Date
RECOMMENDED FOR PROMOTION TO AUXILIARY EQUIPMENT OPERATOR	SOE/OE	Date

OPERATIONS DEPARTMENT SAFETY MEETING

SHIFT _____ TIME STARTED _____

DATE MEETING HELD _____ TIME FINISHED _____

CHAIRMAN OF MEETING _____

MEMBERS PRESENT: _____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

MEMBERS ABSENT: _____ _____

_____ _____

_____ _____

DISCUSSION:

_____
Name of Person Taking Minutes

AEO SYSTEMS CHECKOFF

OHI 2070
Attachment #6

NAME_____ DATE_____

NAME OF SYSTEM_____

I have discussed the mentioned system with the above named individual. I have given him oral or written quizs. I feel that he has a good basic understanding of the system.

SUPERVISOR_____

Forward all written quizs to operations office for filing.

AEO SYSTEMS CHECKOFF

OHI 2070
Attachment #6

NAME_____ DATE_____

NAME OF SYSTEM_____

I have discussed the mentioned system with the above named individual. I have given him oral or written quizs. I feel that he has a good basic understanding of the system.

SUPERVISOR_____

Forward all written quizs to operations office for filing.

D.C. COOK NUCLEAR PLANT
TRAINING PROGRAMS
REVIEW AND APPROVAL SHEET

OPERATOR REPLACEMENT TRAINING
(Program Name)

DATE PREPARED OR REVISED: 2-4-80

PREPARED BY: David G. Lange

REVIEWED BY: (Applicable Dept. Head Minimum) David M. Allen — TRAINING COORDINATOR — 2-5-80 Date

R S Lease — 2-9-80 Date

[illegible] — 3/27/80 Date

Date

Date

APPROVED: [illegible] — Plant Manager — 3/27/80 Date

ENCLOSURE TO AEP:NRC:0395B

Submitted with 0395 B 8/26/82

OPERATOR REPLACEMENT TRAINING PROGRAM

The Operator Replacement Training Program supplies selected operating personnel with the background and experience necessary for safe and reliable operation of the plant controls and prepares them for the NRC Reactor Operator licensing examinations.

Prior to selection to the program, the license candidates shall have been working in the control room under the direction of qualified licensed operators. All control room instruction, including control manipulations, shall be documented on form OHI-2070 Attachment 5 (attached) until the trainee is licensed by the NRC.

Formal classroom instruction will be given in the areas and subjects listed in the Non-licensed Operator Training Program as necessary to ensure thorough trainee comprehension. In addition, formal classroom instruction will be given in the following subjects:

A. Neutron Behavior

1. Microscopic Cross Section.
2. Neutron Energy vs. Cross Section.
3. Doppler Broadening.
4. Macroscopic Cross Section.
5. Neutron Density.
6. Neutron Flux.

7. Reaction Rate Calculations.

8. Energy Dependence of Reaction Rate.

9. Neutron Reactions.

   a. Control Materials.

   b. Water.

   c. Density Effects.

   d. Structural Materials.

10. Power and Power Density.

11. Neutron Scattering.

12. Moderator Properties.

   a. Slowing Down Power.

   b. Moderating Ratio.

   c. Non-Nuclear Factors.

13. Neutron Density Energy Spectrum.

14. Neutron Flux Energy Spectrum.

15. Neutron Diffusion.

16. Neutron Reflection.

B. <u>Reactor Theory</u>

1. Neutron Balance Equations.

2. Multiplication Factors.

3. The Neutron Cycle.

4. Fast Neutrons.

5. Epithermal Neutrons.

6. Neutron Leakage.

7. Thermal Absorption - Fuel.
8. Fast Fission.
9. Epithermal Resonance Capture.
10. Thermal Absorption - Not Fuel.
11. Neutron Cycle Calculations.
12. Calculating the Reproduction Factor.
13. The Fast Fission Factor.
14. The Resonance Escape Probability.
15. Calculating the Thermal Utilization Factor.
16. The Four Factor Formula - The Infinite Multiplication Factor.
17. Enrichment Effects on the Four Factors.
18. Poison Effects on the Four Factors.
19. Moderator-to-Fuel Ratio Effects on the Four Factors.
20. Core Life Effects on the Four Factors.
21. Thermal Neutron Leakage Calculations.
22. Fast Neutron Leakage Calculations.
23. Moderator-to-Fuel Ratio Effects on Leakage.
24. Enrichment Effects on Leakage.
25. Poison Effects on Leakage.
26. Core Life Effects on Leakage.
27. The Six Factor Formula - The Effective Multiplication Factor.
28. Neutron Flux Distribution.
29. Neutron Reflection.
30. Core Zoning.
31. Power-Flux Relationship.

32. Power Distribution.

33. Peaking Factors.

34. Radial Nuclear Factor.

35. Axial Nuclear Factor.

36. Local Nuclear Factor.

37. Total Nuclear Factor.

38. Neutron Production.

39. Prompt Neutrons.

40. Delayed Neutrons.

41. Delayed Neutron Emissions.

42. The Delayed Neutron Fraction.

43. The Delayed Neutron Fraction Change Over Core Life.

44. The Effective Delayed Neutron Fraction.

45. Neutron Lifetime and Generation Time.

46. Delayed Neutron Effects.

47. Reactivity.

48. Reactor Period.

49. The Power Law.

50. Startup Rate.

51. Doubling Time.

52. The Inhour Equation.

53. Reactor Control System Effects.

    a. Short-Term.

    b. Intermediate-Term.

    c. Long-Term.

54. Typical Absorber Materials.

55. Effect of Control Poisons on the Effective Multiplication Factor.

56. Control Poison Forms.

57. Black and Gray Poisons.

58. Effects of Control Systems on Flux Shape.

    a. Control Rods.

    b. Soluble Poison.

    c. Burnable Poisons.

59. Differential Rod Worth.

60. Integral Rod Worth.

61. Differential Boron Worth.

62. The Doppler Coefficient.

63. The Moderator Temperature Corefficient.

64. Undermoderation.

65. Overmoderation.

66. The Pressure Coefficient.

67. The Void Coefficient.

68. The Isothermal Moderator Temperature Coefficient.

69. The Power Coefficient.

70. Calculations of Reactivity Changes.

71. Variations in the Doppler Coefficient.

72. Variations in the Moderator Temperatur Coefficient.

    a. Effect of Fuel Temperature Changes.

    b. Effect of Changes in Moderator Density.

    c. Effect of Poison Density.

    d. Effect of Core Age.

73. Reactivity Defects.

74. The Power Defect.

75. Neutron Competition and Shadowing.

76. Conditions Affecting Control Rod Worth.

77. Coefficients and Control in a Pressurized Water Reactor.

78. Fission Product Formation.

79. Xenon Production and Removal.

80. Equilibrium Xenon.

81. Startup Xenon Transients.

82. Shutdown Xenon Transients.

83. Restart Xenon Transients.

84. Power Change Xenon Transients.

85. Xenon Oscillations.

86. Equilibrium Samarium.

87. Samarium Transients.

88. Core Reactivity Requirements - Excess Reactivity.

89. Core Nuclear Reactions.

90. Fuel Depletion Effects on Reactivity.

    a. U-235 Burnout.

    b. Fission Product Poison Buildup.

    c. Pu-239 Buildup.

    d. Burnable Poisons Depletion.

    e. Total Core Life Effect.

    f. Refueling.

91. Other Fuel Depletion Effects.

a. Effects on Flux.

b. Effects on the Six Factors.

c. Effects on the Effective Delayed Neutron Fraction.

d. Effects on the Reactivity Coefficients.

92. Neutron Sources.

94. 1/M Plots.

95. Fuel Loading.

96. The Approach to the Critical Condition.

97. Predictions of Criticality.

98. Physics Testing.

a. Rod Worth Measurement.

b. Coefficient Worth Measurement.

c. Reactivity Follow.

99. Power Changes.

100. End of Core Life.

101. Reactor Coastdown.

102. Turbine Runback.

103. Planned Shutdown.

104. Reactor Trip.

105. Shutdown Cooling Requirements.

106. Fuel Management.

107. Refueling.

To enhance the theory phase of instruction, the trainees will participate in a training program at a research reactor. During this

program they will perform experiments to exhibit and measure reactivity effects. The trainees will gain hands-on experience by performing startups and shutdowns of the reactor.

Plant systems will be taught in depth through formal classroom instruction and in-plant study. Normal, Abnormal, and Emergency Operating Procedures will be emphasized. Controls, instrumentation, setpoints, automatic actions, differences between the units, system interfaces, and Technical Specifications limitations will be stressed. The systems covered are:

1. Reactor Core.
2. Reactor Coolant System.
3. Pressurizer and Pressure Relief System.
4. Rod Control System.
5. Chemical and Volume Control System.
6. Residual Heat Removal System.
7. Excore Nuclear Instrumentation System.
8. Incore Nuclear Instrumentation System.
9. Reactor Protection System.
10. Emergency Core Cooling System.
11. Containment System.
12. Ice Condenser System.
13. Containment Spray and Hydrogen Recombiner System.
14. Fuel Handling System.
15. Primary Sampling System.
16. Component Cooling Water System.
17. Essential Service Water System.

18. Non-Essential Service Water System.
19. Demineralized Water System.
20. Spent Fuel Pit Systems.
21. Waste Disposal Vent and Drain System.
22. Liquid Waste Disposal System.
23. Gaseous Waste Disposal System.
24. Solid Waste Disposal System.
25. Containment Ventilation System.
26. Auxiliary Building Ventilation System.
27. Control Room Ventilation System.
28. Emergency Diesel Generator Systems.
29. Auxiliary Feedwater System.
30. Compressed Air System.
31. Lube Oil Cleanup System.
32. Secondary Sampling System.
33. Secondary Chemical Feed Systems.
34. Primary Water System.
35. Primary Gas System.
36. Water Fire Protection System.
37. Carbon Dioxide and Halon Fire Protection System.
38. Miscellaneous Fire Protection Systems.
39. Plant Computer.
40. Radiation Monitoring System.
41. Portable Radiation Instruments.
42. Steam Generator and Steam Generator Blowdown System.
43. Main Steam System.

45. Auxiliary Steam System.

46. Plant Heating Boiler.

47. Main Turbine and Control System.

48. Steam Seal Supply and Exhaust System.

49. Main Turbine Lube Oil System.

50. Bleed Steam System.

51. Moisture Separator/Reheater and Feedwater Heater Drains.

52. Circulating Water System.

53. Chlorination System.

54. Miscellaneous Sealing and Cooling Water System.

55. Vacuum Priming System.

56. Condensate System.

57. Feedwater System.

58. Steam Generator Level Control System.

59. Steam Dump System.

60. Main Generator and Auxiliary Systems.

61. 4160 KV Electrical Distribution.

62. 600V AC Electrical Distribution.

63. 120V AC Electrical Distribution.

64. 250V DC Electrical Distribution.

The trainees will be instructed in the Plant Technical Specifications Safety Limits, Limiting Safety System Settings, Limiting Conditions for Operation and Bases for these limits. They will be held responsible for knowing all Action Statements of one hour or less.

Further intensive training in Instrumentation and Control systems and in Radiation Control and Protection will be given.

Periodic written and oral examinations will be given throughout the program to evaluate trainee performance and to prepare them for taking the NRC written and oral examinations.

Plant operating characteristics and responses to transients will be taught. Accident diagnosis and corrective actions will be emphasized.

The trainees will attend a simulator training program where they will perform plant evolutions and casualties. An NRC approved simulator certification program will be utilized for the demonstration portion of the Reactor Operator licensing examination at this time.

Simulated NRC written and oral examinations will be administered to the license candidates to audit their preparation for the NRC Reactor Operator licensing examinations. This audit will be an input in determining which candidates will be recommended for the NRC examination and will be used to identify weak areas needing further study.

After the audit examination, a minimum two week review series will be conducted in final preparation for the NRC examination. Weak areas and overall plant operation will be stressed.

No. of Hours _____
(to the nearest 1/10 hour)
Date _____

Shift _____

REACTIVITY MANIPULATION

Control Board Time

To be completed by Hot License candidates (Replacement Reactor Operator Students) working under instruction in the Control Room, or by any individual Auxiliary Equipment Operator that is working under instruction in the Control Room.

_____ / _____
Name - Print Signature

Control Manipulations, Oral Exams (Walkthrough), etc.

Be Specific:

_____
_____
_____
_____
_____
_____

_____ / _____
Name - Print (RO,SRO) Signature

Forward immediately to the Training Department each and every time a student works in the Control Room.

RO/SRO UPGRADE PROGRAM

Revision 3

The RO/SRO Upgrade Program is designed to help an operator holding an RO license review and upgrade his knowledge in preparation for an SRO examination. This program consists of an open book exam, a self study portion, and a formal classroom training portion. The self study portion and the formal classroom training portion will require the operator/s to be assigned to the Training Department four to six weeks prior to their NRC license exam date.

The open book exam consists of questions which are grouped into six appropriate SRO examination categories (I through N). The questions are designed to require considerable material research by the individual. The exam questions should be answered by the individual and returned to the Training Department seven weeks prior to the NRC license examination date. They will be graded and the results will be used to determine any weak areas that require additional training and/or self study.

The self study portion will allow the operator/s to review their open book exam and pursue any weak areas as necessary.

The formal classroom training consists of attending the review segment/s of the Replacement Training program covering the following subjects:

Reactor Theory	Chemistry
Systems	Radiation Protection
Procedures	Thermodynamics
Transient Analysis	Fluid Properties
Control and Instrumentation	Emergency Plan

Mandatory classroom attendence will be determined on an individual basis. Reference material is available at the Training Department if needed.

CATEGORY I: REACTOR THEORY - STUDY GUIDE

The Senior Reactor Operator candidate should be able to discuss in detail and perform calculations on the following Reactor Theory subjects:

1. Neutron Sources
2. Subcritical Multiplication
3. Delayed Neutrons - Sources and Effects
4. Neutron Multiplication - 6 Factor Formula
5. Reactivity - SUR and Period Calculations, etc.
6. Reactivity Coefficients - MTC, Power Defect, Neutron Kinetics, etc.
7. Poison Effects
8. Rod Worths
9. Xenon Oscillations
10. Changes in Core Parameters and Coefficients with Core Life
11. Startup and Shutdown considerations - SDM, ECP, etc.
12. Neutron Flux, Stability, and Cross Sections

REFERENCES

NET 2 Through 7.

General Physics Academic Program for Nuclear Plant Personnel - Volume II

Westinghouse Core Physics Data, WCAP 7911

Operator Training Class Notes

Introduction to Nuclear Engineering by Lamarsh

Technical Specifications

CATEGORY J: RADIOACTIVE MATERIALS HANDLING, DISPOSAL, AND HAZARDS - STUDY GUIDE

The Senior Reactor Operator candidate should be able to discuss in detail and perform calculations of the following subjects:

1. Hazards of Radiation
2. Control of Radiation Exposure
3. HP Calculations - Time, Distance, Shielding, Dose Rates in mixed radiation fields, Quality Factors, etc.
4. Exposure Limits
5. Radiation Detection
6. D. C. Cook Portable Radiation Instruments
7. Radiation Work Permits and other administrative controls
8. D. C. Cook Radiation Monitoring System
9. Radioactive Waste Handling System - Liquid, Gaseous, and Solid
10. Procedures for Handling and Disposal of Radioactive Materials
11. Technical Specifications pertaining to radiation releases
12. Tritium - Sources and Effects
13. Failed Fuel Detector

REFERENCES

NET 2 Through 7

General Physics Academic Program for Nuclear Plant Personnel - Volume II

Cook Nuclear Plant Radiation Protection Manual

Technical Specifications

Operator Training Class Notes

CATEGORY K: SPECIFIC OPERATING CHARACTERISTICS - STUDY GUIDE

The Senior Reactor Operator candidate should be able to discuss in detail and perform calculations on the following subjects:

1. Primary and Secondary Chemistry Control
2. Plant Transient Response - show and explain traces
3. Temperature, Pressure, and Reactivity Changes - causes and effects
4. Plant Accident Analysis - Recognizing and mitigating the consequences of core damage.
5. Instrumentation Systems - Transient Response, Effects of Failures
6. Operating Characteristics
8. Plant Systems and Operations

REFERENCES

NET 2 Through 7

FSAR, Chapter 15

Technical Specifications

General Physics textbook - Volume II

Operator Training Class Notes

CATEGORY L: FUEL HANDLING AND CORE PARAMETERS - STUDY GUIDE

The Senior Reactor Operator candidate should be able to discuss in detail and perform required calculations on the following subjects:

1. Fuel Handling Equipment - Interlocks, Operation, etc.
2. Fuel Handling Procedures
3. Technical Specifications pertaining to Fuel Handling
4. Source, Detector, and Fuel Configurations
5. General Core Characteristics - Flux Distribution
6. Reactivity Coefficients - Problems pertaining to Power Changes, Burnup, Shutdown Margin, etc.
7. Burnable Poison
8. Radiation hazards for Fuel Handling
9. Fuel Handling accidents
10. Spent Fuel Pool Cooling System - Description, Operation, Design and Safety Features.
11. 1/M Plot - Reasons, Calculations, etc.

REFERENCES

NET 2 Through 7

General Physics Textbook - Volume II

Westinghouse Core Physics Data, WCAP 7911

THP 4050, Fuel Handling Procedures

Cook Nuclear Plant Technical Specification

MP 4040, Special Nuclear Material Accountability Procedures

Operator Training Class Notes

CATEGORY M: ADMINISTRATIVE PROCEDURES, CONDITIONS, AND LIMITATIONS - STUDY GUIDE

The Senior Reactor Operator Candidate should be able to discuss in detail material in the following subject areas:

1. Reactor Safety Limits and Limiting Safety System Settings
2. Limiting Conditions for Operation
3. Technical Specifications, Section 6.0, Administrative Controls
4. Definitions as per Technical Specifications
5. Appendix B, Environmental Technical Specifications
6. Definitions of Operational Modes [illegible]
7. Organization and Responsibilities of Plant Staff
8. Authority and Responsibilities of Reactor Operator
9. Bypass of Safety Functions - Jumpers, Lifted wires, etc.
10. Operating Procedures - Control, Procedures for changes, etc.
11. Emergency Plan - Responsibilities, Action Levels, Personnel Acountability, Procedures, etc.

REFERENCES

NET 2 Through 7

Cook Nuclear Plant Technical Specifications

Administrative Procedures, PMI's, PMP's, OHI's.

Cook Nuclear Plant Emergency Plan and Emergency Plant Procedures

CATEGORY N: PRINCIPLES OF HEAT TRANSFER AND FLUID MECHANICS - STUDY GUIDE

The Senior Reactor Operator candidate should be able to discuss in detail and perform calculations on the following subjects:

1. Heat Transfer Modes - Conduction, Convection, Radiation
2. Heat Transfer vs. ΔT Curve - Nucleate and Film Boiling
3. DNB - Consequences, Parameters monitored
4. Critical Heat Flux - Hot Channel Factors
5. Temperature Profiles - Fuel Centerline to bulk coolant
6. Thermal Conductivity - Definition and causes of change in
7. Technical Specifications - Hot Channel Factors and Rx safety limits
8. Basic properties of fluids - Types of Flow - Two Phase, laminar, turbulent
9. Steam Tables - Enthalpy, Entropy, Latent Heat of Vaporization, Quality
10. Fluid Phases - Saturated, Super heated, Subcooled
11. RCS Void Formation and Gas Binding - causes, consequences, ind.
12. Forced and Natural Circulation
13. Pump Theory - Cent. pp. head vs. flow curve and flow oscillations
14. Cavitation, NPSH, Pump Runout
15. Relationship between RPM, flow, head and H.P.
16. Shrink and Swell
17. Water hammer - Causes and Prevention
18. Operating Principles of Relief and Safety Valves
19. Operating Principles of Air Ejectors, Eductors, and Moisture Separators
20. Corrosion - Types and Causes
21. Zirc-Water Reaction - Sources of hydrogen in RCS

REFERENCES

NET 2 Through 7

Technical Specifications

General Physics Academic Program for Nuclear Plant Personell

Nuclear Power Systems; C.D.G. King

Rotary and Centrifugal Pump Theory and Design; Worthington Corp.

Operating Procedures

FSAR

INDIANA & MICHIGAN ELECTRIC COMPANY

DONALD C. COOK NUCLEAR PLANT

LICENSED OPERATOR REQUALIFICATION PROGRAM

Licensed Operator Requalification Program

A licensed operator requalification program designed to maintain a continuing high degree of knowledge and proficiency as required by 10CFR50 and 10CFR55, Appendix A shall be established for the Donald C. Cook Nuclear Plant Units 1 and 2. It shall apply to all NRC licensed operators and senior licensed operators, including operator and senior operators who perform such duties on an infrequent basis. A site appointed Training Coordinator has been assigned to administer this program.

The Training Coordinator is responsible for implementing the Licensed Operator Requalification Program. Licensed training personnel are exempt from those provisions of the requalification program for which they have primary responsibility for administering. For example, an individual who prepares, administers, and grades a written examination need not take the examination. This exemption provision applies to a maximum of two individuals for a particular lecture, examination, or course.

The licensed operator requalification program shall be conducted on a two year cycle. The two year requalification cycle is divided into requalification

year one and requalification year two. Subsequent cycles will be designated year three and four, etc. Each requalification year runs from Memorial Day to Memorial Day.

The requalification program shall consist of:

1. Formal classroom lectures
2. On-the-job training (including simulator training)
3. An annual evaluation
4. Training documentation

1. Formal Classroom Lectures

Formal classroom lectures shall be conducted each requalification year on a school-year schedule running from Labor day to Memorial Day. Lectures shall be conducted in the following areas with emphasis on identified weak or problem areas:

a. Theory and Principles of Operation (includes Thermodynamics, Heat Transfer and Fluid Flow)
b. General and Specific Plant Operating Characteristics
c. Plant Instrumentation and Control Systems
d. Plant Protection Systems
e. Engineered Safety Systems
f. Normal, Abnormal and Emergency Operating Procedures
g. Radiation Control and Safety

h. Technical Specifications

i. Applicable portions of Title 10, Chapter 1, Code of Federal Regulations

The use of training aids such as videotapes or films may be used in lieu of an instructor. However, no more than 50% of the lecture series shall be solely videotape or film.

The annual lecture series will be of an estimated length of 40 hours but, in no case, less than 30 hours. Lectures shall be evenly spaced throughout the period, taking infrequent operations such as refueling operations into account. Licensed operators may be exempted from attendance in a particular subject area if they have attained a grade of $\geq$ 80% in the related areas of the previous year's annual written examination.

Written quizzes will be administered after each lecture topic for the evaluation of individual knowledge level and progress. A minimum grade of 80% is acceptable. A grade of less than 80% will require additional training in the identified areas of weakness.

2. <u>On-The-Job Training</u>

On-the-job training shall consist of:

a. Performance of control manipulations (simulator training)

b. On-shift abnormal and emergency procedure review

c. Keeping abreast of all facility and procedure changes

A. Control Manipulations

Each licensed operator shall, during each two-year requalification training cycle, perform a minimum of plant control manipulations which demonstrate his skill and/or familiarity with plant control systems. Each licensed senior operator shall either manipulate the controls or direct or evaluate the activities of others during these control manipulations. Credit for a manipulation shall be limited to the one operator performing the task and one senior operator engaged in directing the operation.

Normal control manipulations, such as plant or reactor startups, must be performed. Control manipulations during abnormal or emergency conditions may be walked through with and evaluated by a member of the training staff; however, preference is to perform these manipulations at an appropriate simulator.

The following control manipulations shall be performed during each two-year requalification cycle. The starred items shall be performed annually.

PWR

*1. Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established

2. Plant shutdown

*3. Manual control of steam generators and/or feedwater during startup or shutdown

4. Boration and/or dilution during power operation

*5. Any significant (>10%) power changes in manual rod control

*6 Loss of coolant, including:

1. Significant steam generator leaks.
2. Inside and outside primary containment.
3. Large and small, including leak-rate determination.
4. Saturated Reactor Coolant response.

7. Loss of electrical power (and/or degraded power sources).

*8 Loss of core coolant flow/natural circulation.

9. Loss of condenser vacuum.

10. Loss of Essential Service Water.

11. Loss of shutdown cooling.

12. Loss of Component Cooling System or cooling to an individual component.

13. Loss of normal feedwater or normal Feedwater System failure.

*14. Loss of all feedwater (normal and emergency).

15. Loss of protective system channel.

16. Mispositioned control rod(s) (or rod drops).

17. Inability to drive control rods.

18. Conditions requiring use of emergency boration.

19. Fuel cladding failure or high activity in reactor coolant or offgas.

20. Turbine or generator trip.

21. Malfunction of Automatic Control System(s) which affect reactivity.

22. Malfunction of Reactor Coolant Pressure/Volume Control System.

23. Reactor Trip.

24. Main steam line break (inside or outside containment).

25. Nuclear instrumentation failure(s).

* Required at least annually

Even if the above manipulations are not needed to be accomplished at a simulator, each licensed operator shall attend a training session at an appropriate simulator annually.

B. Abnormal and Emergency Procedure Review

Abnormal and emergency procedures shall be reviewed by all licensed operators on a regularly scheduled basis as assigned by the Training Coordinator. The procedure review shall normally be accomplished each shift cycle on the 4 to midnight shift by conducting on-shift group discussions or by on-shift self-study. Other areas of interest may be included in the periodic review assignment. All abnormal and emergency plant operating procedures shall be reviewed at least annually.

C. Facility Design, Change, Procedure Change and Facility License Change Review

All licensed operators shall review on a continuous basis all changes in facility design, operating procedures and the facility license. The determination of the depth of review of any changes shall be made by the Training Coordinator or cognizant Department Head. Reviews shall be conducted by one of the following methods:

1. Formal training lectures, to be scheduled and conducted during requalification lectures.
2. Individual review, to be read by the individual during his normal work hours. Questions to be directed to the Training Department.

3. Shift group discussion, to be conducted on-shift by the Shift Operating Engineer.

3. Annual Evaluation

All licensed operators shall be evaluated annually prior to Labor Day by participation in an oral and a written examination.

Annual Oral Examination

All licensed operators shall receive an oral examination from someone of the plant management staff other than the individual's shift members or immediate supervisor annually prior to Labor Day. The oral examination shall be designed to:

1. Evaluate each operator's understanding of the operation of systems and components and knowledge of operating procedures.
2. Evaluate each operator's competency and knowledge of action to be taken during actual or simulated abnormal and emergency conditions.

An operator failing to achieve a satisfactory evaluation on the annual operating examinations shall be placed into an accelerated training program developed to correct the identified weakness. The scope and duration of each accelerated training program shall be based on management evaluation in each instance it is required. Following completion of the accelerated training program, the operator shall be required to take and pass a second oral evaluation.

Annual Written Examination

All operators shall receive a written examination comparable to the NRC examinations annually prior to Labor Day to determine the effectiveness of the overall requalification program and to define those areas where additional emphasis is required. A grade of 80% or greater in a particular area will exempt the individual from attendance at lectures in this area during the upcoming requalification year. An overall grade average of less than 80% or any category grade of less than 70% shall require the individual to be placed on an accelerated training program prepared to correct the identified weakness. The scope and duration of the accelerated training program shall be based upon management evaluation in each instance it is required. During participation in this accelerated training program, the operator shall not be placed in a position where he is performing licensed duties. Following completion of the accelerated training program, the operator shall be required to take and pass a second written examination in those areas in which he was deficient.

4. Training Program Documentation

Copies of the following requalification records shall be maintained for two (2) years following the date of recorded event or requalification program completion:

a. Licensed Operator Requalification Summary

b. Topic quizzes, answers given by licensee and quiz answer key

c. On-the-job training records

d. Change review records

e. Annual Written Examination, answers given by licensee and answer key

f. Annual oral examination reports

g. Accelerated training programs (if assigned)

A permanent record shall be maintained for each operator containing verification of each program completion and the overall grade scores for the two (2) year program. This permanent record file shall be maintained for the life of the facility and conform with the requirements of 10CFR55 Appendix A.

Senior Operator License Limited to Fuel Handling

A licensed operator requalification program designed to maintain a continuing high degree of knowledge and proficiency as required by 10CFR50 and 10CFR55, Appendix A, shall be established for the Donald C. Cook Nuclear Plant. It shall apply to plant personnel that are licensed Senior Reactor Operators Limited to Fuel Handling (licensed fuel handlers) that are required to routinely supervise fuel handling operations, as well as those who perform such duties on an infrequent basis. A site appointed Training Coordinator has been assigned to administer this program.

The Senior Operator License Limited to Fuel Handling requalification program shall be conducted on a two-year cycle, commencing at the time of initial plant licensing. The requalification program shall consist of:

1. Formal classroom lectures
2. On-the-job training
3. An annual evaluation
4. Training documentation

1. Classroom Lectures

Senior Operators Limited to Fuel Handling (SROL) shall be responsible for all the requirements of those in paragraph one of the Licensed Operator Requalification

Program as it relates to fuel handling as follows:

a. Reactor and Fuel Characteristics

b. Equipment and Instrumentation, Description and Design

c. Procedures and Limitations

d. Emergency Systems and Safety Devices

e. Health Physics and Radiation Protection

f. Technical Specifications

The annual lecture series for an SROL will be of an estimated length of 20 hours but, in no case, less than 16 hours.

2. On-The-Job Training

Senior Operators Limited to Fuel Handling (SROL) shall be responsible for all requirements of those in paragraph two of the Licensed Operator Requalification Program with the following exceptions:

a. All the requirements of 2A

b. That portion of 2B dealing with on-shift discussions. These discussions will be held during day shift and shall be conducted by the Fuel Handling Foreman.

3. Annual Evaluation

Senior Operators Limited to Fuel Handling (SROL) shall be responsible for all requirements of those in paragraph three of the Licensed Operator Requalification Program with the following exception, the scope of the oral and written examination shall be commensurate with the lectures, and within the five (5) categories enumerated in paragraph 1a.

4. Training Documentation

Senior Operators Limited to Fuel Handling (SROL) shall be responsible for all requirements of those in paragraph four of the Licensed Operator Requalification Program.

ATTACHMENT B

Operations Group Retraining (NRC Licensed Operator Requalification Training)

The D. C. Cook NRC licensed operator requalification program is designed to maintain an organization fully qualified to safely operate Cook Units 1 and 2 and associated auxiliary equipment. The program satisfies the requirements of 10CFR55, Appendix A, and meets the commitments made in the Licensed Operator Requalification Program submitted to and approved by the NRC. All licensed staff members will participate in the requalification program to the extent that their normal duties exclude the need for retraining in specific areas.

Non-licensed operators in the Operations Group are required to participate in training eventually leading to an NRC license and, as such, do not require retraining in their existing positions.

Program Description

The NRC Licensed Operator Requalification Program is conducted under the guidance of the D. C. Cook Training Coordinator. The program complies with the requirements of 10CFR55, Appendix A, and the commitments made in the Cook Requalification Program submitted to the NRC.

The overall requalification program schedule is illustrated in Figure 1. The requalification program is conducted for a continuous two-year cycle, Memorial Day to Memorial Day, and upon its conclusion a successive requalification program is immediately initiated. Each requalification cycle is divided into two (2) halves designated requalification year one (1) and requalification year two (2) respectively. Subsequent cycles will be designated year three (3) and year four (4), etc.

The requalification program for each requalification year consists of a lecture series, on-the-job training and annual written and oral examinations.

Lecture Series

A lecture series begins following Labor Day and runs through Memorial Day of the following year. Normally, lectures will be given throughout the period with the exception of periods of plant outages. Required lecture attendance is determined by the annual written simulated NRC examination administered at the conclusion of the previous requalification year.

On-The-Job Training

On-the-job training is conducted throughout the entire requalification year.

On-the-job training consists of:

1. Performance of Plant Control Manipulations
2. An on-shift abnormal and emergency procedure and periodic review program
3. Keeping abreast of design changes, procedural changes and license changes.

Annual Examinations

Oral and written examinations are given annually at the conclusion of each requalification year.

The "Cook Licensed Operator Requalification Summary" (Form O-3) summarizes the completion of required training. Note that the form is divided into three (3) sections:

I. Requalification Program - Year 1*

II. Requalification Program - Year 2*

III. Overall Requalification Program Summary 3* and 4, 5 and 6 etc.

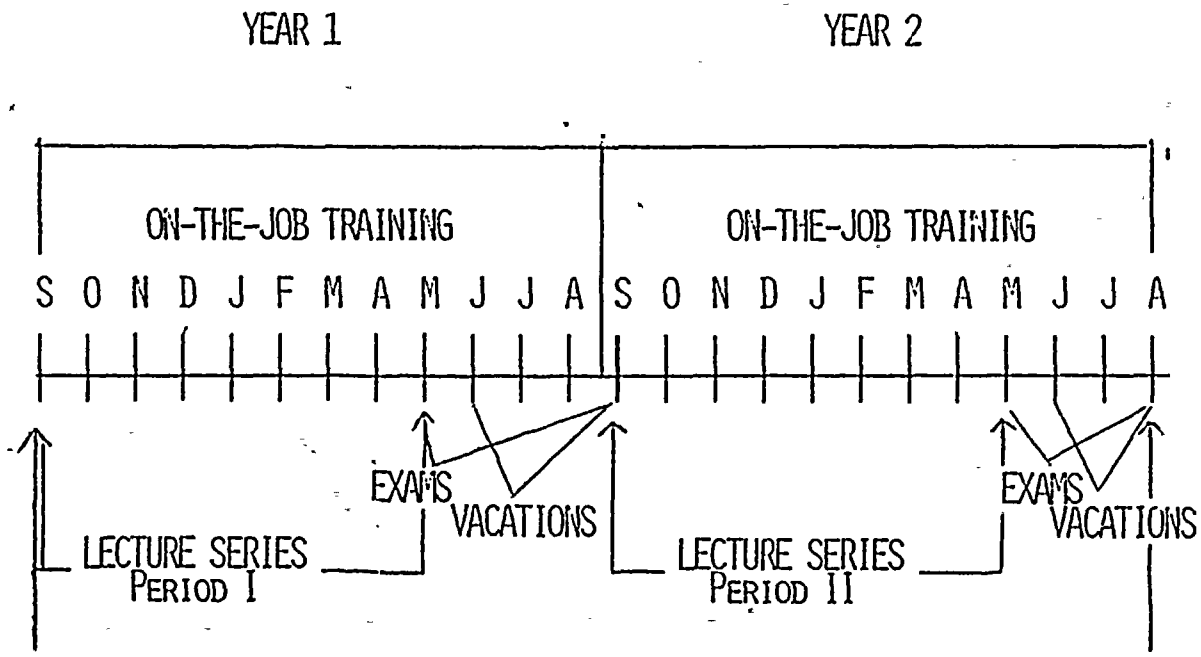

FIGURE 1. TYPICAL OVERALL NRC LICENSED OPERATOR REQUALIFICATION PROGRAM SCHEDULE

Lecture Series

All NRC Licensed Personnel shall normally attend 40 hours of lecture per year, except as exempted by the results of the annual written examination. Videotape or film presentations may be used to supplement the scheduled lecture series.

The requalification program lecture series consists of eight topics required for licensees depending upon their annual written examination performance. The topics are:

I. Theory and Principles of Operation (including Heat Transfer, Fluid Flow and Thermodynamics)

II. General and Specific Operating Characteristics

III. Plant Instrumentation and Control.

IV. Radiation Control and Safety (Applicable portions of Title 10, Chapter 1, CFR)

V. Plant Protection Systems

VI. Engineered Safety Systems/Technical Specifications

VII. Features of Facility Design

VIII. Normal, Abnormal and Emergency Procedures.

Following the completion of the previous requalification year annual written examination, the Training Coordinator will utilize Section I/II-A of the "Cook Licensed Operator Requalification Summary" to determine the lectures that each operator will be required to attend during the upcoming lecture period. A grade of less than 80% on any specified section of the written examination will require lecture attendance on a related subject. For example, an individual who receives less than 80% on all sections of the written examination will be required to attend up to 40 hours of lecture during the upcoming lecture series while another individual receiving a grade greater than 80% in all sections may not be required to attend

any lectures. The number of hours of lecture under each lecture topic and lecture titles will be based on operator exam performance and noted operator weak areas.

Each requalification year lecture series begins after Labor Day and runs through to Memorial Day of the following calendar year. Lectures are not normally held during the months of June, July and August due to the heavy vacation schedule. Since 40 hours of lecture are scheduled during the nine month period, lectures will normally be given at the rate of eight hours per shift cycle.

The Training Coordinator is responsible for the conduct of the requalification training lectures. As such, he will establish training dates, determine detailed lecture content, assign lecturers for each lecture.

Shift Supervisors are responsible for ensuring that operators attend required training lectures on the training dates specified by the Training Coordinator. Although licensed operators are required to attend only those lectures where they have received less than 80% in the corresponding section of previous requalification year written examination, all licensed operators will be encouraged to attend.

The Training Coordinator will assign lectures utilizing Form G-2, "Cook Lecture Attendance Form." The assigned lecturer is responsible for delivering a well-prepared lecture. Lecture attendance will be documented on Form G-2, signed and returned to the Training Coordinator for documentation in Section I/IIB of the licensee's "Cook Licensed Requalification Summary."

Note that not only the specific lecture title is documented in Section I/IIB but also the date and lecture length.

Written quizzes will be administered at the conclusion of each lecture series

topic. Quiz grades will be recorded on Form O-3 and the quiz retained in the individual's training record.

For those whose attendance was mandatory at the lecture, a grade less than 80% on the quiz will indicate a need for additional training in that subject. Additional training normally consists of reviewing the material referenced in the lesson plan. After the material has been reviewed, the operator is required to demonstrate satisfactory knowledge of the subject by either passing a second quiz or oral examination on that topic. Completion of the second quiz or oral examination will be documented by the examiner in the appropriate location of Form O-3, Section I/IIB. "Satisfactory" will be entered in the "quiz re-take grade" section following the satisfactory completion of an oral re-examination.

A similar procedure is followed if an individual who is required to attend a lecture is, for unavoidable reasons, unable to attend. After reviewing the material contained in the lesson plan, he is required to complete a quiz on that topic as specified in the previous paragraph. Completion of the lecture is documented in the normal manner, with the exception that under lecture "length", the Training Coordinator will affix his signature instead of documenting the length of the lecture.

On-The-Job Training

On-the-job training consists of:

1. Performance of Plant Control Manipulations
2. Participation in an on-shift abnormal and emergency procedure and periodic review programs
3. Keeping abreast of design changes, procedural changes and license changes

Plant Control Manipulations

Each licensed operator shall, during each two-year requalification training cycle, perform a minimum of plant control manipulation which demonstrate his skill and/or familiarity with plant control systems. Each licensed senior operator shall either manipulate the controls or direct or evaluate the activities of others during these control manipulations. Credit for a manipulation shall be limited to the operator performing the task and one senior operator engaged in directing the operation and one senior operator evaluating the operation.

Normal control manipulations, such as plant or reactor startups, must be performed. Control manipulations during abnormal or emergency situations may be walked through with and evaluated by a member of the training shift; however, preference is to perform these manipulations at an appropriate simulator.

The following control manipulations shall be performed during each two-year requalification cycle. The starred items shall be performed annually.

PWR

1. Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established
2. Plant Shutdown
3. Manual control of steam generators and/or feedwater during startup or shutdown
4. Boration and/or dilution during power operation.
5. Any significant (>10%) power changes in manual rod control
6. Loss of coolant, including:
    1. Significant steam generator leaks
    2. Inside and outside primary containment
    3. Large and small, including leak-rate determination.
    4. Saturated Reactor Coolant Response.

7. Loss of electrical power (and/or degraded power sources)

*8. Loss of core coolant flow/natural circulation

9. Loss of condenser vacuum.

10. Loss of Essential Service Water

11. Loss of shutdown cooling.

12. Loss of Component Cooling System or cooling to an individual component

13. Loss of normal feedwater or normal Feedwater System failure

*14. Loss of all feedwater (normal and emergency)

15. Loss of protective system channel

16. Mispositioned control rod(s) (or rod drops)

17. Inability to drive control rods.

18. Conditions requiring use of emergency boration

19. Fuel cladding failure or high activity in reactor coolant or offgas

20. Turbine or generator trip

21. Malfunction of Automatic Control System(s) which affect reactivity

22. Malfunction of Reactor Coolant Pressure/Volume Control System

23. Reactor Trip

24. Main steam line break (inside or outside containment)

25. Nuclear instrumentation failure(s)

*Required at least annually

Even if the above manipulations are not needed to be accomplished at a simulator, each licensed operator shall attend a training session at an appropriate simulator annually.

Plant control manipulations are documented in the following manner:

When an operator performs or a senior operator supervises the performance of a control manipulation, he documents it in the control room plant control log book.

Periodically, the Training Coordinator reviews these forms and transcribes the manipulation to Form O-4, "Cook Plant Control Manipulation Record." At the end of each requalification year (each May) or when the form is completed, such as attendance at a simulator course, the Training Coordinator files them in each individual's training record. These forms will be reviewed by the Training Coordinator prior to attending simulator training to determine which manipulations must be performed during this training. Attendance at simulator training will be documented by the use of the plant control manipulation record and/or a copy of the course completion certificate issued from the simualtor facility. Further records of classroom lectures, etc. from the simulator course may be filed in the requalification records, but are not mandatory.

On-Shift Abnormal and Emergency Procedures and Periodic Review Program

In order to ensure that operators keep abreast of abnormal and emergency procedures and other subjects important to continued safe plant operations, an on-shift review program has been established.

On-shift review assignments are made periodically by the Training Coordinator by routing appropriately filled out copies of Form O-5, "On-Shift Review Form", to each licensed operator. Form O-5 not only contains a list of materials to be reviewed but also space to indicate the method by which the review was completed.

Normally, a discussion session will be held by the Shift Operating Engineer to review the material listed on Form O-5. If personnel are unable to attend the session, they are required to review the referenced material by themselves.

After each licensee has completed the on-shift review, he or she will sign and

date Form O-5 and return it to the Training Coordinator. The Training Coordinator then documents completion of the periodic on-shift review in Section I/IID of Form O-3, "Licensed Operator Requalification Summary".

Facility Design Change, Procedure Change and Facility License Change Review

Significant changes in facility design, facility license and procedures will be reviewed by all NRC licensed operators. The Training Coordinator is responsible for listing items to be reviewed on Form G-4 and routing this form to all licensed personnel. Each licensed operator is responsible for reviewing these revisions and documenting this review on Form G-4.

When all personnel have completed the review, the Training Coordinator collects the completed form and maintains it in a chronological file for a period of two (2) years.

Annual Oral Examination

At the conclusion of each requalification year, the Training Coordinator or designated station staff member will administer an oral examination to each licensed operator. During the walkthrough special emphasis is given to the operator's knowledge of the operation of equipment and procedures in addition to operator response to actual or simulated abnormal and emergency conditions. Those licensed station staff members designated by the Training Coordinator to administer an annual oral examination may not be required to take an oral examination themselves.

The plant walkthrough examination will be conducted utilizing Form O-2, "Operating and Oral Examination Summary Report". Completion of the walkthrough

will be documented in Section I/IIF of the "Licensed Operator Requalification Summary".

The annual oral examination is a sat/unsat. examination. If the performance of any operator is unsatisfactory, the operator will be placed in an accelerated training program to correct the deficiencies noted. This training program will be assigned by the Training Coordinator based upon weak areas noted in the oral examination. The content of the accelerated review program will be documented on Form O-6, "Accelerated Training Record". After the review program has been completed, the operator is required to demonstrate satisfactory knowledge in the identified weak area by receiving a second oral examination from either the Training Coordinator or the original oral examiner. The sequence of events to be followed after an oral examination failure is outlined in Section I/IIF of the "Licensed Operator Requalification Summary".

Annual Written Examinations

An operationally oriented, simulated NRC written examination will be administered to all NRC licensed operators at the conclusion of each requalification year. This examination, which will be prepared and graded by the Training Coordinator, will serve as the basis for determining required lecture attendance for the upcoming year's lecture series.

The results of each individual's annual examination will be recorded in Section I/IIE of Form O-3. An individual failing to achieve an overall examination grade of 80%, or 70% in any category, will immediately be removed from licensed duties and placed into an accelerated training program.

The content of the accelerated training program will be documented on Form 0-6, "Accelerated Review Record". The sequence of events to be followed after an examination failure is outlined in Section I/IIE-1 of the "Licensed Operator Requalification Summary". The operator is required to pass a second written examination prior to resuming licensed duties.

Individuals receiving a grade of less than 80% in any particular area of the annual examination shall be required to attend lectures on that subject during the upcoming year's lecture series. The procedure to be followed to determine required lecture attendance is illustrated in Section I/IIA of the "Licensed Operator Requalification Summary" and is described in the "Lecture Series" of this administrative training procedure.

Program Schedule

The requalification program schedule is as described in "Program Description" and as illustrated in Figure #1.

The Training Coordinator has the authority to modify the normal requalification training schedule as special circumstances arise. The Training Coordinator will keep the Plant Manager informed of all changes in the program schedule.

Program Responsibility

Responsibilities for Operator Requalification Training are summarized below:

Training Coordinator

The Training Coordinator is responsible for:

1. Implementing the Licensed Operator Requalification Training Program.
2. Preparing and grading the annual simulated NRC written examination.
3. Utilizing the results of the annual written exam, determining required lecture attendance for the upcoming lecture series.
4. Preparing any required accelerated training programs.
5. Determining the content of each lecture topic.
6. Setting all requalification training lecture dates.
7. Developing or approving a lesson plan for each requalification lecture.
8. Assigning qualified lecturers for requalification lectures.
9. Approving quizzes that may be given in conjunction with the requalification training lecture series.
10. Preparing, administering and grading any required quiz retakes.
11. Periodically reviewing plant control manipulation records in the control room.
12. Preparing assignments for and documenting completion of the on-shift review program.
13. Scheduling the annual oral examination at the end of each requalification year and assigning examiners.
14. Modifying the normal requalification training schedules as necessary due to special circumstances.
15. Maintaining all licensed operator requalification program documentation as specified in "Program Documentation".
16. Making applications for operator license renewals based upon successful participation in the requalification training program.
17. Approving all training materials used in the on-site training programs. This includes documents such as abstracts and training aids such as videotape.

Shift Operating Engineers

Shift Operating Engineers are responsible for:

1. Assuring that on-shift review assignments are completed by licensed personnel on their shift. Specifically, this means conducting discussion or training sessions as specified by the Training Coordinator.
2. Overseeing the performance of on-shift plant control manipulations and documenting satisfactory performance in the control manipulations record log for each licensed operator on his shift.

Assigned Lecturers

Individuals assigned to give requalification lectures are responsible for:

1. Obtaining or preparing a lecture lesson plan for approval of the Training Coordinator.
2. Delivering a well-prepared lecture in accordance with the lecture lesson plan.
3. Documenting lecture completion and lecture attendance on Form G-1, "Lecture Attendance Form", and returning Form G-1 to the Training Coordinator.
4. Preparing, administering, and grading quizzes as designated by the Training Coordinator. All quizzes must be approved by the Training Coordinator.

Program Documentation

The Training Coordinator is responsible for maintaining licensed operator requalification training records. This includes documentation maintained in each licensed individual's training record and general requalification program files.

Individual Training Records

The following requalification training program documentation will be maintained in each individual's training record. If desired, for ease of documentation, the current Licensed Operator Requalification summary for each licensed operator may be maintained in one common file.

DOCUMENTATION	RETENTION PERIOD
Form 0-3, Licensed Operator Requalification Summary	2 years after program completion
Form 0-2, Operating and Oral Examination Summary Report	2 years after program completion
Form 0-4, Plant Control Manipulation Record	2 years after program completion
Form 0-5, On-Shift Review Form	2 years after program completion
Annual Written Examination	2 years after program completion
Form 0-6, Accelerated Training Record (if required)	2 years after program completion

General Requalification Program Files

The following requalification training program documentation will be maintained in general files:

DOCUMENTATION	RETENTION PERIOD
Annual Written Examination Answer Key	2 years after program completion
Copies of Lecture Series Quizzes	2 years after program completion
Copies of Quiz Answer Keys	2 years after program completion

FORM O-5

ON-SHIFT REVIEW FORM

TO: Licensee_____

SHIFT TRAINING FOR THE MONTHS OF_____

REVIEW THE FOLLOWING ASSIGNMENTS:

I have completed the above assigned monthly review by 1) participation in a group shift session_____, or 2) individual study_____.

_____ _____

Signature, Licensee Date

7/80

Form O-3

LICENSED OPERATOR REQUALIFICATION SUMMARY

NAME _____

Training Cycle Dates: June 19__ - May 19__

LICENSE TYPE: _____ LICENSE NUMBER: _____

DATE ISSUED: _____

I. REQUALIFICATION PROGRAM - YEAR_____

A. Determine required lecture attendance based on the results of the annual written examination administered at the conclusion of the previous requalification year.

Date Administered _____

Required For		Lecture Topics	✓ = Areas of Required Attendance
<80, Section A, H, I, N	I	Theory & Principles of Operations	_____
<80, Section C, K	II	General & Specific Operating Characteristics	_____
<80, Section D.	III	Plant Instrumentation & Control	_____
<80, Section G, J	IV	Radiation Control & Safety	_____
<80, Section E	V	Plant Protection Systems	_____
<80, Section E or M	VI	Engineered Safety Systems/ Tech. Specifications	_____
<80, Section B, L	VII	Features of Facility Design	_____
<80, Section F.	VIII	Normal, Abnormal & Emergency Procedures	_____

_____
TRAINING COORDINATOR

Form 0-3

II. REQUALIFICATION PROGRAM - YEAR _____

A. Determine required lecture attendance based on the results of the annual written examination administered at the conclusion of the previous requalification year.

Date Administered _____

Required For		Lecture Topics	✓ = Areas of Required Attendance
<80, Section A, H, I, N	I	Theory & Principles of Operations	_____
<80, Section C, K	II.	General & Specific Operating Characteristics	_____
<80, Section D	III.	Plant Instrumentation & Control	_____
<80, Section G, J	IV	Radiation Control & Safety	_____
<80, Section E.	V	Plant Protection Systems	_____
<80, Section E or M	VI	Engineered Safety Systems/ Tech. Specifications	_____
<80, Section B, L	VII	Features of Facility Design	_____
<80, Section F.	VIII	Normal, Abnormal & Emergency Procedures	_____

_____
TRAINING COORDINATOR

B. LECTURE ATTENDANCE SUMMARY

I. THEORY AND PRINCIPLES OF OPERATION

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

II. GENERAL AND SPECIFIC OPERATING PROCEDURES

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

III. PLANT INSTRUMENTATION AND CONTROL

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

B. LECTURE ATTENDANCE SUMMARY

IV. RADIATION CONTROL AND SAFETY

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

V. PLANT PROTECTION SYSTEMS

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

VI. ENGINEERED SAFETY SYSTEMS/TECHNICAL SPECIFICATIONS

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

B. LECTURE ATTENDANCE SUMMARY

VII. FEATURES OF FACILITY DESIGN

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

VIII. NORMAL, ABNORMAL AND EMERGENCY PROCEDURE REVIEW

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

IX. OTHER

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

Form 0-3

C. PLANT CONTROL MANIPULATION SUMMARY

Manipulation Record reviewed and filed. Simulator Training completed on _____.
DATE

_____ DATE REVIEWED

_____ TRAINING COORDINATOR

D. ON-SHIFT REVIEW SUMMARY

PERIODIC ASSIGNMENT COMPLETED	DATE COMPLETED	INITIAL
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

_____ TRAINING COORDINATOR

E. ANNUAL WRITTEN EXAMINATION SUMMARY

Date Taken _____

RO	GRADE	MAKEUP
A. Principles of Reactor Operation	_____	_____
B. Features of Facility Design	_____	_____
C. General Operating Characteristics	_____	_____
D. Instruments and Controls	_____	_____
E. Safety and Emergency Systems	_____	_____
F. Standard & Emergency Operating Proc.	_____	_____
G. Radiation Control and Safety	_____	_____
H. Principles of Heat Transfer and Fluid Mechanics	_____	_____
OVERALL	_____	_____

SRO		
I. Reactor Theory	_____	_____
J. Radioactive Materials	_____	_____
K. Specific Operating Characteristics	_____	_____
L. Fuel Handling	_____	_____
M. Administrative Procedures	_____	_____
N. Theory of Fluids and Thermodynamics	_____	_____
OVERALL	_____	_____

1. Overall Grade less than 80% or any category less than 70%.

   a. Individual removed from licensed duties

   _____ DATE REMOVED _____ SIGNATURE, PLANT MANAGER

   b. Accelerated training program assigned (Form 0-6)

   _____ DATE ASSIGNED _____ SIGNATURE, TRAINING COORDINATOR

   c. Accelerated training program completed

   _____ DATE COMPLETED _____ SIGNATURE, TRAINING COORDINATOR

   d. Makeup exam passed

   _____ MAKEUP GRADE _____ SIGNATURE, TRAINING COORDINATOR

   e. Individual returned to licensed duties

   _____ DATE RETURNED _____ SIGNATURE, PLANT MANAGER

2. Overall Grade Greater than or Equal to 80%.

   Determine lecture attendance requirements for the upcoming lecture series in accordance with Section II-A.

F. Annual Oral Examination Summary (Attach Form 0-2)

_____ DATE _____ SIGNATURE, EXAMINER

1. Unsatisfactory Results

a. Accelerated training program assigned (Form 0-6)

_____ DATE _____ SIGNATURE, TRAINING COORDINATOR

b. Accelerated training program completed

_____ DATE _____ SIGNATURE, TRAINING COORDINATOR

c. Oral Re-examination Completed (Attach Form 0-2)

_____ DATE _____ SIGNATURE, EXAMINER

III. REQUALIFICATION PROGRAM SUMMARY

A. Annual Written Examination Results:

Year _____ Grade _____ T. C. Initial _____

Year _____ Grade _____ T. C. Initial _____

B. Plant Control Manipulations Reviewed:

Year _____ T. C. Initial _____

Year _____ T. C. Initial _____

Total Required Manipulations complete: T. C. Initial _____

C. Oral Examination Complete:

Year _____ T. C. Initial _____

Year _____ T. C. Initial _____

REQUALIFICATION PROGRAM CERTIFIED COMPLETE:

_____ DATE

_____ TRAINING COORDINATOR

B. LECTURE ATTENDANCE SUMMARY

I. THEORY AND PRINCIPLES OF OPERATION

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

II. GENERAL AND SPECIFIC OPERATING PROCEDURES

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

III. PLANT INSTRUMENTATION AND CONTROL

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

B. LECTURE ATTENDANCE SUMMARY

IV. RADIATION CONTROL AND SAFETY

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

V. PLANT PROTECTION SYSTEMS

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

VI. ENGINEERED SAFETY SYSTEMS/TECHNICAL SPECIFICATONS

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

B. LECTURE ATTENDANCE SUMMARY

VII. FEATURES OF FACILITY DESIGN

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

VII. NORMAL, ABNORMAL, AND EMERGENCY PROCEDURE REVIEW

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

IX. OTHER

SPECIFIC LECTURE TITLE	QUIZ GRADE	DATE	LENGTH
Average Quiz Grade			
Quiz Retake Grade (if necessary)			

Form 0-3

C. PLANT CONTROL MANIPULATION SUMMARY

Manipulation record reviewed and filed. Simulator Training completed on _____
DATE

_____ DATE REVIEWED

_____ TRAINING COORDINATOR

D. ON-SHIFT REVIEW SUMMARY

PERIODIC ASSIGNMENT COMPLETED	DATE COMPLETED	INITIAL
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

_____ TRAINING COORDINATOR

E. ANNUAL WRITTEN EXAMINATION SUMMARY

Date Taken _____

RO	GRADE	MAKEUP
A. Principles of Reactor Operation	_____	_____
B. Features of Facility Design	_____	_____
C. General Operating Characteristics	_____	_____
D. Instruments and Controls	_____	_____
E. Safety and Emergency Systems	_____	_____
F. Standard & Emergency Operating Proc.	_____	_____
G. Radiation Control and Safety	_____	_____
H. Principles of Heat Transfer and Fluid Mechanics	_____	_____
OVERALL	_____	_____

SRO		
I. Reactor Theory	_____	_____
J. Radioactive Materials	_____	_____
K. Specific Operating Characteristics	_____	_____
L. Fuel Handling	_____	_____
M. Administrative Procedures	_____	_____
N. Theory of Fluids and Thermodynamics	_____	_____
OVERALL	_____	_____

1. Overall Grade less than 80% or any category less than 70%.

   a. Individual removed from licensed duties

   _____ DATE REMOVED _____ SIGNATURE, PLANT MANAGER

   b. Accelerated training program assigned (Form 0-6)

   _____ DATE ASSIGNED _____ SIGNATURE, TRAINING COORDINATOR

   c. Accelerated training program completed

   _____ DATE COMPLETED _____ SIGNATURE, TRAINING COORDINATOR

   d. Makeup exam passed

   _____ MAKEUP GRADE _____ SIGNATURE, TRAINING COORDINATOR

   e. Individual returned to licensed duties

   _____ DATE RETURNED _____ SIGNATURE, PLANT MANAGER

2. Overall Grade Greater than or Equal to 80%.

   Determine lecture attendance requirements for the upcoming lecture series in accordance with Section II-A.

F. Annual Oral Examination Summary (Attach Form 0-2)

DATE	SIGNATURE, EXAMINER

1. Unsatisfactory Results

a. Accelerated training program assigned (Form 0-6)

DATE	SIGNATURE, TRAINING COORDINATOR

b. Accelerated training program completed

DATE	SIGNATURE, TRAINING COORDINATOR

c. Oral Re-examination Completed (Attach Form 0-2)

DATE	SIGNATURE, EXAMINER

FORM O-2

OPERATING AND ORAL EXAMINATION SUMMARY REPORT

LICENSE TYPE SRO___ RO___ LICENSEE_____

	SIGNATURE	DATE
1. KNOWLEDGE OF LATEST REVISION OF:		
a. Facility Design Changes		
b. Change in Procedures		
c. Facility License Changes		
2. DISCUSS CONTENTS OF:		
a. Abnormal Procedures (list procedures reviewed)		
b. Emergency Procedures (list procedures reviewed)		

FORM O-2
OPERATING AND ORAL EXAMINATION SUMMARY REPORT

	SIGNATURE	DATE

3. PLANT WALKTHROUGH:

a. System and Components Discussed

b. Evolutions Discussed

c. Evolutions Performed

FORM O-2
OPERATING AND ORAL EXAMINATION SUMMARY REPORT

	SIGNATURE	DATE
3. PLANT WALKTHROUGH: (Continued)		
d. Procedures Discussed or Performed		
e. Miscellaneous (Reactor Theory, Tech. Specs., Radiation Protection, Emergency Plan)		

FORM O-2
OPERATING AND ORAL EXAMINATION SUMMARY REPORT

	SIGNATURE	DATE

3. PLANT WALKTHROUGH:

e. Miscellaneous (Continued)

f. Person Giving Oral Examination

NAME_____ DATE_____

JOB TITLE_____ ORAL EXAM GRADE_____

g. Comments on Examination

_____

_____

_____

_____

_____

_____

_____

_____

_____

FORM 0-4

D. C. COOK NUCLEAR POWER PLANT
OPERATOR REQUALIFICATION PROGRAM

NAME: _____ _____

LICENSE: RO/SRO

JOB TITLE: _____

RECORD OF PLANT CONTROL MANIPULATIONS

		ACTIVITY	DATE	SUPERVISOR'S INITIALS
*	1.	Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.		
	2.	Plant Shutdown.		
*	3.	Manual control of steam generators and/or feedwater during startup or shutdown.		
	4.	Boration and/or dilution during power operation.		
*	5.	Any significant (> 10%) power changes in manual rod control.		
*	6.	Loss of Coolant, including: 1) Significant steam generator leaks. 2) Inside and outside primary containment. 3) Large and small, including leak-rate determination 4) Saturated Reactor Coolant response		
	7.	Loss of electrical power (and/or degraded power sources).		
*	8.	Loss of core coolant flow/ natural circulation.		
	9.	Loss of condenser vacuum.		

	ACTIVITY	DATE	SUPERVISOR'S INITIALS
10.	Loss of Essential Service Water.		
11.	Loss of shutdown cooling.		
12.	Loss of Component Cooling System or cooling to an individual component.		
13.	Loss of normal feedwater or normal Feedwater System failure.		
* 14.	Loss of all feedwater (normal and emergency).		
15.	Loss of protective system channel.		
16.	Mispositioned control rod(s) (or rod drops).		
17.	Inability to drive control rods.		
18.	Conditions requiring use of emergency boration.		
19.	Fuel cladding failure or high activity in reactor coolant or offgas.		
20.	Turbine or generator trip.		
21.	Malfunctions of Automatic Control System(s) which affect reactivity.		

ACTIVITY	DATE	SUPERVISOR'S INITIALS
22. Malfunction of Reactor Coolant Pressure/Volume Control System.		
23. Reactor Trip.		
24. Main steam line break (inside or outside of containment).		
25. Nuclear instrumentation failure(s)		

* Required at least annually.

OPERATOR EVALUATION

D. C. COOK NUCLEAR PLANT
LICENSED REQUALIFICATION PLANT WALK-THROUGH

WORK SHEET

	3 = SATISFACTORY	COMMENTS
PLANT FIRE SYSTEMS	1 2 3 4 5	
CONTAINMENT ISOLATIONS	1 2 3 4 5	
SERVICE WATER:		
ESW	1 2 3 4 5	
NESW	1 2 3 4 5	
CCW	1 2 3 4 5	
TECH. SPECIFICATIONS	1 2 3 4 5	
EXCORE NUCLEAR INSTRUMENTATION:		
THEORY	1 2 3 4 5	
DESIGN	1 2 3 4 5	
TECH. SPECIFICATIONS	1 2 3 4 5	
OTHER _____	1 2 3 4 5	
ECCS:		
CTS	1 2 3 4 5	
SIS	1 2 3 4 5	
RHR	1 2 3 4 5	
ACCUM	1 2 3 4 5	
TECH. SPECIFICATIONS	1 2 3 4 5	
OTHER _____	1 2 3 4 5	
REACTOR COOLANT:		
PUMPS	1 2 3 4 5	

REACTOR COOLANT: (Continued)

SEALS . . . . . 1 2 3 4 5 _____

PRESSURIZER . . . . . 1 2 3 4 5 _____

PRT . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

RODS AND REACTOR CONTROL:

RODS . . . . . 1 2 3 4 5 _____

ROD CONTROL . . . . . 1 2 3 4 5 _____

PRI . . . . . 1 2 3 4 5 _____

INSTRUMENTATION . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

STEAM DUMP . . . . . 1 2 3 4 5 _____

TURBINE CONTROLS . . . . . 1 2 3 4 5 _____

SWGLC . . . . . 1 2 3 4 5 _____

FEEDWATER:

MAIN . . . . . 1 2 3 4 5 _____

AUXILIARY . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

TURBINE AUXILIARIES:

OIL . . . . . 1 2 3 4 5 _____

TACW . . . . . 1 2 3 4 5 _____

H_2 . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

OPERATOR EVALUATION
PAGE THREE

ELECTRICAL DISTRIBUTION:

GENERAL . . . . . 1 2 3 4 5 _____

EMERGENCY . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . . 1 2 3 4 5 _____

GENERATOR . . . . . 1 2 3 4 5 _____

AIR SYSTEMS:

PLANT . . . . . 1 2 3 4 5 _____

CONTROL . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

CIRCULATING WATER . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

APDMS:

THEORY . . . . . 1 2 3 4 5 _____

DESIGN . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . . 1 2 3 4 5 _____

WASTE DISPOSAL:

LIQUID . . . . . 1 2 3 4 5 _____

GASEOUS . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

BORIC ACID RECYCLE . . . . . 1 2 3 4 5 _____

ICE CONDENSER . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

SPENT FUEL PIT . . . . . 1 2 3 4 5 _____

WASTE DISPOSAL (Continued)

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

FUEL HANDLING . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS . . . . . 1 2 3 4 5 _____

D. C. COOK NUCLEAR PLANT
LICENSED REQUALIFICATION PLANT WALK-THROUGH

DISCUSSION

3 = SATISFACTORY | COMMENTS

RADIATION PROTECTION - HEALTH PHYSICS:

SHIELDING . . . . . 1 2 3 4 5 _____

INSTRUMENTS . . . . . 1 2 3 4 5 _____

LIMITS . . . . . 1 2 3 4 5 _____

TECH. SPECIFCATIONS . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . . 1 2 3 4 5 _____

REACTOR THEORY:

SUBCRITICAL MULTIPLICATION . . 1 2 3 4 5 _____

Keff . . . . . 1 2 3 4 5 _____

DOPPLER . . . . . 1 2 3 4 5 _____

POWER DEFECT . . . . . 1 2 3 4 5 _____

XENON, SAMARIUM . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

CONTROLS:

ROD CONTROL . . . . . 1 2 3 4 5 _____

REACTOR PROTECTION . . . . . 1 2 3 4 5 _____

SGWLC . . . . . 1 2 3 4 5 _____

TURBINE . . . . . 1 2 3 4 5 _____

STEAM DUMP . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

INSTRUMENTATION:

EXCORE . . . . . 1 2 3 4 5 _____

INCORE . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . . 1 2 3 4 5 _____

SAFETY ANALYSIS AND CORE:

FUEL . . . . . 1 2 3 4 5 _____

DESIGN . . . . . 1 2 3 4 5 _____

LOCA . . . . . 1 2 3 4 5 _____

STEAM BREAK . . . . . 1 2 3 4 5 _____

STUCK ROD . . . . . 1 2 3 4 5 _____

REACTIVITY ADDITION . . . . . 1 2 3 4 5 _____

OTHER _____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

NORMAL AND EMERGENCY PROCEDURES:

NORMAL _____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

EMERGENCY _____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS:

SAFETY LIMITS . . . . . 1 2 3 4 5 _____

TECH. SPECIFICATIONS: (Continued)

LSSS . . . . . 1 2 3 4 5 _____

LCO _____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

_____ . . . . 1 2 3 4 5 _____

OVERALL EVALUATION:

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OPERATOR _____ DATE _____ EXAMINER _____ DATE _____

Form 0-6

ACCELERATED TRAINING RECORD

NAME _____ TITLE _____ DATE ASSIGNED _____

A. Reason for accelerated review:

1. ( ) Annual Written Exam Failure Grade _____ Date Taken _____
2. ( ) Annual Oral Exam Unsatisfactory Date Taken _____
3. ( ) Other _____ Date Taken _____

B. Review Assignment:

C. Recommendation for Re-Exam

Accelerated training program certified complete

_____ DATE _____ SIGNATURE, LICENSED OPERATOR

_____ DATE _____ SIGNATURE, TRAINING COORDINATOR

D. Makeup Examination Results:

1. ( ) Written Examination Grade _____ Date _____
2. ( ) Oral Examination Sat _____ Unsat _____ Date _____
3. ( ) Other _____ Sat _____ Unsat _____ Date _____

FORM G-4 No._____

INDIANA & MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

CHANGE REVIEW RECORD

I. DATE _____

II. DOCUMENT DESCRIPTION:

No._____ Title _____ Rev. # _____

_____ _____ _____

III. TYPE:

___DESIGN CHANGE ___PROCEDURAL CHANGE ___LICENSE CHANGE ___OTHER _____

VI. CHANGE SUMMARY: ___ATTACHMENTS: _____

V. REQUIRED TRAINING:

__FORMAL TRAINING LECTURE __INDIVIDUAL REVIEW __ SHIFT GROUP DISCUSSION

_____
TRAINING COORDINATOR

VI. AFTER COMPLETING THE REQUIREMENTS OF SECTION V, PLEASE INITIAL:

NAME	INITIALS	NAME	INITIALS

CLASS ROSTER

INSTRUCTOR _____ DATE _____

COURSE TITLE _____ FROM _____ TO _____

MATERIAL COVERED

_____

_____

NAME (Please Print)

1.	21.
2.	22.
3.	23.
4.	24.
5.	25.
6.	26.
7.	27.
8.	28.
9.	29.
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17.	37.
18.	38.
19.	39.
20.	40.