APPROVED T B Vaughn

DATE 5-4-84

CATAWBA NUCLEAR STATION
SHIFT ADVISOR PROGRAM

PURPOSE:

To define the Qualification, Duties and Responsibilities, Training and Reporting Relationship of the Catawba Nuclear Station (CNS) Shift Advisor (SA).

OBJECTIVE:

A. The SA will provide additional operating (NRC license) experience to the CNS Shift Supervisor (SS) and as appropriate other shift personnel until the following experience standard has been obtained. (Experience is accumulative at CNS and/or same type plant.)

1) Both the SS and the Senior Reactor Operator (SRO) in the Control Room have obtained a minimum of 6 weeks at greater than 20% power.

2) The SS has participated in at least 1 Startup and 1 Shutdown.

3) Either the SS or SRO in the Control Room have obtained 6 months Operating SRO experience on a similar plant that has been at greater than 20% power.

B. A SA shall be on duty on each shift that does not meet the above experience standard whenever:

1) The reactor is in Mode 4 or above.

C. The SS and the SA shall both report to the Shift Operating Engineer (SOE). The SS shall be responsible for safe operations. The SA shall advise the SS in safe operations. The SOE will resolve any situation in which the SS and SA cannot reach mutual agreement.

QUALIFICATIONS:

The Shift Advisors will:

1) Have at least 4 years Power Plant experience.

2) Have at least 2 years on-shift experience as a licensed operator (preferable 1 year of this as a SRO) at a similar type plant.

DUTIES AND RESPONSIBILITIES:

A. General

The SA will work clos[illegible] with the SS to insure that decisions made and actions taken by the S[illegible] sound and conducive to Nuclear Safety and Station Reliability. The SA will normally be located in or near the Control Room area and will be available to the SS at all times. As the SS acquires more operational experience, the SA will reduce his role as advisor to a monitoring role but be available for advice as needed.

B. Specific

1) Participate in SS shift turnovers.

2) Review Control Boards

3) Counsel with the SS and as appropriate with other shift personnel, and recommend appropriate action to operation (transients, startup, and shutdown), maintenance, and testing situations that occur on shift, including shutdown of the Unit.

4) The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.

5) The SA will not supervise licensed operators in [illegible]ents which require an operator's license.

PROGRAM EFFECTIVENESS:

The CNS Shift Operating Engineer will be responsible for the effectiveness of the CNS Shift Advisor Program.

TRAINING:

A. General

The SA's for CNS are experienced, Duke Power SRO's from McGuire Nuclear Station (MNS), CNS, and (if needed) Oconee Nuclear Station (ONS).

MNS and CNS are essentially identical plants with the same terminology, system designations, organizations and etc. which will greatly enhance our program. Training will familiarize the SA candidates with the Duties and Responsibilities of the SA. In addition the training will emphasize the significant differences between MNS and CNS for the candidates from MNS.

If candidates from ONS are to be utilized, a more detailed training program will be required.

B. Specific Revised 5/30/84

Training for SA's with varying background will be:

Attachment 1 - Catawba Nuclear Station Shift Advisor Training Program (Previously SRO Licensed CNS Personnel)

Attachment 2 - Catawba Nuclear Station Shift Advisor Training Program (SRO Licensed MNS Personnel)

Attachment 3 - Catawba Nuclear Station Shift Advisor Training Program (SRO Licensed ONS Personnel)
Attachment 3 will be added later if ONS SRO's are required for SA's at CNS.

Training for shifts will be:

Attachment 4 - Catawba Nuclear Station Shift Advisor Familiarization Program.

EVALUATION & EXPERIENCE:

Attachment 5 - Shift Advisor Evaluation

Attachment 6 - Shift Advisors Composite of Experience

ATTACHMENT 1

CATAWBA NUCLEAR STATION

SHIFT ADVISOR TRAINING PROGRAM

(PREVIOUSLY SRO LICENSED CATAWBA PERSONNEL)

CATAWBA SHIFT ADVISOR TRAINING PROGRAM
(PREVIOUSLY SRO LICENSED CATAWBA PERSONNEL)

The Shift Advisor Training Program will enable experienced individuals that have held an SRO license on the Oconee Nuclear Station and have completed the Systems, Theory Simulator and Procedures Segments of the Catawba Nuclear Station Cold License Preparatory Training to advise the Catawba Nuclear Station Shift Supervisor as to the impact of plant operational, maintenance and testing activities. The program will familiarize the candidates with the duties and responsibilities of a Shift Advisor.

To successfully complete the program a candidate must have received training on the Duties and Responsibilities of a Shift Advisor and have successfully completed the Systems, Theory, Simulator and Procedures Segments of the Catawba Cold License Preparatory Training with an average grade of $\geq$ 80% on the written examinations.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

INDEX

RESPONSIBILITIES AND DUTIES OF THE SHIFT ADVISOR

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Responsibilities and Duties of the Shift Advisor

1.0 Lesson Objectives

1.1 Terminal Objective

Upon completion of this lesson, the student will be able to discuss all the duties and responsibilities of the Shift Advisor.

1.2 Enabling Objectives

Upon completion of this course, the student will be able to:

1.2.1 Explain the responsibilities of the Shift Advisor.

1.2.2 List the limitations of the Shift Advisor.

1.2.3 Explain the duties of the Shift Advisor.

1.2.4 State under what plant conditions the Shift Advisor must be on duty.

1.2.5 State to whom the Shift Advisor must report.

1.2.6 Explain how conflicts will be resolved.

ATTACHMENT 2

CATAWBA NUCLEAR STATION

SHIFT ADVISOR TRAINING PROGRAM

(SRO LICENSED McGUIRE PERSONNEL)

CATAWBA SHIFT ADVISOR TRAINING PROGRAM

(SRO LICENSED McGUIRE PERSONNEL)

The Shift Advisor Training Program will enable an experienced individual currently holding an SRO license on the McGuire Nuclear Station to advise the Catawba Nuclear Station Shift Supervisor as to the impact of plant operational, maintenance, and testing activities. This program will familiarize the candidate with the duties and responsibilities of a Shift Advisor and will emphasize the significant differences between McGuire Nuclear Station and Catawba Nuclear Station.

At the end of the course, oral and written examinations will be administered by the Production Training Service Group. To successfully complete the program the candidate must receive a grade of $\geq$ 80% on the written examination and a "SATISFACTORY" evaluation on the oral examination.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

INDEX

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Responsibilities and Duties of the Shift Advisor

1.0 Lesson Objectives

1.1 Terminal Objective

Upon completion of this lesson, the student will be able to discuss all the duties and responsibilities of the Shift Advisor.

1.2 Enabling Objectives

Upon completion of this course, the student will be able to:

1.2.1 Explain the responsibilities of the Shift Advisor, including why the Shift Advisor position is necessary.

1.2.2 List the limitations of the Shift Advisor.

1.2.3 Explain the duties of the Shift Advisor.

1.2.4 State under what plant conditions the Shift Advisor must be on duty.

1.2.5 State to whom the Shift Advisor must report.

1.2.6 Explain how conflicts will be resolved.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Plant Differences Overview

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student will be able to describe the major differences between McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Describe the major differences in the following systems:

A. NV	E. CM	I. RL
B. ND	F. CF	J. Main Power
C. KC	G. CA	K. Diesel Generators
D. RN	H. RC	

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Main Power Distribution System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences in the Main Power Distribution Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 List the 22KV/6.9KV Auxiliary transformers.
1.2.2 Describe the power supplies to the 6.9 KV busses.
1.2.3 Describe what happens to the 6.9KV busses upon loss of one power supply.
1.2.4 List the 600 volt shared and unit load centers that have an alternate power supply and tell why.
1.2.5 Describe the differences between the CNS and MNS Switchyards.
1.2.6 Explain the purpose and operation of the Blackout Busses at CNS.
1.2.7 List the power supplies to the cooling tower load centers.
1.2.8 Explain why CNS has the ability to electrically connect the two units through the 13.8 switchgear.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Standby Diesel Generators

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences in the Standby Diesel Generators at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this course, the student should be able to:

1.2.1 State the KW ratings for the Catawba Diesel Generators.
1.2.2 List the conditions that will prevent an automatic Diesel start.
1.2.3 List the trips that are active after an automatic diesel start.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

NV Systems

1.0 Lesson Objectives

1.1 Terminal Objectives:

Upon completion of this lesson, the student should be able to explain the differences in the NV Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Describe the difference in the ECCS portion of the NV System between McGuire and Catawba Nuclear Stations.

1.2.2 Describe how seal injection to the NC pumps will be maintained upon a loss of all AC power.

1.2.3 Describe how seal injection flow to the NC Pumps is maintained at the proper value.

1.2.4 Be familiar with NV System instrumentation located in the Control Room.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

ND System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences in the ND Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 List the suction sources and alignments to the ND pumps.
1.2.2 Describe how the system responds to changing heat exchanger outlet flow.
1.2.3 Describe what happens upon low level (37%) in the FWST during an ECCS actuation.
1.2.4 Explain why 1ND-1 and 1ND-37 have alternate power supplies.
1.2.5 State the pressure at which ND suctions from the hot legs automatically close.
1.2.6 Be familiar with the ND System instrumentation in the Control Room.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

KC System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences in the KC Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Describe the effect of high activity as sensed by EMF-46 A or B on the KC System.

1.2.2 Describe the KC System response to a Lo-Lo level in either KC Surge Tank.

1.2.3 Describe where KC System drains are directed to.

1.2.4 Be familiar with the KC System instrumentation in the Control Room.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

RN System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences between the RN Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Describe what takes place in the RN System upon the following signals:

a. Safety injection
b. Hi-Hi containment pressure
c. Station blackout
d. Unit blackout
e. Pump house low-low pit level
f. Operation from Aux Shutdown Panel

1.2.2 List the suction and discharge paths through the RN System during normal and emergency operation.

1.2.3 Be familiar with the RN System instrumentation in the Control Room.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

CM System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences between the Condensate Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Explain how minimum flow protection for the hotwell pumps is provided.
1.2.2 List the components in the condensate flow path.
1.2.3 Describe operation of the load rejection bypass valve.
1.2.4 Be familiar with the CM System instrumentation located in the Control

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

CF System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences in the Feedwater Systems at McGuire and Catawba Nuclear Stations:

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Describe what happens in the CF System upon Hi-Hi doghouse level.

1.2.2 State the number of feedwater heaters per string of heaters.

1.2.3 Be familiar with indications of the CF System located in the Control Room.

1.2.4 Describe the interlocks between the CFPT control valves and stop valves and 1CF-26.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

CA System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences between the CA Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Explain the runout protection for the CA pumps.
1.2.2 Describe the Normal CA System alignment.
1.2.3 Describe what is necessary to regain control of the CA pump discharge valves after any automatic actuation signal.
1.2.4 Be familiar with the indications for the CA System located in the Control Room.
1.2.5 Describe how overpressurization of the CA pump suction piping is prevented at Catawba.
1.2.6 List the suction sources to the CA pumps and explain priority of usage.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

RC System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to describe the differences between the RC Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson the student should be able to:

1.2.1 Describe the flow path through the RC System.
1.2.2 Explain why vacuum varies in the condensers.
1.2.3 State the source of makeup to the RC System.
1.2.4 Be familiar with the RC System controls located in the Control Room.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

RL System

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be able to explain the differences in the RL Systems at McGuire and Catawba Nuclear Stations.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 List the source of water to the RL System.
1.2.2 Describe how RL header pressure is maintained at the proper valve.
1.2.3 Describe the types of loads supplied by the RL System.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Operating Procedures

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be familiar with the steps of the Controlling Procedure for Unit Operation.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 Locate all Control Room indications necessary to verify proper Unit Operation.

1.2.2 Explain the major evolutions accomplished per the Controlling Procedure Unit Operation.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Abnormal Procedures

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be familiar with the abnormal procedures listed below.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should:

1.2.1 Be familiar with the immediate actions for the following AP's.

a. Turbine Trip
b. Load Rejection
c. ECCS Actuation During Plant Shutdown
d. Loss of S/G Feedwater
e. Loss of Normal Power
f. Reactor Coolant Leak
g. Loss of Control Room
h. Loss of ND
i. Loss of RN
j. Loss of KC

1.2.2 Be able to locate Control Room indications that may be required to verify symptoms and results of actions for the abnormal procedures listed in #1 above.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Emergency Procedures

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student should be familiar with the Catawba Emergency Procedures.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 List the immediate actions for the following EP's.

1.2.2 Locate Control Room indications that may be required to verify symptoms and results.

1.2.3 With the aid of a procedure, walk through all subsequent actions specified in the Emergency Procedures.

1.2.4 Explain the 2 column format of the Catawba Emergency Procedures and when to enter the "Response Not Obtained" column.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Station Emergency Plan

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student will be familiar with the CNS Emergency Plan.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be able to:

1.2.1 List the location of relocation sites Alpha and Bravo.
1.2.2 Be familiar with RP/0/A/5000/11 (Protective Action Recommendations Without the OAC).
1.2.3 List the agencies that must be notified in an emergency.
1.2.4 Locate the Operations Support Center and the Technical Support Center.
1.2.5 Locate all Control Room indications necessary for classifying events and making Protective Action Recommendations.

CATAWBA SHIFT ADVISOR TRAINING OBJECTIVES

Operations Management Procedures

1.0 Lesson Objectives

1.1 Terminal Objective:

Upon completion of this lesson, the student will be familiar with the requirements of the Operations Management Procedures that are applicable to the Shift Advisor Position.

1.2 Enabling Objectives:

Upon completion of this lesson, the student should be familiar with the requirements of the following Operations Management Procedures:

A. OMP 1-4 Use of Procedures
B. OMP 2-5 Operations Worklist and Technical Memorandums
C. OMP 2-14 Temporary Modifications
D. OMP 2-15 Notification of Proper Authority
E. OMP 2-16 Control Room Conduct
F. OMP 2-17 Control Room and Unit Supervisors Logbooks
G. OMP 2-22 Shift Turnover
H. OMP 2-29 Tech Spec Action Items Logbook
I. OMP 2-30 Test Logbooks
J. OMP 2-31 Control Room Annunciator Status Log

ATTACHMENT 4

CATAWBA NUCLEAR STATION

SHIFT ADVISOR FAMILIARIZATION PROGRAM

SHIFT ADVISOR FAMILIARIZATION PROGRAM

The Shift Advisor Familiarization Program will introduce the Operations personnel at Catawba Nuclear Station to the Shift Advisor Program. The program will explain to the Operations personnel why the Shift Advisors are needed as well as their Qualifications, Duties and Responsibilities, Authority and Limitations.

CATAWBA SHIFT ADVISOR FAMILIARIZATION PROGRAM

INDEX

Responsibilities and Duties of the Shift Advisor

CATAWBA SHIFT ADVISOR FAMILIARIZATION TRAINING OBJECTIVES

Responsibilities and Duties of the Shift Advisor

1.0 Lesson Objectives

1.1 Terminal Objectives

Upon completion of this lesson, the student will be able to discuss all the duties and responsibilities of the Shift Advisor.

1.2 Enabling Objectives

Upon completion of this course, the student will be able to:

1.2.1 Explain the responsibilities of the Shift Advisor.

1.2.2 List the limitations of the Shift Advisor.

1.2.3 Explain the duties of the Shift Advisor.

1.2.4 State under what plant conditions the Shift Advisor must be on duty.

1.2.5 State to whom the Shift Advisor must report.

1.2.6 Explain how conflicts will be resolved.

1.2.7 Explain the purpose of the Shift Advisor position.

SHIFT ADVISOR EVALUATION

I - PURPOSE - To provide interface between the Shift Advisor and Operations Management. This interface will provide an opportunity to discuss the following topics:

a. Shift Advisor Effectiveness
b. Problems Encountered In the Performance of His Duties
c. Operations Organization Effectiveness
d. Identification of Areas Which Need Additional Management Emphasis - Advisor and/or Organization
e. Shift Supervisor Progress

II - ADMINISTERED BY - Shift Operating Engineer

III - FREQUENCY - Approximately once per month

IV - RESPONSIBILITY FOR ANY ACTION ITEMS IDENTIFIED - Shall rest with the Shift Operating Engineer

V - IMPLEMENTATION - Will begin at the time the Shift Advisors go on shift

ATTACHMENT 6

CATAWBA NUCLEAR STATION

SHIFT ADVISOR COMPOSITE OF EXPERIENCE

COMPOSITE OF EXPERIENCE
OF
GARY L. MITCHELL

EXPERIENCE SYNOPSIS

OCT. 1972 -JUNE 1974 Employed by Duke Power Co. at Oconee Nuclear Station.

1. Oct. 1972 - Jan. 1974 - On shift as a Utility Operator (NEO). Responsible for operation of equipment outside Control Room. Participated in NRC-RO license training during this time.

2. Jan. 1974 - Received NRC-RO License.

3. Jan. 1974 - May 1974 - On shift as Reactor Operator (ANCO). May 1974 - Oct. 1975 - On shift as Reactor Operator (CO). Responsible for operation of plant from Control Room.

4. April 1975 - Received NRC SRO License.

5. Oct. 1975 - June 1978 - On shift as Senior Reactor Operator (ASS). Responsible for supervising plant operations of shift crew for one unit. Acting SS for three units many times.

6. Completed general Duke Power Managment/Supervisor courses at ONS and Lake Hickory. 1972-1978

NOV. 1965 - OCT. 1972 U.S. Navy Nuclear Program as Reactor Operator. (Submarine) Qualified as Reactor Operator, Reactor Technician, and Shutdown Maneuvering Area Watch. (3000 hours at RX controls and 150 RX startups).

Experience Highlights on Shift at ONS at RO/SRO

Gained large nuclear power plant startup experience while assisting in the startup of all three units at Oconee Nuclear Station. 1972-1974

SRO in charge of numerous ONS refuelings.

Performed numerous normal reactor startups and shutdowns as RO/SRO.

Recovered from reactor trips at various power levels due to: loss of feedwater, loss of feedpump, loss of ICS power, steam bypass valve failing open, loss of reactor coolant pump, load rejection, and dropped group of control rods.

Performed general reactor shutdowns due to excessive steam generator tube leaks, also due to small reactor coolant leaks, control rod misalignment, loss of instrument air, loss of vacuum, technical specification action items (example: loss safety injection train).

Recovered from various abnormal transients and evolutions such as: inadvertent safety injection, excessive reactor coolant pump cool leakage, loss of station cooling, dropped control rods, instrument failures.

JUNE 1978 -MAY 1984 - Employed by Duke Power Co. at Catawba Nuclear Station

1. June 1978 - Dec. 1978 - SRO Cold License Certification Training on MNS (classroom and simulator). "Cold Certified December 1978"

2. Dec. 1978 - Sept. 1980 - Shift Supervisor at CNS.

3. Completed Catawba Specific Procedures and System Training (SPS) 3 mo. 1981.

4. Sept. 1980 - May 1984 - Assistant Operating Engineer at CNS.

5. May 1983 - Dec. 1983 - Completed Cold License Prep segments for an SRO at CNS (classroom and MNS, simulator included running thru all emergency situations on simulator.)

6. Completed numerous Duke Power Management courses at CNS 1978 - 1984.

Experience Highlights at Catawba

Performed extensive procedure writing and reviews, also design and other document reviews.

Participated in -
- 1981 MNS Emergency Plan Drill as an Evaluator/Controller.
- 1982 ONS Emergency Plan Drill as an Evaluator/Controller.

Two weeks at Three Mile Island as a Duke Power Company Assistance Team, member in Control Room.

Member of Duke Power Crisis Management Team as local agency liaison between Duke Power Company and state.

Assisted in development of operations periodic test to insure compliance with Technical Specifications Surveillance Requirements.

Participated in Unit One Hot Functional Testing on shift as Unit Coordinator for Shift Supervisor.

Presently involved as Unit One Duty Engineer and Unit Two Assistant Operating Engineer during flushing hydros, pre-op testing and turnover phase of Unit Two Construction.

ATTACHMENT 6.2

COMPOSITE OF EXPERIENCE
OF
RICHARD CASLER

EXPERIENCE SYNOPSIS

OCT. 1972 -JULY 1978 Employed by Duke Power Company at Oconee Nuclear Station.

1. Oct. 1972 - Jan 1974 - On shift as a Utility Operator (NEO). Responsible for operation of equipment outside Control Room. Participated in NRC-RO license training during this time.

2. Jan. 1974 - Received NRC-RO License.

3. Jan. 1974 - May 1974 - On shift as Reactor Operator (ANCO). May 1974 - Dec. 1974 - On shift as Reactor Operator (CO). Responsible for operation of plant from Control Room.

4. Dec. 1974 - Received NRC SRO License.

5. Dec. 1974 - July 1978 - On shift as Senior Reactor Operator (ASS). Responsible for supervising plant operations of shift crew for one unit. Acting SS for three units many times.

6. Completed general Duke Power Management/Supervisor courses at ONS and Lake Hickory. 1972-1978

JAN. 1969 - OCT. 1972 U.S. Navy Nuclear Program as Reactor Operator. (Submarine). Qualified as Reactor Operator, Reactor Technician, and Shutdown Maneuvering Area Watch. (3000 hours at RX controls and 150 RX startups). Performed initial criticality on S3G core #3 in Oct. 1971.

Experience Highlights on Shift at ONS as RO/SRO.

Gained large nuclear power plant startup experience while assisting in the startup of all three units at Oconee Nuclear Station. 1972-1974

SRO in charge of numerous ONS refuelings.

Performed numerous normal reactor startups and shutdowns as RO/SRO.

Performed from reactor trips at various power levels due to: loss of feedwater, loss of feedpump, loss of ICS power, steam bypass valve failing open, loss of reactor coolant pump, load rejection, and dropped group of control rods.

Performed general reactor shutdowns due to excessive steam generator tube leaks, also due to small reactor coolant leaks, control rod misalignment, loss of instrument air, loss of vacuum, technicial specification action items (example: loss of safety injection train).

Recoverd from various abnormal transients and evolutions such as: inadvertent safety injection, excessive reactor coolant pump coolant leakage, loss of station cooling, dropped control rods, instrument failures.

JULY 1978 - MAY 1984 Employed by Duke Power Company at Catawba Nuclear Station

1. July 1978 - Dec. 1978 - SRO Cold License Certification Training at MNS (classroom and simulator). "Cold Certified December 1978"

2. Dec. 1978 - Sept. 1980 - Shift Supervisor at CNS.

3. Completed Catawba Specific Procedures and System Training (SPS) 3 mo. 1981.

4. Setp. 1980 - May 1984 - Assistant Operating Engineer at CNS.

5. May 1983 - Dec. 1983 - Completed Cold Licens[illegible] Prep segments for an SRO at CNS (classroom and MNS, simulator, included running thru all emergency situations on simulator.)

6. Completed numerous Duke Power Management Courses at CNS, 1978-1984.

Experience Highlights at Catawba

Performed extensive procedure writing and reviews, also design and other document reviews.

Participated in - 1981 MNS Emergency Plan Drill as a member of Crisis Management Team
- 1982 ONS Emergency Plan drill as a member of Crisis Managemnt Team

One week at Three Mile Island as a Duke Power Company assistance team member in Control Room.

Member of Duke Power Crisis Management Team as local agency liaison between Duke Power Company and State.

Participated in Unit One Hot Functional Testing on shift as Unit Coordinator for Shift Supervisor.

Presently involved as Unit One Duty Engineer and Unit One Assistant Operating Engineer assigned to Unit Coordinator Section. Coordinating all activities involved with the startup of Unit One.

ATTACHMENT 6.3

COMPOSITE OF EXPERIENCE
OF
CLARENCE DWIGHT CRAIG

Experience Synoposis

1. April 1974 - Dec. 1975 - Assigned as Learner at Allen Steam Station for power plant operations familiarization.

2. December 1975 - June 1978 - Assigned to McGuire Nuclear Station as a Nuclear Equipment Operator responsible for systems and equipment outside the Control Room.

3. June 1978 - April 1979 - Assigned as Assistant Nuclear Control Operator (RO) at McGuire Nuclear Station responsible for operations of equipment inside and outside the Control Room.

4. April 1979 - May 1983 - Assigned to McGuire Nulcear Station as a Nuclear Control Operator (RO) responsible for station equipment from inside and outside the Control Room.

5. May 1983 - Present - Assigned on shift as Assistant Shift Supervisor (SRO) responsible for supervising plant operations of shift crew.

Experience Highlights on Shift as RO/SRO

- Operator at the controls (O.A.T.C.) during all phases of Hot Functional Testing and Pre-Startup Testing for Unit #1. (MNS)

- During Loss of Control Room Test, participated as operator at the controls for Unit #1 and assured the responsibilities of supervision for Unit #2. (MNS)

- Operator at the controls during two safety injections (one inadvertent and one acutal) and participated in recovery actions for both. (MNS)

- Operator at the controls during a plant reactor trip and subsequent recovery actions. (MNS)

- Participated in numerous startups and shutdowns both as O.A.T.C and A.S.S. (MNS)

- O.A.T.C. for rods during initial criticality on Unit #1. (MNS)

- O.A.T.C. in initial power generation for Unit #1. (MNS)

- NCSU PULSTAR Research Reactor, Oct. 75 - March 76 - Participated in 15 startups with power changes at low reactor power.

- Approximately 500 hours on the McGuire/Catawba Simulator which has the capability of simulating plant conditions.

COMPOSITE OF EXPERIENCE
OF
HOYT MONROE HARRIS, JR.

Experience Synopsis

1. Sept. 1970 - Sept. 1971 - Assigned to a fossil power plant of Duke Power Company for power plant operations familiarization.

2. Sept. 1971 - Dec. 1975 - Assigned as coal handling operator with responsibilities for operation of coal handling equipment.

3. Dec. 1975 - June 1978 - Assigned to McGuire Nuclear station as a Utility Operator with responsibilities for systems and equipment outside the Control Room.

4. June 1978 - Aug. 1980 - Assigned as Assistant Nuclear Control Operator (RO) with responsibilities for operation of systems and equipment inside and outside the Control Room.

5. Aug. 1980 - Feb. 1982 - Assigned as Nuclear Control Operator (RO) with responsibilities of equipment operations from inside and outside the Control Room.

6. Feb. 1982 - Present - Assigned as Assistant Shift Supervisor with responsibilities for supervising plant operations of shift crew.

Experience Highlights on Shift as RO/SRO

1. While assigned to shift as a Control Room Operator, manipulated all plant controls as necessary for the operation of the plant during preoperational testing. Some major activities participated in were:

   - Hot Functional Testing, including primary system fill and vent, heating and operation at normal operating temperature and pressure.
   - Steam dump, functional testing at normal operating conditions.
   - Boron thermal, regeneration testing by varying boron concentration at normal operating conditions.
   - Pressurizer level and pressure control system functional testing at normal operating conditions.

2. NCSU PULSTAR Research Reactor - Oct. 1975 - March 1976 - Participated in 12 startups of the reactor with power changes at low power.

3. Acted as Unit Supervisor for MNS Unit #2 initial criticality May 8, 1983.

4. Approximately 310 hours on the McGuire/Catawba Simulator which has the capability of simulating plant conditions.

5. Participated in Unit 2 Blackout testing.

COMPOSITE OF EXPERIENCE
OF
JERRY WAYNE RUMFELT

Experience Synopsis

SEPT. 1975 - PRESENT: Employed by Duke Power Company at McGuire Nuclear Station.

1. Sept. 1975 - Sept. 1976 - Learner, became familiar with power plant operations.

2. Sept. 1976 - Oct. 1979 - On shift as a Nuclear Equipment Operator (NEO). Operated system and equipment outside the Control Room.

3. Oct. 1979 - July 20, 1981 - On shift as an Assistant Nuclear Control Operator (RO). Responsible for operation of equipment inside and outside the Control Room.

4. July 20, 1981 - April 1983 - On shift as a Nulcear Control Operator (RO). Responsible for station equipment operation from inside and outside the Control Room.

5. April 15, 1983 - Received NRC SRO License.

6. May 1983 - Present - On shift as an Assistant Shift Supervisor (SRO). Responsible for supervising plant operations of shift crew for one unit.

Reactor Operating Experience

1. Nov. 1976 - NCSU PULSTAR Research Reactor - 40 hours of console time including 14 startups.

2. July 1980 - March 1983 - MNS/CNS Simulator at the Duke Power Technical Training Center - 287 hours of console time with numerous startups and power level changes due to simulated conditions.

3. July 1981 - April 1983 - MNS Unit 1 - 2400 hours of console time at McGuire Nulcear Station.

Experience Highlights on Shift At MNS

1. Several reactor trips resulting from I&E and Operational problems (i.e. Lo-Lo S/G level and Hi-Hi S/G level) occurred while on shift.

2. Participated in ESF testing on MNS Unit 1.

3. Participated in Loss of Control Room Test.

4. On shift during inadvertant safety injection while in Mode 5.

5. Involved in 1 or more recovery from loss of RHR.

ATTACHMENT 6.6

COMPOSITE OF EXPERIENCE
OF
RANDALL WILSON MAYES

Experience Synopsis

SEPT. 1975 - PRESENT: Employed by Duke Power Company at McGuire Nuclear Station.

1. Sept. 1975 - Sept. 1976 - Learner, became familiar with power plant operations.

2. Sept. 1976 - Oct. 1979 - On shift as a Nuclear Equipment Operator (NEO) - Operated systems and equipment outside the Control Room.

3. Oct. 1979 - July 1981 - On shift as an Assistant Nuclear Control Operator (RO). Responsible for operation of equipment inside and outside the Control Room.

4. July 1981 - April 1983 - On shift as a Nuclear Control Operator (RO) - Responsible for station equipment operation from inside and outside the Control Room.

5. April 15, 1983 - Received NRC SRO License.

6. May 1983 - Present - On shift as an Assistant Shift Supervisor (SRO). Responsible for supervising plant operations of shift crew for one unit.

Reactor Operating Experience

1. Nov. 1976 - NCSU PULSTAR Research Reactor - 40 hours of console time including 14 startups.

2. Feb. 1981 - March 1983 - MNS/CNS Simulator at the Duke Power Technical Training Center - 283 hours of console time.

3. July 1981 - April 1983 - MNS Unit 1 - 2400 hours of console time at an operating reactor.

COMPOSITE OF EXPERIENCE
OF
RANDOLPH NELSON PATTON

Experience Synopsis

1. March 1969 - Feb. 1975 - USN Second Class Electrician.
   Responsible for operation and maintenance of electrical equipment.

2. March 1975 - June 1978 - On shift as a Nuclear Equipment Operator (NEO) at MNS. Operated systems and equipment outside the Control Room.

3. June 1978 - April 1979 On shift as an Assistant Nuclear Control Operator (RO). Responsible for operation of equipment inside and outside the Control Room.

4. April 1979 - April 1983 - On shift as a Nuclear Control Operator (RO). Responsible for station equipment operation from inside and outside the Control Room.

5. April 15, 1983 - Received NRC SRO License.

6. May 1983 -May 1984 - On shift as an Assistant Shift Supervisor (SRO). Responsible for supervising plant operations of shift crew for one unit.

Reactor Operating Experience

1. 1970 - USN Nuclear Power School, Vallejo, Calif.
   1970 - USN Nuclear Prototype SIW, Idaho Falls, Idaho

2. Oct. 1975 - March 1976 - NCSU PULSTAR Research Reactor
   40 hours of console training including 12 startups.

3. Aug. 1979 - March 1983 - MNS/CNS Simulator at the Duke Power Company, Technical Training Center - 449 hours of console time with numerous startups and power level changes due to simulated conditions.

4. July 1980 - April 1983 - MNS Unit 1 - 3800 hours of console time at McGuire Nuclear Station.

Experience Highlights on Shift At MNS

1. Participaated in recovery due to loss of FWP Turbine caused by I&E induced problems and low level in the reservoir.

2. On shift during the recovery from loss of all cooling (KC) to the RCP.

3. Several reactor trips occurred while on shift.

4. Unit supervisor during the recovery from loss of RHR.

5. Participated in the recovery from loss of seal injection flow to the RCP.

COMPOSITE OF EXPERIENCE
OF
ROBERT ALAN LINDSAY

Experience Synopsis

AUGUST 1975 - PRESENT Employed by Duke Power Company at McGuire Nuclear Station.

1. Aug. 1975 - Nov. 1975 - Learner, Became familiar with power plant operations.

2. Nov. 1975 - Oct. 1979 - On shift as a Nuclear Equipment Operator (NEO). Operated systems and equipment outside the Control Room.

3. Oct. 1979 - July 20, 1981 - On shift as an Assistant Nuclear Control Operator (RO). Responsible for Operation of Equipment inside and outside the Control Room.

4. July 20, 1981 - April 1983 - On shift as a Nuclear Control Operator. Responsible for station equipment operation from inside and outside the Control Room.

5. April 15, 1983 - Received NRC SRO License.

6. May 1983 - Present - On shift as an Assistant Shift Supervisor (SRO). Responsible for supervising plant operations of shift crew for one unit.

Reactor Operating Experience

1. USN Nuclear Power School

2. March 1976 - NCSU PULSTAR Research Reactor - 40 hours of console time including 12 startups.

3. Jan. 1978 - March 1983 - MNS/CNS Simulator at the Duke Power Company Technical Traning Center - 443 hours of console time with numerous startups and power level changes due to simulated conditions.

4. July 1981 - April 1983 - MNS Unit 1 - 2400 hours of console time at McGuire Nuclear Station.

Experience Highlights On Shift At MNS

1. Lead person on natural circulation test on Unit 1.

2. Actively involved in Unit 1 initial startup.

3. Involved in the recovery of several reactor trips which were I&E related.

4. Involved in the recovery of Loss of Feedwater Pump Trips.

Form 3686 (R2-84)

TRAINING CONTENT SUMMARY
TSR-10

Summary No. TT-2007

Training Title Catawba Shift Advisor Training (CN-AT)

Organization Presenting Training Production Training Services

Dates: From 05/07/84 (mm/dd/yy) To 05/16/84 (mm/dd/yy) Duration 64 hours (See reverse for attendee's hrs.)

Instructor(s) Supervisor(s) R.E. Kimray, G.E. Spurlin, A.C. Miller, W.S. Russell, R.H. Young

Prime Location of Training Catawba Nuclear Station

Training Summary Trained students on duties and responsibilities of shift advisors, major differences between MNS and CNS, Catawba EP's, AP's, OP's, OMP's oral and written exams were conducted and plant tours were conducted.

Documentation Attached:

X Test ___ Outlines X Scores X Attendees

Coordinated By Wendell K. Barron Title Senior Instructor Date 24 May 84

PAGE _____ FROM _____ TO _____

PROGRAM/TOPIC ID CN-AT

COURSE DATE 5/7/84 - 5/16/8

GROUP/CLASS ID AT-1

SUMMARY NO. _____

TOPICS/MODULES (DESCRIPTION ON BACK)

INSTRUCTORS R.E. Kimray G.E. Spurlin W.S. Russell R.H. Young A.C. Miller TRAINEE/SOCIAL SECURITY NO./STATION	1 Shift Advisor Exam	2 Oral Exam	3	4	5	6	7	8	9	10	11	1
TEST/EXERCISE DATE -	5/16											
C.D. Craig/ 238-74-4085	91	S										
H.M. Harris / 239-90-6825	85	S										
R.A. Lindsay / 238-88-9656	89	S										
R.W. Mayes / 242-86-0081	92	S										
R.N. Patton/ 587-26-1581	89	S										
J.W. Rumfelt / 239-94-3492	95	S										
CLASS AVERAGE	90											

TRAINING SCHEDULE

PROGRAM ID CN-AT

AT-1 CLASS ID

(AS TAUGHT)

DATE 4-25-84

WEEK 1

ADVISOR TRAINING

(SRO LICENSED McGUIRE PERSONNEL)

DATE 5/7	5/8	5/9	5/10	5/11
Duties and Responsibilities of Shift Advisors Overview: Differences In MNS and CNS Main Power Standby Diesel Generator	NV System ND System KC System RN System	CM System CF System CA System RC System RL System	Emergency Plan Abnormal Procedures •AP/1/A/5500/02 Turbine Generator Trip •AP/1/A/5500/03 Load Rejection •AP/1/A/5500/05 ECCS Actuation During Plant Shutdown	•AP/1/A/5500/06 Loss of S/G Feedwate •AP/1/A/5500/07 Loss of Normal Power •AP/1/A/5500/10 Reactor Coolant Leak •AP/1/A/5500/17 Loss of Control Room •AP/1/A/5500/19 Loss of ND
•OMP 2-22 Shift Turn-Over •OMP 1-4 Use of Proc. Plant Tours and •Control Board Familiarization	•OMP 2-16 Control Room Conduct •OMP 2-17 Control Room and Supervisor Log-book •Plant Tour and Control Board Familiarization	•OMP 2-5 Technical Memorandums •OMP 2-31 Control Room Annunciator Status Log •Plant Tour and Control Board Familiarization	•OMP 2-14 Temporary Modifications Log •OMP 2-15 Notification of Proper Authority •Plant Tour and Control Board Familiarization	•AP/1/A/5500/20 Loss of RN •AP/1/A/5500/21 Loss of KC •OMP 2-29 Tech Spec Action Item Logbook •OMP 2-30 Test Logboo •Plant Tour and Control Board Familiarization

Hrs: 40

REMARKS:

PREPARED BY: REK

TRAINING SCHEDULE

PROGRAM ID CN-AT

AT-1 CLASS ID
(AS TAUGHT)

DATE 4-15-84

WEEK 2

ADVISOR TRAINING

DATE	5/14	5/15	5/16		
	Catawba Emergency Procedure Familiarization (Utilizing the MNS Simulator) Controlling Proc. for Unit Operation	Catawba Emergency Procedure Familiarization (Utilizing the MNS Simulator)	Orals and Self Study	Blank	Blank
	- Increased Heat Removal By Secondary Scenario - LOCA Scenario	- S/G Tube Rupture Scenario - Decreased Heat Removal By Secondary Scenario	Written Exam		

Hrs: 24

REMARKS:

PREPARED BY: REK

TRAINING SCHEDULE

PROGRAM ID CN-AT AT-1 CLASS ID PAGE 1 OF 1

WEEK 2 DATE 5/15/84

ADVISOR TRAINING ORALS

DATE		5/16		
BLANK	BLANK	0800- A. Lindsey CTK D. Craig GES B. Harris REK 1000 R. Patton CTK R. Mayes GES J. Rumfelt REK	BLANK	BLANK

REMARKS:

PREPARED BY: REK

MONTH May
YEAR 1984

PRODUCTION TRAINING SERVICES
STUDENT ATTENDANCE RECORD
CLASS Shift Advisor
PROGRAM CN-AT
MODULE

L - LATE
S - SICK
E - EXCUSED
UE - UNEXCUSED
DA - DR. APPT.
O - OTHER & OJT

NAME	STA CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOT HOU
Ransy Mayes								5.5	6.5	7.0	[illegible]	8.0			8.0	8.0	6.5																49.
Randy Patton								5.5	6.5	7.0	6.0	8.0			8.0	8.0	6.5																55.
Danny Craig								5.5	6.5	7.0	6.0	10.0*			8.0	8.0	6.5																57.
Bud Harris								5.5	6.5	7.0	6.0	13.5*			8.0	8.0	6.5																61.
Jerry Rumfelt								5.5	6.5	7.0	6.0	13.0*			8.0	8.0	6.5																60.
AL Lindsay								5.5	6.5	0	6.0	8.0			8.0	8.0	6.5																48.

TABULATE THE ... OF PERSONNEL HOURS FOR EACH LOCATION LISTED BELOW:

OCONEE ______ MCGUIRE ______ 23 ______ ______ FOSSIL ______ ______ 333 TOTAL HOURS

* 1/2 c

Form 1855C (R2 84)

TRAINING CONTENT SUMMARY
TSR-10

Summary No. TT-[illegible]

Training Title: Catawba Shift Advisor Training (CN-AT)

Organization Presenting Training: Production Training Services

Dates: From 05/07/84 (mm/dd/yy) To 05/07/84 (mm/dd/yy) Duration 1 hours (See reverse for attendee's hrs.

Instructor(s) Supervisor(s): G.E. Spurlin

Prime Location of Training: Training Students on duties and responsibilities of shift advisors.

Training Summary

Documentation Attached:

___Test ___Outlines ___Scores _x_ Attendees

Coordinated By: Wendell H. Barron Title: Senior Instructo Date: 24 MAY 1984

MONTH [illegible]

YEAR [illegible]

[illegible] TRAINING SERVICES

[illegible] ATTENDANCE RECORD

CLASS Shift Advisor

PROGRAM CN-AT

MODULE ______

CODES:
L - LATE
S - SICK
E - EXCUSED
UE - UNEXCUSED
DA - DR. APPT.
O - OTHER & OJT

NAME	STA CODE	HOURS OF ATTENDANCE BY DATE 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TO HO
Rich Casler								1																									1
Bary Mitchell								1																									1

TABULATE THE TOTAL NUMBER OF PERSONNEL HOURS FOR EACH LOCATION LISTED BELOW:

[illegible]	MCGUIRE	CATAWBA	SMS	FOSSIL	OTHER	TOTAL HOURS
		2				2

TRAINING SCHEDULE

PROGRAM ID CN-AT AT-1 CLASS ID

PAGE 1 OF

DATE 4-25-84

WEEK 1

ADVISOR TRAINING

(PREVIOUSLY SRO LICENSED CATAWBA PERSONNEL)

DATE 5/7 _____ _____ _____ _____

DUTIES AND RESPONSIBILITIES OF SHIFT ADVISORS	BLANK	BLANK	BLANK	BLANK

Hrs: 4 1

REMARKS:

PREPARED BY: REK

NAME AL LINDSAY

DATE 5-16-84

S.S. # 238 88 9656

CLASS ID AT-1

OP-CN-AT
Test # 1
May 16, 1984

9.5

88.5

SHIFT ADVISOR TRAINING

FINAL TEST

TOTAL POINTS: 83

TOTAL QUESTIONS:

INSTRUCTIONS:

1. Put your name on each sheet.
2. Write your answers on the test sheet.
3. Ask the test monitor instructor concerning questions which are not clear to you.

ALL WORK DONE ON THIS EXAMINATION IS MY OWN, I HAVE NEITHER GIVEN NOR RECEIVED AID.

Robt A Lindsay

Students Signature

AK Lindsay

hy 1ND-1 (NCS Loop Suction) and 1ND-37 (NCS Loop Suction)
lternate power supply.

OF A FIRE, WE HAVE ALTERNATE PWR
TO INSURE YOU KEEP AT LEAST ONE
F NO OPERABLE

the KC system response to a low-low level in KC surge

UNLESS NOR ISOLATES
TRAIN RELATED

e source of suction for the ND pumps under the following
ons:

mal cooldown
A injection phase
A cold leg recirculation

LOOP LEG C + B
=WST
CONT SUMP

r False
pply valves to the ND pumps from the hot legs will close
tically if NC system pressure increases to 450 psig.

FALSE

.5

(4 pts) 5. List three major differences in the ND systems at MNS and CNS.

CNS HAS - ① AUTO FLOW CONTROL TO MAINTAIN 3000 GPM

" " - ② SEPERATE SECTION FROM FWST FOR BOTH TRAINS

③ AUTO CLOSURE SETPOINTS ARE DIFFERENT

④ SEPERATE SUCTION FOR EACH TRAIN FROM H.T.LEG.

(3 pts) 6. Describe the RN System response to each of the following :

a) Safety Injection
b) Unit Blackout
c) Taking the aux. shutdown panel to "Local"

a) ① ALL PUMPS GET START SIGNAL
② NON ESS. VENT GET'S ISOLATED
③ AUTO SUPPLY TO D/G OPENS

b) TRAIN RELATED PUMPS START BOTH UNITS D/G GET'S WATER SUPPLY

c) IF PUMP RUNNING IT ALIGNS VALVE TO SNSWP.
IF PUMP NOT RUNNING IT DOES THIS WHEN YOU START PUMP

(1 pt) 7. Briefly describe how total seal injection flow to the NC Pumps is maintained at 32 gpm.

AUTO FLOW CONTROLER IN C/A MAINTAINS SEAL FLOW

(1 pt) 8. True or False
Upon low level in the FWST (37%) the suction for the NI pumps automatically swaps from the FWST to the Containment Sump.

FALSE

(1pt) 9. Explain why vacuum varies in the condensers.

BECAUSE OF SERIES FLOW PATH THROUGH CONDENSER BAYS, THE WATER TEMP INCREASE, EFFICIENCY DROPS AND SO DOES VACUUM

(1 pt) 10. From which system does the RC system receive makeup?

a. RY
b. RN
c. RL
d. RF

(2 pts) 11. Basically describe how RL, pressure is maintained.

TURN BYPASS VALVES POSITION TO MAINTAIN PRESS.
IF PRESS IS ↑ THEY OPEN,
IF PRESS IS ↓ THEY CLOSE

(2 pts) 12. What are the power supplies to the 6.9 KV buses at CNS?

1T1A 1T1B 1T2A 1T2B

(1 pt) 13. Upon loss of power to 1T1A, what occurs on the 6.9 KV buses?

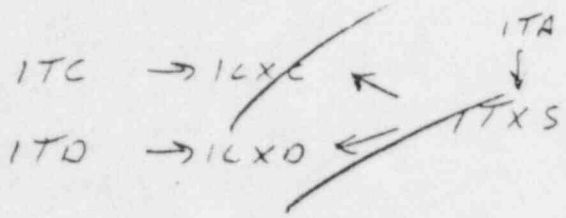
THE TIE WILL CLOSE ON LOW VOLTAGE ON 6.9KV BUS
FAST TRANSFER IF IN SYNC
SLOW TRANSFER IF OUT OF SYNC., WHEN VOLTAGE GET TO <25%

10

A. Kennedy

(1 pt) 14. a. Which two 600V unit load centers receive an alternate power supply? LXC / LXD

(1 pt) b. What are the power supplies to these 600V load centers?



(1 pt) 15. What is the KW rating for the CNS D/G's (Normal and Emergency)?

7000
10% 7700 2 HRS / 24

(4 pts) 16. Give four (4) conditions that will trip the D/G's after an auto start.

87 DIFFERENTIAL
OVERSPEED
~~LOSS OF STARTING AIR~~
MAINTENANCE MODE
LO LO LUBE OIL PRESS

(3 pts) 17. How does the main turbine condenser at CNS differ from MNS's condenser? Give three (3) major differences.

① NOT INTER CONNECTED
② LINED UP IN SERIES FLOW PATH
③ DIFFERENT VACUUM IN EACH CONDENSER

(5 pts) 18. Which valves in CF system auto close on a Hi-Hi doghouse level?

CF-13
TEMPERING VALVES
MAIN FEED ISOLATION VALVES
BYPASS FEED VALVES
MAIN FEED REG. VALVES & BYPASS

CF PUMP DISCH
CF TO CA

-1.5

(5 pts) 19. Describe the normal alignment for the CNS CA System.

SUCTION CACST, UST, HOTWELL OPEN
T/D CA DISCHARGES TO A S/G
M/D "A" DISCHARGES TO A & B
M/D "B" DISCHARGE TO B & D

-1

2.5

A L Lindsey

where does the RN system normally discharge?

DISCHARGE

he first immediate action of AP/1/A/5000/21 "Loss of Component ooling" states: "Verify KC pump(s) running". If no KC pumps can e started, what must be done? (Select One)

. Trip all NC pumps immediately
. If <P-10, trip all NC pumps within 5 minutes
. If >P-6, continue to operate and monitor pumps frequently
. If <P-10 trip the reactor and trip the NC pumps within 5 minutes.

b

To gain control of the CA regulating valves for the TD CA pump following an auto start (caused by a blackout) the operator must: (Choose One)

a. Reset the CA valve reset and the TD CA pump reset
b. Reset the CA valve reset and the sequencer reset
c. Reset the sequencer and the TD CA pump reset
d. Reset the SM isolation and the sequencer reset

The first immediate action in AP/1/A/5000/02 Turbine Generator Trip states "Ensure Turbine Trip". How is this accomplished at CNS?

INSURE ALL THROTTLE AND GOVERNOR VALVES GO CLOSED

MANUALLY INITIATE TURBINE TRIP

To whom will the SA and SS go for resolution of any differences in opinion? (Choose One)

a. Superintendent of OPS
b. Assistant Shift Supervisor
c. Shift Operating Engineer
d. Assistant Shift Operating Engineer

5. A SA shall be on duty on each shift that does NOT meet the experience standard whenever:

a. Core alterations are taking place
b. The reactor is in Mode 4 or above
c. The reactor is critical
d. The reactor is in Mode 1

1

(1 pt) 26. Which of the following is not a duty nor responsibility of the Shift Advisor?

a. Participate in SS turnover
b. Review control boards
c. The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.
d. The SA will supervise licensed operators and direct assignments which require an operators license.

(5 pts) 27. List the five immediate actions for "Loss of All AC Power" (EP/1/A/5000/03)

MANUALLY TRIP RX
VERIFY RX TRIP
VERIFY TURBINE TRIP
VERIFY D/G GETS START SIGNAL
GET KEY GO TO SSF (TWO OPERATORS) START STANDBY PUMP TO SUPPLY NC PUMPS SEALS

(1 pt) 28. When would the operator enter the "Response Not Obtained" column in an emergency procedure?

WHEN YOU DON'T MEET THE EXPECTED RESPONSE

(2 pts) 29. a. In the CNS Emergency Plan relocation site Bravo is ALLEN (fill in the blank)

b. In the CNS Emergency Plan relocation site Alpha is NEWTOWN SUB (fill in the blank) NEWPORT

(6 pts) 30. During an unusual event, what six (6) outside agencies must be notified?

NRC
COUNTIES - YORK, UNION, MECK.
NORTH CAROLINA STATE WARNING POINT.
SOUTH CAROLINA STATE WARNING POINT.
CHARLOTTE DUTY PRODUCTION ENGINEER

(6 pts) 31. Describe the difference in the following terms per OMP 1-4 "Use of Procedures":

a. Verify - CAN BE CHECKED REMOTELY check for response
Ensure - YOU MUST GO CHECK IT PHYSICALLY take action as needed

b. Should - YOU HAVE THE OPTION OF DOING IT OR NOT.
Shall - YOU MUST DO THIS

c. Refer - GO TO ANOTHER PROCEDURE BUT YOU WILL COME BACK
Go - LEAVE THE PROCEDURE YOU ARE IN AND NEVER COME BACK

(1 pt) 32. For what period of time is Technical Memorandum valid?

a) A maximum of 6 months unless reissued

b) A maximum of 1 week unless reviewed by Operating Engineer

c) Until the expiration date

d) 1 year, so long as all performance items are complete and verified by the applicable group.

(1 pt) 33. How will you as a Shift Advisor know of any Temporay Modifications to plant systems?

THE S.S. MAINTAINS THE LOG BOOK

THE S.S. AUDITS THE LOG BOOK

THE TURNOVER SHEET HAS A SECTION FOR NEW OR CHANGE TEMP. MODS. FOR INFORMATION.

H 2 Kendrick

(4 pts) 34. List four conditions that require immediate notification of management personnel per OMP 2-15 (Notification of Proper Authority).

SERIOUS INJURY OR DEATH TO AND INDIVIDUAL AT THAT SITE

UNCONTROLLED RADIOACTIVE RELEASE

UNEXPLAINED POSITIVE REACTIVITY ADDITION

FAILURE OF MAJOR EQUIPMENT

HIGHLY CONTAMINATED INDIVIDUAL REQUIRING MEDICAL ATTENT

1.5

(2 pts) 35. Responsibility for limiting access to the Control Room rests with the OATC during normal operations and the SS or his designee during abnormal/emergency operations.

(5 pts) 36. List five (5) items the Shift Supervisor must review as soon as possible after turnover per the Turnover Sheet.

RED TAG LOG

WHITE TAG LOG

TEMP MOD. LOG

TECH SPEC LOG

TECHNICAL MEMORANDUM LOG

UNIT SUPER. LOG BOOK

(1 pt) 37. Per OMP 2-29 (Tech Specs Action Items Logbook) if an item affects both units, how is this documented?

IT IS LOGGED IN BOTH LOG BOOKS

1.5

SHIFT ADVISOR ORAL EXAMINATION FORM

Student AL LINDSAY

Date 5-16-84

S.S. # 238-88-9656

Examiner C T KIKER JR.

Student Background MNS SRO

System Differences in MNS and CNS	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
NV	✓			
ND	✓			
KC	✓			
RN	✓			
CM	✓			
CF	✓			
CA				
RC	✓			
RL	✓			
MAIN POWER	✓			
DIESELS				

ADMINISTRATIVE	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operations Management Proc.	✓			
Duties and Responsibilities	✓			

PROCEDURES	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operating Proc.	✓			
Abnormal Proc.	✓			
Emergency Proc.	✓			
RESPONSE PROC.	✓			

SHIFT ADVISOR ORAL

EXAMINATION QUESTIONS

DATE 5-16-84

STUDENT AL LINDSAY

S.S. # 238-88-9656

STUDENT BACKGROUND MNS SRO EXAMINER CT K. KC. J.

1) What duties of the SS or SRO can the SA assume? 2) What equipment in the CR can the SA operate? 3) When is the SA req'd 4) Who resolves SS/SA conflicts? 5) NCP seal flow maintenance difference. 6) NO suction and C/D rate control differences 7) Which 600V load centers have normal and alternate supply's and why? 8) 1HTA voltage? 9) 1HTA, 2HTA Tie? 10) Loss of All AC imm. Actions. 11) Where is RHT level indicated? 12) KC leakage indication in CR? 13) Auto Actions on KC Surge Tank Lo-lo Level 14) RN pit lo-lo level, Ss, and Sp Auto actions 15) CM water hammer prevention on Hotwell pump start? 16) Two cases CMB? auto opens? 17) Component cooled by CM? 18) From where can Cooling Tower Fans be started? 19) AL pressure maintenance and indication? 20) CR indications for axial and quadrant tilts 21) Main Generator indications and values? 22) How much load can one feed pump carry? 23) Show controls for tripping turbine if it fails to trip. 24) If loss CF >5%, what does operator do? 25) When 'Response Not Obtained' is Not Obtained, what is done? 26) Who is Notified of accidental release? 27) where are the evacuation sites? 27) Locate TSC & OSC 28) Who can do independent verification? 29) How are electric jumpers documented? 30) Describe turnover with sheet. 31) When is CR Annunciator Status Log Used? 32) Where are the documents located which are reviewed after turnover?

NAME H M. HARRIS

DATE 5-16-84

S.S. # 239-90-6825

CLASS ID AT - I

OP-CN-AT
Test # 1
May 16, 1984

-12.5

84.9

SHIFT ADVISOR TRAINING

FINAL TEST

TOTAL POINTS: 83

TOTAL QUESTIONS:

INSTRUCTIONS:

1. Put your name on each sheet.
2. Write your answers on the test sheet.
3. Ask the test monitor instructor concerning questions which are not clear to you.

ALL WORK DONE ON THIS EXAMINATION IS MY OWN,
I HAVE NEITHER GIVEN NOR RECEIVED AID.

H M Harris

Students Signature

Tim Harris

(1 pt) 1. Explain why 1ND-1 (NCS Loop Suction) and 1ND-37 (NCS Loop Suction) have an alternate power supply.

To ensure that at least one suction flow path to the ND pumps will be operable in the event of a fire.

(1 pt) 2. Describe the KC system response to a low-low level in KC surge tank 1A.

.5 Auxillery and Reactor building non-essential headers isolate. TRAIN RELATED

(3 pts) 3. List the source of suction for the ND pumps under the following conditions:

a) normal cooldown
b) LOCA injection phase
c) LOCA cold leg recirculation

.5 A - B and C NC loops

B - FWST

C - Containment Sump.

(1 pt) 4. True or False
The supply valves to the ND pumps from the hot legs will close automatically if NC system pressure increases to 450 psig.

False - 600# Hot leg pressure will auto close valves

1

H.M. HARRIS

(4 pts) 5. List three major differences in the ND systems at MNS and CNS.

1. Pumps can take suction from two NC loops -

2. ND Hx's have individual bypasses and controls

3. cold leg injection is opposite from MNS -
at CNS A pump discharges to C and D loops - B pump
discharges to A and B loops

(3 pts) 6. Describe the RN System response to each of the following :

a) Safety Injection
b) Unit Blackout
c) Taking the aux. shutdown panel to "Local"

-.5 A. Ss - RN pump suction and discharge re align to the SNSWP
D/G Hx discharge aligns to SNSWP - Auto Pumpstart -

-1 B. B/O - same as A above

-.5 C. RN pump suction and discharge values re-align to SNSWP if running

(1 pt) 7. Briefly describe how total seal injection flow to the NC Pumps is maintained at 32 gpm.

NV pump charging header control value recieves input from NCP seal injection line to modulate the charging control value open or closed to maintain seal injection flow to NCP's at 32 GPM.

(1 pt) 8. True or False
Upon low level in the FWST (37%) the suction for the NI pumps automatically swaps from the FWST to the Containment Sump.

False - manual action required to swap NI and NV pump suction.

2

H.M. Harris

(1pt) 9. Explain why vacuum varies in the condensers.

RC is circulated in series thru the C, B, and A condenser - as the water passes thru C condenser it picks up heat causing less condensation in the B. Condenser resulting in a decrease in vacuum After leaving B condenser the water is even hotter causing less condensation in the A condenser resulting in decreased vacuum in A condenser -

(1 pt) 10. From which system does the RC system receive makeup?

a. RY
b. RN
c. RL
d. RF

C o

(2 pts) 11. Basically describe how RL, pressure is maintained.

The RL system incorporates a three valve in parallel arrangement which will modulate open and/or closed to maintain proper RL pressure -

(2 pts) 12. What are the power supplies to the 6.9 KV buses at CNS?

Auxiliary transformers

1T1A
1T1B
1T2A
1T2B

(1 pt) 13. Upon loss of power to 1T1A, what occurs on the 6.9 KV buses?

A. If NO fault is present and the bus is in sync with the xformer the tie will auto close.

B. If not in sync - it will wait for voltage to decay to 25% of normal and then close -

10

A.M Harris

two 600V unit load centers receive an alternate power
17

are the power supplies to these 600V load centers?

C AND 1LXD
XC ~~AND 2SLX2~~
9 thru 1TXS to 1LXC AND 1LXD
D thru 1STXS ~~TO~~ 1SLXC OR 2SLXC

the KW rating for the CNS D/G's (Normal and Emergency)?

1 7,000 KW
ncy 7,000 KW for 2hr out of 24 hr period.

our (4) conditions that will trip the D/G's after an
tart.

86 or 87 relay Actuate
maintainance mode Actuated.
over-speed of D/G.
lo lo lube oil pressure.

does the main turbine condenser at CNS differ from MNS's
lenser? Give three (3) major differences.

ot well pumps does not take suction from individual hotwells -
2C supplied in series -
RC pump takes suction from condensers -

ich valves in CF system auto close on a Hi-Hi doghouse level?

ouse related S/G feed isolation valves & Bypass
Feed reg & Bypass
aring flow common isolation valve.
pump Discit
npering flow individual isolation valves
CF TO CA

escribe the normal alignment for the CNS CA System.

uction from CA CST thru CA 6 to CA pumps - Hotwell, CST
)CA discharge aligned to ~~Bank~~ C steam generators
)CA-A - discharge aligned ~~to A & B~~ S/G
)CA-B - discharge aligned to C & D S/G.

4

H. M. HARRIS

(1 pt) 20. To where does the RN system normally discharge?

TO RL discharge piping -

(1 pt) 21. The first immediate action of AP/1/A/5000/21 "Loss of Component Cooling" states: "Verify KC pump(s) running". If no KC pumps can be started, what must be done? (Select One)

a. Trip all NC pumps immediately
b. If < P-10, trip all NC pumps within 5 minutes
c. If > P-6, continue to operate and monitor pumps frequently
d. If < P-10 trip the reactor and trip the NC pumps within 5 minutes.

-1 b

(1 pt) 22. To gain control of the CA regulating valves for the TD CA pump following an auto start (caused by a blackout) the operator must: (Choose One)

a. Reset the CA valve reset and the TD CA pump reset
b. Reset the CA valve reset and the sequencer reset
c. Reset the sequencer and the TD CA pump reset
d. Reset the SM isolation and the sequencer reset

-1 b

(1 pt) 23. The first immediate action in AP/1/A/5000/02 Turbine Generator Trip states "Ensure Turbine Trip". How is this accomplished at CNS?

-.5 verify 1. ~~Ensure~~ NO mega watt output indicated -
2. ~~check~~ - control and stop valves closed.
3. generator BREAKERS ~~OPEN~~ OPEN -

(1 pt) 24. To whom will the SA and SS go for resolution of any differences in opinion? (Choose One)

a. Superintendent of OPS
b. Assistant Shift Supervisor
c. Shift Operating Engineer
d. Assistant Shift Operating Engineer

(1 pt) 25. A SA shall be on duty on each shift that does NOT meet the experience standard whenever:

a. Core alterations are taking place
b. The reactor is in Mode 4 or above
c. The reactor is critical
d. The reactor is in Mode 1

2.5

(1 pt) 26. Which of the following is not a duty nor responsibility of the Shift Advisor?

a. Participate in SS turnover
b. Review control boards
c. The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.
d. The SA will supervise licensed operators and direct assignments which require an operators license.

(5 pts) 27. List the five immediate actions for "Loss of All AC Power" (EP/1/A/5000/03)

1. Verify Reactor tripped.
2. verify turbine tripped.
3. generate A D/G start signal
4. Dispatch 2 NEO's to SSF with Keys.
5. manually trip reactor.

(1 pt) 28. When would the operator enter the "Response Not Obtained" column in an emergency procedure?

Any time the expected action/response is not obtained

(2 pts) 29. a. In the CNS Emergency Plan relocation site Bravo is Allen Plant.
(fill in the blank)

b. In the CNS Emergency Plan relocation site Alpha is Newport Unisys warehouse
(fill in the blank)

(6 pts) 30. During an unusual event, what six (6) outside agencies must be notified?

1. Gaston county emergency centre. (warning point)
2. mecklenburg County emergency centre (warning point)
3. York County emergency centre (warning point).
4. NC state warning point.
5. SC state warning point
6. NRC - Maryland - ENS phone.

10

H.M. Harris

(6 pts) 31. Describe the difference in the following terms per OMP 1-4 "Use of Procedures":

a. Verify
Ensure

b. Should
Shall

c. Refer
Go

A- verify - check indications to see that a function has taken place -
ensure - check to see if function has taken place - must initiate action to make it happen

B. should - would be good to do if possible but not required
Shall - must be done - required -

C. refer - consult AN information resource - but do not discontinue the procedure or evolution you ARE in AT the time -
go - leave what you ARE doing AND start on what has been directed that you go to -

(1 pt) 32. For what period of time is Technical Memorandum valid?

a) A maximum of 6 months unless reissued

b) A maximum of 1 week unless reviewed by Operating Engineer

(c) Until the expiration date

d) 1 year, so long as all performance items are complete and verified by the applicable group.

(1 pt) 33. How will you as a Shift Advisor know of any Temporay Modifications to plant systems?

By review of temporay log book

5

H.M. HARRIS

conditions that require immediate notification of management per OHP 2-15 (Notification of Proper Authority).

tor trip - unscheduled plant shut down

lementation of AOI R.P.

bility to meet a T.S. LCO

uation of ECCS -

bility for limiting access to the Control Room rests
OATC during normal operations and the
or his designee during abnormal/emergency operations.

re (5) items the Shift Supervisor must review as soon as
e after turnover per the Turnover Sheet.

l boards -

for log book -

for turnover sheet

mod book -

and white tag log book.

2-29 (Tech Specs Action Items Logbook) if an item affects
its, how is this documented?

'l be assigned two TSAIL Numbers - one for unit #1
ne for unit #2.

3

SHIFT ADVISOR ORAL EXAMINATION FORM

Student H. M. HARRIS

Date 5/16/94

S.S. # 239-90-6825

Examiner KIMRAY

Student Background McGUIRE

System Differences in MNS and CNS

	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
NV	✓			
ND	✓	②		② Could not explain system action for Lo-Lo surge tank level completely
KC				
RN	✓			
CM	✓			
CF	✓			
CA	✓			
RC				
RL	✓			
MAIN POWER	✓			
DIESELS	✓			

ADMINISTRATIVE	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operations Management Proc.	✓			
Duties and Responsibilities	✓			

PROCEDURES	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operating Proc.	✓			
Abnormal Proc.	✓			
Emergency Proc.	✓			
Emergency Plan	✓			

SHIFT ADVISOR ORAL

EXAMINATION QUESTIONS

DATE 5/16/74

STUDENT H. M. HARRIS

S.S. # 237-90-6825

STUDENT BACKGROUND McGuire

EXAMINER Kinsey

(1) Explain the difference in the way ND control rate is controlled at CVCS and RMS.

(2) Which ND valves have alternate power supplies and why?

(3) From which loops can the ND pumps take suction?

(4) Who resolves differences between the Shift Supervisor and the Shift Advisor

(5) Locate the TSC and OSC.

(6) Give the immediate actions for Rx Trip or SI EP

(7) Per the Duties and Responsibilities, show me all the documents you must review on turnover

(8) Which load centers have alternate power supplies? Why?

(9) List the sources of water to the CA System in order of preferred use.

(10) Describe the RC System flow path

(11) Describe the RH System flow path during Normal and Emergency operations

(12) Describe how mini flow to the Intmd pumps is provided

(13) How does KM-93 respond to a load rejection?

(14) Describe the actions for the loss of RH per the AP

NAME Randy Mayes

DATE 2/2/84

S.S. # 242-82-0091

CLASS ID AT-I

OP-CN-AT
Test # 1
May 16, 1984

-6.25
92.4

SHIFT ADVISOR TRAINING

FINAL TEST

TOTAL POINTS: 83

TOTAL QUESTIONS:

INSTRUCTIONS:

1. Put your name on each sheet.
2. Write your answers on the test sheet.
3. Ask the test monitor instructor concerning questions which are not clear to you.

ALL WORK DONE ON THIS EXAMINATION IS MY OWN,
I HAVE NEITHER GIVEN NOR RECEIVED AID.

Randy Mayes

Students Signature

K Wright

(1 pt) 1. Explain why 1ND-1 (NCS Loop Suction) and 1ND-37 (NCS Loop Suction) have an alternate power supply.

In the event of a loss of power to one train (bus) the ability to supply power supply to the opposite train if available

(1 pt) 2. Describe the KC system response to a low-low level in KC surge tank 1A.

The heaters isolate (train operation ceases) which leaders

-.5

(3 pts) 3. List the source of suction for the ND pumps under the following conditions:

a) normal cooldown ✓
b) LOCA injection phase
c) LOCA cold leg recirculation

A) B + C bus bars
B) individual suction supply from FWST ✓
C) " " " containment sump

(1 pt) 4. True or False
The supply valves to the ND pumps from the hot legs will close automatically if NC system pressure increases to 450 psig.

False

-.5

Khozje

(4 pts) 5. List three major differences in the ND systems at MNS and CNS.

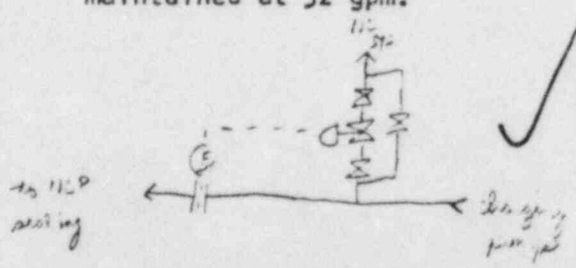
MNS	CNS
1) Common suction for NC hotleg	1) Independent suctions, B & C hotlegs
2) Common suction from FWST	2) " " from FWST
3) Manual control cooldown flow rate using manual bypass & Hx flow.	3) Cooldown flow rate has auto circuit, operator setting Hx flow, bypass is able to control total flow @ 5000 gpm

(3 pts) 6. Describe the RN System response to each of the following :

a) Safety Injection
b) Unit Blackout
c) Taking the aux. shutdown panel to "Local"

A) D/G flows start, non-essential aux bldg hdr isolates, all 4 pumps start
B) RN Related pumps start, D/G flows start
C) Pot supplying disch to panel when RN pump started.

(1 pt) 7. Briefly describe how total seal injection flow to the NC Pumps is maintained at 32 gpm.



an auto flow pressure control valve senses charging flow and controls flow to the NCP @ 32 gpm. The NCP seal flows throttled individually to maintain ~8 gpm to each NCP.

(1 pt) 8. True or False
Upon low level in the FWST (37%) the suction for the NI pumps automatically swaps from the FWST to the Containment Sump.

False

(1pt) 9. Explain why vacuum varies in the condensers.

The P- from the condensate system is in series and designed to heat in the last section prior to it. Due to the temperature difference & because the condensers have a loop seal between each section, vacuum varies between each.

(1 pt) 10. From which system does the RC system receive makeup?

a. RY
b. RN
(c.) RL
d. RF

(2 pts) 11. Basically describe how RL, pressure is maintained.

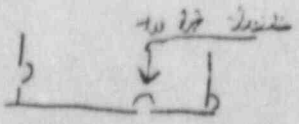
The RL system has 3 pressure regulating valves called train around valves which open and close to maintain RL header pressure. When open they make a direct flow path between the RL supply hdr. & discharge hdr.

(2 pts) 12. What are the power supplies to the 6.9 KV buses at CNS?

1T1A, 1T1B, 1T2A, 1T2B (two transformers)

(1 pt) 13. Upon loss of power to 1T1A, what occurs on the 6.9 KV buses?

The tie breaker from the bus fed by 1T1A closes to supply power from the other source. (Inc BKR from A Trips)



6

Killough

:h two 600V unit load centers receive an alternate power
›ly? 1LXC + 1LXD

: are the power supplies to these 600V load centers?

1TC + 1TXS   LXD from 1TD or 1TXS

↑

1TA

the KW rating for the CNS D/G's (Normal and Emergency)?

Nor. 7000

Emerg 7700 2 hrs/24 hrs

›ur (4) conditions that will trip the D/G's after an
:art.

1) 86 D ✓
2) Overspeed ✓
3) lo-lo lube oil ✓
4) Maint mode ✓

es the main turbine condenser at CNS differ from MNS's
ser? Give three (3) major differences.

[illegible] ✓

[illegible] between sections

[illegible] between condenser sections

MNS

1) RC [illegible] in parallel
2) [illegible] vacuum [illegible]
3) All sections tied together

valves in CF system auto close on a Hi-Hi doghouse level?

[illegible] ✓
[illegible] bypass
[illegible] (main)
[illegible] bypass

5) CF upper nozzle [illegible] CF
6) tempering flow [illegible]
7) common tempering line.
8) CFP disch [illegible]

ibe the normal alignment for the CNS CA System.

[illegible] from CACST to A, B + Turb CA pumps,

A → A+B S/G's   Turb → B+C S/G's.
B → C+D S/G's

.75

(1 pt) 20. To where does the RN system normally discharge?

RL discharge ✓

(1 pt) 21. The first immediate action of AP/1/A/5000/21 "Loss of Component Cooling" states: "Verify KC pump(s) running". If no KC pumps can be started, what must be done? (Select One)

a. Trip all NC pumps immediately
(b.) If < P-10, trip all NC pumps within 5 minutes
c. If > P-6, continue to operate and monitor pumps frequently
d. If < P-10 trip the reactor and trip the NC pumps within 5 minutes.

(1 pt) 22. To gain control of the CA regulating valves for the TD CA pump following an auto start (caused by a blackout) the operator must: (Choose One)

a. Reset the CA valve reset and the TD CA pump reset
(b.) Reset the CA valve reset and the sequencer reset
c. Reset the sequencer and the TD CA pump reset
d. Reset the SM isolation and the sequencer reset

(1 pt) 23. The first immediate action in AP/1/A/5000/02 Turbine Generator Trip states "Ensure Turbine Trip". How is this accomplished at CNS?

Verify Trip Lights on the Turbine are Lit

(1 pt) 24. To whom will the SA and SS go for resolution of any differences in opinion? (Choose One)

a. Superintendent of OPS
b. Assistant Shift Supervisor
(c.) Shift Operating Engineer
d. Assistant Shift Operating Engineer

(1 pt) 25. A SA shall be on duty on each shift that does NOT meet the experience standard whenever:

a. Core alterations are taking place
(b.) The reactor is in Mode 4 or above
c. The reactor is critical
d. The reactor is in Mode 1

12

(1 pt) 26. Which of the following is not a duty nor responsibility of the Shift Advisor?

a. Participate in SS turnover
b. Review control boards
c. The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.
d. The SA will supervise licensed operators and direct assignments which require an operators license.

(5 pts) 27. List the five immediate actions for "Loss of All AC Power" (EP/1/A/5000/03)

1) Manual trip Rx
2) Verify Rx trip
3) Verify turb trip
4) Energize D/G start signal
5) Obtain key + send 2 operators to establish RCP seal flow

(1 pt) 28. When would the operator enter the "Response Not Obtained" column in an emergency procedure?

When the action required can not be met

(2 pts) 29. a. In the CNS Emergency Plan relocation site Bravo is Williamsburg. (fill in the blank)

b. In the CNS Emergency Plan relocation site Alpha is Newport. (fill in the blank)

(6 pts) 30. During an unusual event, what six (6) outside agencies must be notified?

1) Washington
2) Easton
3) York
4) NRC
5) NC dept
6) SC dept

6

(6 pts) 31. Describe the difference in the following terms per OMP 1-4 "Use of Procedures":

a. Verify - see that it is where its supposed to be
   Ensure - if not there, put it there.

b. Should - recommendation
   Shall - requirement

c. Refer - perform activities stipulated within the current procedure
   Go - leave the current procedure and exit to the stated procedure

(1 pt) 32. For what period of time is Technical Memorandum valid?

a) A maximum of 6 months unless reissued

b) A maximum of 1 week unless reviewed by Operating Engineer

(c) Until the expiration date

d) 1 year so long as all performance items are complete and verified by the applicable group.

(1 pt) 33. How will you as a Shift Advisor know of any Temporay Modifications to plant systems?

Review of the Temp Mod Log Book

(4 pts) 34. List four conditions that require immediate notification of management personnel per OMP 2-15 (Notification of Proper Authority).

1) Safety limit violation ✓
2) Notification ✓
3) Emergency plan implementation ✓
4) Transportation of contaminated injured staff.

(2 pts) 35. Responsibility for limiting access to the Control Room rests with the DATC during normal operations and the SS or his designee during abnormal/emergency operations. ✓

(5 pts) 36. List five (5) items the Shift Supervisor must review as soon as possible after turnover per the Turnover Sheet.

1) R&R ✓
2) R.O. log ✓
3) Red tags ✓
4) White tags ✓
5) Work list ✓

(1 pt) 37. Per OMP 2-29 (Tech Specs Action Items Logbook) if an item affects both units, how is this documented?

It is listed in both units logbooks. ✓

10

SHIFT ADVISOR ORAL EXAMINATION FORM

Student Randy Mayes Date 5/16/84

S.S. # 242-76-0081 Examiner Glenn Spurlin

Student Background MNS SRO

System Differences in MNS and CNS	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
NV	X			
ND	X			
KC	X			
RN	X			
CM	X			
CF	X			
CA	X			
RC	X			
RL	X			
MAIN POWER	X			
DIESELS	X			

ADMINISTRATIVE	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operations Management Proc.	X			
Duties and Responsibilities	X			

PROCEDURES	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operating Proc.	X			
Abnormal Proc.	X			
Emergency Proc.	X			

SHIFT ADVISOR ORAL

EXAMINATION QUESTIONS

DATE 5/16/84

STUDENT Randy Mayes

S.S. # 242-86-0081

STUDENT BACKGROUND MNS SRO

EXAMINER Glenn Spurlin

EP- Locate 6900 Room - ✓ Exc 1D pwr - ↑ Manner 6900 Run - ↓ Aux rGs - ↑

Difference in [illegible] - ↑ % [illegible] - ↑ [illegible] - ↑ Trips

138 Differences - ↑ X-connects - ↑

RL- Hdr Press control - ↑ Location ↑

RC- System operation - Flow paths - Hotwell arrangements - ↑

CM- [illegible] Trips - ↑ Flow paths - ↑ Interlocks - ↑

RN- Swap to [illegible] Loads -

KC- Normal lineup - ↑ Start on B/O r/o LOCA - ↑ Look into status from KC - ↑

use of [illegible] leakage AP - ↑

ND- Cooldown Rate control ↑ Suctions - ↑ Suct valve alt power - ↑

Auto swap - ↑ overpressure protection - ↑

NV- Plant differences - ↑ NCP seal flow normal - ↑ Emergency - ↑

CA- Auto starts - ↑ supplies - ↑ Controls - ↗ Run out protection - ↑

CF- When placed in service - ↑ Loss CF at 50% pwr - ↑

Differences ↑

Duties & Responsibilities - ↑ When required ↑

RP- Locate TSC - ↑ When req'd to be manned - ↑ classifications - ↑

NAME R PATTON

DATE 5/16/84

S.S. # 587-26-1521

CLASS ID AT-1

OP-CN-AT
Test # 1
May 16, 1984

95

98.5

SHIFT ADVISOR TRAINING

#6

FINAL TEST

TOTAL POINTS: 83

TOTAL QUESTIONS:

INSTRUCTIONS:

1. Put your name on each sheet.
2. Write your answers on the test sheet.
3. Ask the test monitor instructor concerning questions which are not clear to you.

ALL WORK DONE ON THIS EXAMINATION IS MY OWN,
I HAVE NEITHER GIVEN NOR RECEIVED AID.

Randy Patton

Students Signature

(1 pt) 1. Explain why 1ND-1 (NCS Loop Suction) and 1ND-37 (NCS Loop Suction) have an alternate power supply.

TO ALLOW OPERATION OF VALVE IN EVENT OF FIRE IN NORM PWR SUPPLY

(1 pt) 2. Describe the KC system response to a low-low level in KC surge tank 1A.

NON ESS AUX & RX. BLDG ISOLATES
1 of 5
TRAIN RELATED

(3 pts) 3. List the source of suction for the ND pumps under the following conditions:

a) normal cooldown A PUMP - B LOOP B PUMP C LOOP
b) LOCA injection phase
c) LOCA cold leg recirculation

(b) FWST
(c) CONT SUMP

(1 pt) 4. True or (False)
The supply valves to the ND pumps from the hot legs will close automatically if NC system pressure increases to 450 psig.

r

1.5

(4 pts) 5. List three major differences in the ND systems at MNS and CNS.

1 AUTO FLOW CONTROL FROM HX BYPASS VLVS

2 NO PUMP SUCTION COMMON ISOLATION from where

3 PUMPS HAVE SEPARATE SUCTION VLVS FROM LOOPS

(3 pts) 6. Describe the RN System response to each of the following :

a) Safety Injection
b) Unit Blackout
c) Taking the aux. shutdown panel to "Local"

A (a) PUMPS START – TRAIN RELATED ALL 4 pumps START

(b) PUMP START – TRAIN RELATED BOTH UNITS

(c) SUCTION & DISCHARGES ALIGN TO POND IF PUMPS RUNNI AND IF NOT RUNNING THEY WILL ALIGN SO WHEN STARTED

(1 pt) 7. Briefly describe how total seal injection flow to the NC Pumps is maintained at 32 gpm.

BY AUTO FLOW CONTROL VLV IN ONE COMMON VLV WILL CONTROL TOTAL SEAL INJ FLOW TO 32 GPM

(1 pt) 8. True or False
Upon low level in the FWST (37%) the suction for the NI pumps automatically swaps from the FWST to the Containment Sump.

4 1.5

(1pt) 9. Explain why vacuum varies in the condensers.

BECAUSE THERE IS A WATER SEAL BETWEEN INDIVIDUAL SECTIONS AND NO FLOW THRU COND SECTIONS IS IN SERIES

(1 pt) 10. From which system does the RC system receive makeup?

a. RY
b. RN
c. RL
d. RF

(2 pts) 11. Basically describe how RL, pressure is maintained.

BY THE RCL TURBINE VLVS WHICH CONTROL BACKPRESS ON THE RL HDR

(2 pts) 12. What are the power supplies to the 6.9 KV buses at CNS?

1T1B 1T1A 1T2A 1T2B

(1 pt) 13. Upon loss of power to 1T1A, what occurs on the 6.9 KV buses?

THE TIE TO THE SHORT SIDE WILL AUTO CLOSE IN ON A FAST XFER IF IN SYNC SLOW XFER IF NOT IN SYN TO SUPPLY THE VITAL LOADS ON THAT BUS

60

(1 pt) 14. a. Which two 600V unit load centers receive an alternate power supply? 1LXC 1LXD

(1 pt) b. What are the power supplies to these 600V load centers?

1XTS IS ALTERNATE

.5

(1 pt) 15. What is the KW rating for the CNS D/G's (Normal and Emergency)?

7000 NORMAL

7700 for 2/24 HRS (EMERG)

(4 pts) 16. Give four (4) conditions that will trip the D/G's after an auto start.

1. OVERSPEED
2. MAINT MODE
3. LO LUBE OIL PRESS AFTER 60 SEC TIMER
4. 87 LOCKOUT

(3 pts) 17. How does the main turbine condenser at CNS differ from MNS's condenser? Give three (3) major differences.

1. RC FLOW THRU COND IS IN SERIES
2. SECTIONS HAVE WATER SEAL BETWEEN THEM
3. RC PUMPS ARE ON OUTLET SIDE OF COND

(5 pts) 18. Which valves in CF system auto close on a Hi-Hi doghouse level?

1. CF PUMP DISC VLVS
2. TEMP FLOW VLVS
3. CF CONT ISOL VL
4. CF CONT ISOL VLV BY PASS } IN THAT DOGHOUSE
5. COMMON TEMP FLOW ISOL

feed reg & bypass
CF to CA

-1

(5 pts) 19. Describe the normal alignment for the CNS CA System.

SUPPLYS FROM CA TK UST HOTWELL OPEN A MOTOR DRIVEN ALIGNED TO A&B S/G, B ALIGNED TO C&D and TURB ALIGNED TO B&C S/K AND RN & RC SUPPLYS CLSD

-1

(1 pt) 20. To where does the RN system normally discharge?

LAKE VIA RC

(1 pt) 21. The first immediate action of AP/1/A/5000/21 "Loss of Component Cooling" states: "Verify KC pump(s) running". If no KC pumps can be started, what must be done? (Select One)

NOT ENOUGH OPTIONS

a. Trip all NC pumps immediately
b. If <P-10, trip all NC pumps within 5 minutes
c. If >P-6, continue to operate and monitor pumps frequently
d. If <P-10 trip the reactor and trip the NC pumps within 5 minutes.

b

(1 pt) 22. To gain control of the CA regulating valves for the TD CA pump following an auto start (caused by a blackout) the operator must: (Choose One)

a. Reset the CA valve reset and the TD CA pump reset
b. Reset the CA valve reset and the sequencer reset
c. Reset the sequencer and the TD CA pump reset
d. Reset the SM Isolation and the sequencer reset

b

(1 pt) 23. The first immediate action in AP/1/A/5000/02 Turbine Generator Trip states "Ensure Turbine Trip". How is this accomplished at CNS?

BY OBSERVING GOV & THROTTLE VLV POSITIONS

OK

(1 pt) 24. To whom will the SA and SS go for resolution of any differences in opinion? (Choose One)

a. Superintendent of OPS
b. Assistant Shift Supervisor
c. Shift Operating Engineer
d. Assistant Shift Operating Engineer

(1 pt) 25. A SA shall be on duty on each shift that does NOT meet the experience standard whenever:

a. Core alterations are taking place
b. The reactor is in Mode 4 or above
c. The reactor is critical
d. The reactor is in Mode 1

B

(1 pt) 26. Which of the following is not a duty nor responsibility of the Shift Advisor?

a. Participate in SS turnover
b. Review control boards
c. The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.
d. The SA will supervise licensed operators and direct assignments which require an operators license.

(5 pts) 27. List the five immediate actions for "Loss of All AC Power" (EP/1/A/5000/03)

1. MANUAL TRIP RX
2. VERIFY RX TRIP
3. VERIFY TURB TRIP
4. MANUALLY START DG
5. IF NO H GO TO SSE TO START SEAL INJ.

(1 pt) 28. When would the operator enter the "Response Not Obtained" column in an emergency procedure?

WHEN EXPECTED RESPONSE IS NOT OBTAINED

(2 pts) 29. a. In the CNS Emergency Plan relocation site Bravo is PLANT ALLEN. (fill in the blank)

b. In the CNS Emergency Plan relocation site Alpha is NEWPORT / MISSION HILL (fill in the blank)

(6 pts) 30. During an unusual event, what six (6) outside agencies must be notified?

1. NRC
2. MECK. COUNTY
3. GASTON COUNTY
4. YORK COUNTY
5. NC
6. SC

6

(6 pts) 31. Describe the difference in the following terms per OMP 1-4 "Use of Procedures":

a. Verify — MEANS TO CHECK THAT SOMETHING HAS HAPPENED
   Ensure — MAKE IT HAPPEN IF IT IS NOT ALREADY HAPPENING

b. Should — MEANS ITS A GOOD IDEA TO DO IT
   Shall — " YOU WILL DO IT

c. Refer — CONSULT ANOTHER PROCEDURE BUT KEEP THE ONE YOU ARE IN
   Go — MEANS START USING ANOTHER PROCEDURE ALL TOGETHER

(1 pt) 32. For what period of time is Technical Memorandum valid?

a) A maximum of 6 months unless reissued

b) A maximum of 1 week unless reviewed by Operating Engineer

c) Until the expiration date

d) 1 year, so long as all performance items are complete and verified by the applicable group.

(1 pt) 33. How will you as a Shift Advisor know of any Temporay Modifications to plant systems?

BY REFERING TO TEMP MOD LOGS

(4 pts) 34. List four conditions that require immediate notification of management personnel per OMP 2-15 (Notification of Proper Authority).

UNPLANNED RADIOACTIVE RELEASE

FIRE > 10 MIN

ACTUATION OF ECCS SYSTEM

RX TRIP

OK

(2 pts) 35. Responsibility for limiting access to the Control Room rests with the OATC during normal operations and the SRO or his designee during abnormal/emergency operations.

1 SHIFT SUPV.

(5 pts) 36. List five (5) items the Shift Supervisor must review as soon as possible after turnover per the Turnover Sheet.

TEMP MOD LOG

ALARM STATUS LOG

UNIT SUPERVISORS TURNOVER

CONTROL ROOM LOG

PERF TEST IN PROGRESS LOG

(1 pt) 37. Per OMP 2-29 (Tech Specs Action Items Logbook) if an item affects both units, how is this documented?

WILL BE LOGGED OUT IN BOTH UNIT TEC SPEC LOGS

1

SHIFT ADVISOR ORAL EXAMINATION FORM

Student Randy Patton

Date 5-16-84

S.S. # 587-26-1581

Examiner C T Kiker, Jr.

Student Background MNS SRO

System Differences in MNS and CNS

	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
NV	✓			
ND	✓			
KC	✓			
RN	✓			
CM	✓			
CF				
CA	✓			
RC	✓			
RL	✓			
MAIN POWER	✓			
DIESELS	✓			

ADMINISTRATIVE	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operations Management Proc.	✓			
Duties and Responsibilities	✓			

PROCEDURES	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operating Proc.	✓			
Abnormal Proc.	✓			
Emergency Proc.	✓			
Response Proc.	✓			

SHIFT ADVISOR ORAL

EXAMINATION QUESTIONS

DATE 5-16-84

STUDENT RANDY PATTON

S.S. # 587-26-1581

STUDENT BACKGROUND MNS SRO EXAMINER CT KIKER, JR.

1) What duties of the SS or SRO can the SA assume? 2) What equipment in the CR can the SA operate? 3) When is the SA requir 4) Who resolves SS/SA conflicts? 5) NCP seal flow maintenance difference: 6) NO suction and C/D rate control differences 7) Which 600V load centers have normal and alternate supply's and why? 8) Feeder to CT FANS? 9) 1ETA, 2ATA Tie? 10) Loss of All AC imm. Actions. 11) CA runout protection ? 12) KC leakage indication in CR? 13) Auto Actions on KC Surge Tank Lo-lo Level 14) RN pit lo-lo level, SS, and SP Auto actions 15) CA pump and valve control following accident? 16) Two cases CM83 auto opens? 17) Component cooled by CM? 18) From where can Cooling Tower Fans be started? 19) RL pressure maintenance and indication? 20) CR indications for axial and quadrant tilts 21) Main Generator indications and values? 22) List the sources of water to CA system. 23) Show controls for tripping turbine if it fails to trip. 24) Go through Turbine Trip immediate actions. 25) When 'Response Not Obtained' is not obtained, what is done? 26) Who is Notified of accidental release? 27) where are the evacuation sites? 27) Locate TSC & OSC 28) Who can do independent verification? 29) How are electric jumpers documented? 30) Describe turnover with sheet. 31) When is CR Annunciator Status Log Used? 32) Where are the documents located which are reviewed after turnover? 33) D/G Auto start trips & interlocks 34)

NAME Jerry Runcie

DATE 5-16-84

S.S. # 239-94-3492

CLASS ID AT - I

OP-CN-AT
Test # 1
May 16, 1984

~~5.75~~
4.25

~~93.4~~ 94.9

SHIFT ADVISOR TRAINING

FINAL TEST

TOTAL POINTS: 83

TOTAL QUESTIONS:

INSTRUCTIONS:

1. Put your name on each sheet.
2. Write your answers on the test sheet.
3. Ask the test monitor instructor concerning questions which are not clear to you.

ALL WORK DONE ON THIS EXAMINATION IS MY OWN, I HAVE NEITHER GIVEN NOR RECEIVED AID.

Jerry Runcie

Students Signature

(1 pt) 1. Explain why 1ND-1 (NCS Loop Suction) and 1ND-37 (NCS Loop Suction) have an alternate power supply.

To assure that in the event of a fire, that at least one train of ND will always be available for cooling.

(1 pt) 2. Describe the KC system response to a low-low level in KC surge tank 1A.

1A Train Header Isolates to the Non ESFAS and Non RLOG Non-Essential Headers will auto-close.

(3 pts) 3. List the source of suction for the ND pumps under the following conditions:

a) normal cooldown
b) LOCA injection phase
c) LOCA cold leg recirculation

a) A Pump - A Hot Leg B Pump - B Hot Leg.

b) A and B pump from FWST via Seperate Suction Lines.

c) Containment Sump via seperate Suction lines.

(1 pt) 4. True or False
The supply valves to the ND pumps from the hot legs will close automatically if NC system pressure increases to 450 psig.

False

10

(4 pts) 5. List three major differences in the ND systems at MNS and CNS.

Auto Flow Control - 3000 gpm.

Seperate Pump Suctions from FWST

Seperate Pump Suctions from Hot Legs.

Seperate Heatexchanger bypass valves with Manual/Auto Station.

Auto Swapover to Cont. Sump on Lo FWST Level (37%)

A Pump Discharges to C + D Loops - B pump to A + B Loops

(3 pts) 6. Describe the RN System response to each of the following :

a) Safety Injection
b) Unit Blackout
c) Taking the aux. shutdown panel to "Local"

a) ① All Pumps Start
② Aligns Flow to K/6 Hx
③ Isolates Non-ess. Vent. AH

b) ① Starts Train related Pumps (both units)
Aligns Suction & Disch to Pond
Auto Supplies K/6 Hx

c) ① On Running Pump swaps Suction & Disch to SNSWP.
② Idle Pump will Auto Swap to SNSWP when Started.

.5

(1 pt) 7. Briefly describe how total seal injection flow to the NC Pumps is maintained at 32 gpm.

Controlled Auto Matically. As Charging flow is varied, flow control valve Automatically re-positions to Maintain 32 gpm total Seal inj flow

(1 pt) 8. True or False
Upon low level in the FWST (37%) the suction for the NI pumps automatically swaps from the FWST to the Containment Sump.

False

.5

(1pt) 9. Explain why vacuum varies in the condensers.

Varies due to RC flow being Supplied in Series to Condenser waterboxes. C Condenser Supplied with the coolest water, then B recieves slightly warmer water and then A recieves the warmest.

(1 pt) 10. From which system does the RC system receive makeup?

a. RY
b. RN
c. RL
d. RF

(2 pts) 11. Basically describe how RL, pressure is maintained.

The 3 RL Turnaround values Auto Control to Maintain RL Pump Discharge Pressure at ≈ 75#. As Pressure ↑, Values open. As Pressure ↓, values close down.

(2 pts) 12. What are the power supplies to the 6.9 KV buses at CNS?

1T1A
1T1B
1T2A
1T2B

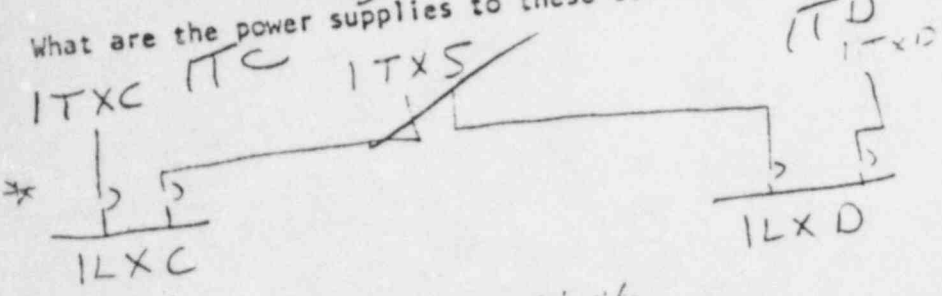
(1 pt) 13. Upon loss of power to 1T1A, what occurs on the 6.9 KV buses?

The 6.9 KV buses being powered from 1T1A will Aut. close the tie breaker between the Short bus and Long bus so that the redundant power supply can carry the affected 6.9 KV buses.

6

Which two 600V unit load centers receive an alternate power supply? 1LXC & 1LXD

. What are the power supplies to these 600V load centers?



Can only supply 1 bus - 1LXC priority.

What is the KW rating for the CNS D/G's (Normal and Emergency)?

Normal 7000 KW
Emer. 7700 KW 2 HRS/24

. Give four (4) conditions that will trip the D/G's after an auto start.

87 Diff. Relay
Overspeed
Maint. Mode Selected
Lo L. Lube oil Pressure after 60 sec. Time Delay.

17. How does the main turbine condenser at CNS differ from MNS's condenser? Give three (3) major differences.

① RC Flow is in Series.
② Supplied from Cooling Towers instead of Lake.
③ Closed Loop
④ Gravity Flow thru Condensers.

) 18. Which valves in CF system auto close on a Hi-Hi doghouse level?

① The Normal FW Isol Valves in the Related D/T
a - EFW - CF Recirc - Temp. Line - CF-SA - FW Isol Valve - FWLCS Typ
② ICF-100 - Common Tempering Flow Isol.
③ FWP Discharge Valves (Also Trips both FWPs)

ts) 19. Describe the normal alignment for the CNS CA System.

T/D aligned to B & C S/G only.
A M/D aligned to A & B S/G only
B M/D aligned to C & D S/G only.
Suction from CBEST - USFT Hotwell open.

.25

(1 pt) 20. To where does the RN system normally discharge?

Lake Wylie via RC DISCH

(1 pt) 21. The first immediate action of AP/1/A/5000/21 "Loss of Component Cooling" states: "Verify KC pump(s) running". If no KC pumps can be started, what must be done? (Select One)

a. Trip all NC pumps immediately
b. If < P-10, trip all NC pumps within 5 minutes
c. If > P-6, continue to operate and monitor pumps frequently
d. If < P-10 trip the reactor and trip the NC pumps within 5 minutes.

b

(1 pt) 22. To gain control of the CA regulating valves for the TD CA pump following an auto start (caused by a blackout) the operator must: (Choose One)

a. Reset the CA valve reset and the TD CA pump reset
b. Reset the CA valve reset and the sequencer reset
c. Reset the sequencer and the TD CA pump reset
d. Reset the SM isolation and the sequencer reset

(1 pt) 23. The first immediate action in AP/1/A/5000/02 Turbine Generator Trip states "Ensure Turbine Trip". How is this accomplished at CNS?

Verify Throttle valves & Governor valves closed.

OK

(1 pt) 24. To whom will the SA and SS go for resolution of any differences in opinion? (Choose One)

a. Superintendent of OPS
b. Assistant Shift Supervisor
c. Shift Operating Engineer
d. Assistant Shift Operating Engineer

(1 pt) 25. A SA shall be on duty on each shift that does NOT meet the experience standard whenever:

a. Core alterations are taking place
b. The reactor is in Mode 4 or above
c. The reactor is critical
d. The reactor is in Mode 1

1.5

(1 pt) 26. Which of the following is not a duty nor responsibility of the Shift Advisor?

a. Participate in SS turnover
b. Review control boards
c. The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.
d. The SA will supervise licensed operators and direct assignments which require an operators license.

(5 pts) 27. List the five immediate actions for "Loss of All AC Power" (EP/1/A/5000/03)

① Manually Trip the Rx
② Verify Rx Tripped
③ Verify Turbine Tripped.
④ Generate D/G Start Signal
⑤ After Obtaining Key dispatch 2 Operators to SSF to establish RCP seal Inj flow via S/B M/U Pump.

(1 pt) 28. When would the operator enter the "Response Not Obtained" column in an emergency procedure?

When he/she cannot meet the requirement for the expected response column.

(2 pts) 29. a. In the CNS Emergency Plan relocation site Bravo is Allen Steam Station
(fill in the blank)

b. In the CNS Emergency Plan relocation site Alpha is Newport Tech Dept. Warehouse.
(fill in the blank)

(6 pts) 30. During an unusual event, what six (6) outside agencies must be notified?

① Mecklenburg County
② York "
③ Gaston "
④ NRC via ENS
⑤ N.C. State Warning Point.
⑥ S.C. " " "

6

(6 pts) 31. Describe the difference in the following terms per OMP 1-4 "Use of Procedures":

a. Verify - check to see if something was done.
   Ensure - Make sure action is taken to achieve objective.

b. Should Not-Mandatory - Needs to be done.
   Shall Mandatory - Must be done.

c. Refer - use in conjunction with
   Go - leave this procedure - Use the one required to

(1 pt) 32. For what period of time is Technical Memorandum valid?

a) A maximum of 6 months unless reissued

b) A maximum of 1 week unless reviewed by Operating Engineer

c) Until the expiration date

d) 1 year so long as all performance items are complete and verified by the applicable group.

(1 pt) 33. How will you as a Shift Advisor know of any Temporay Modifications to plant systems?

By checking the Temporary Mod Book

10

(4 pts) 34. List four conditions that require immediate notification of management personnel per OMP 2-15 (Notification of Proper Authority).

When entering an LCO in Tech. Specs.

If Tech Spec

When a prior X Item cannot be completed

S/I required by T.S.

(2 pts) 35. Responsibility for limiting access to the Control Room rests with the OA/TC during normal operations and the SS or his designee during abnormal/emergency operations.

(5 pts) 36. List five (5) items the Shift Supervisor must review as soon as possible after turnover per the Turnover Sheet.

R.O. Logs

T.S. A.I.L.

Work

Control Boards

Control Room Annunciator Status Lights/Alarms

(1 pt) 37. Per OMP 2-29 (Tech Specs Action Items Logbook) if an item affects both units, how is this documented?

Will be Logged in both Unit T.S. A.I.L.

32

SHIFT ADVISOR ORAL EXAMINATION FORM

Student JERRY RUMPELT

S.S. # 239-94-3492

Student Background McGUIRE

Date 5/16/84

Examiner ZK Kinsey

System Differences in MNS and CNS

	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
NV	✓			
ND	✓			
KC	✓			
RN	✓			
CM	✓			
CF	✓			
CA	✓			
RC	✓			
RL	✓			
MAIN POWER	✓			
DIESELS	✓			

ADMINISTRATIVE	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operations Management Proc.				
Duties and Responsibilities				

PROCEDURES	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operating Proc.	✓			
Abnormal Proc.	✓			
Emergency Proc.	✓			

all responses sat

SHIFT ADVISOR ORAL

EXAMINATION QUESTIONS

DATE 5/10/84

STUDENT Jerry Rumfelt

S.S. # 239-90-3492

STUDENT BACKGROUND McGuire EXAMINER Kimzey

① Explain the difference in the way ND controls rate is controlled I CVC and I MVE

② Which ND valves have alternate power supplies and why?

③ Granabit loops on the ND pumps to be written?

④ Who resolves any differences between the SS and the SA?

⑤ Locate the TSC and OSC

⑥ Give the immediate actions for Reactor Trip or SI EP

⑦ Which load centers have alternate power supplies and why?

⑧ List the sources of water to the CA system in order of preference of use.

⑨ Describe the RC system flow path

⑩ Describe the RV system flow path for normal and emergency operations

⑪ Describe how mini flow protection for the Intake pumps is assured

⑫ How does KW-E2 respond to a load rejection?

⑬ Describe the actions for a loss of KC per the AP

⑭ Describe the normal CA system alignment.

⑮ Describe current protection for the CA pumps

NAME DANNY REED

DATE 4-16-84

S.S. # 238-24-4085

CLASS ID 24-1

OP-CN-AT
Test # 1
May 16, 1984

.75
90.9

SHIFT ADVISOR TRAINING

FINAL TEST

TOTAL POINTS: 83

TOTAL QUESTIONS:

INSTRUCTIONS:

1. Put your name on each sheet.
2. Write your answers on the test sheet.
3. Ask the test monitor instructor concerning questions which are not clear to you.

ALL WORK DONE ON THIS EXAMINATION IS MY OWN,
I HAVE NEITHER GIVEN NOR RECEIVED AID.

Danny E Reed

Students Signature

© Gray

y 1ND-1 (NCS Loop Suction) and 1ND-37 (NCS Loop Suction)
:ernate power supply.
can a fire isolated with one on other train
2". the operator can get TSE to swap
er supplies to opposite train and ensure
least one pump has a suction path from
1C system.

the KC system response to a low-low level in KC surge

a train related valves isolate its Rx Flds
d Aux Flds from ESS header.

source of suction for the ND pumps under the following
ins:

nal cooldown
A injection phase
A cold leg recirculation

"A" ND "B" Hot Cold Legs
B ND "C" Hot Cold Legs
FWST
Cont. Sump

r (False)
pply valves to the ND pumps from the hot legs will close
tically if NC system pressure increases to 450 psig.

S Cary

(4 pts) 5. List three major differences in the ND systems at MNS and CNS.

1) "A" ND train goes to C & D C/C's
   B ND train goes to D & B C/C's
2) CNS has auto Bypass around Hx to control Flow to 2000 gpm
3) the NC pumps have no Excha Isolations
4) As mentioned before you have to Cold Legs you can take out. from inside of one die

(3 pts) 6. Describe the RN System response to each of the following :

a) Safety Injection
b) Unit Blackout
c) Taking the aux. shutdown panel to "Local"

A) Safety Injection
1) All RN Pump Start
2) D/G is supplied cooling H2O
3) Isolates RN Non Ess vent Hdr

B) Unit BO
1) D/G for that unit receives Flow
Unit Related RN pumps Start

C) 1) Start All RN pumps in unit
2) trains Flow to and from Hdr

-.5

(1 pt) 7. Briefly describe how total seal injection flow to the NC Pumps is maintained at 32 gpm.

Is maintained automatically, unless we have manual control

(1 pt) 8. True or False
Upon low level in the FWST (37%) the suction for the NI pumps automatically swaps from the FWST to the Containment Sump.

15

(1pt) 9. Explain why vacuum varies in the condensers.

Vacuum varies in cond due to diff in temp of RC Flowing thru condenser tubes. RC goes in "C" Cond, "B" cond, then "A" Cond.

(1 pt) 10. From which system does the RC system receive makeup?

a. RY
b. RN
c. RL
d. RF

(2 pts) 11. Basically describe how RL, pressure is maintained.

Between supply header and return header you have so called by-around valves. These valves close on ↑ press and open on ↓ pressure to Maintain RC press

(2 pts) 12. What are the power supplies to the 6.9 KV buses at CNS?

1+1A
1+2A
1+1B
1+2B

(1 pt) 13. Upon loss of power to 1T1A, what occurs on the 6.9 KV buses?

The tie breaker will close between the long and short bus of the two 6.9KV buses being supplied (ie, 1+1A (Assuming BKR will open)

10

(1 pt) 14. a. Which two 600V unit load centers receive an alternate power supply?

(1 pt) b. What are the power supplies to these 600V load centers?

A) 1LXD
1LXC

-1 ? 1LXA alternate, and normal supply

(1 pt) 15. What is the KW rating for the CNS D/G's (Normal and Emergency)?

7000 KW
7700 KW → 2 hrs out of 24 hrs

(4 pts) 16. Give four (4) conditions that will trip the D/G's after an auto start.

1) 87Diff-86 Lockout
2) OVERspeed
3) Mint Mode Depressed
4) LO LO lube oil press after 60 sec

(3 pts) 17. How does the main turbine condenser at CNS differ from MNS's condenser? Give three (3) major differences.

there are separate Hotwell's
End cond. will diff vacuums than the 2
RC Flows thru the cond in series instead of parallel.

(5 pts) 18. Which valves in CF system auto close on a Hi-Hi doghouse level?

-2 Temp Recirculation
Dog House Related FW Recirculation valves ← which ones are these?
FWPT Disch Valves

(5 pts) 19. Describe the normal alignment for the CNS CA System.

CACST
UST
Hotwell → turb Driven Pump → RSC 4Gs
PN → A MD pump → A&B 4Gs
RC → C MD pump → C&D 4Gs

(1 pt) 20. To where does the RN system normally discharge?

back to suction even if so taking a suction group - Late Wiley thru RL

(1 pt) 21. The first immediate action of AP/1/A/5000/21 "Loss of Component Cooling" states: "Verify KC pump(s) running". If no KC pumps can be started, what must be done? (Select One)

a. Trip all NC pumps immediately
b. If < P-10, trip all NC pumps within 5 minutes
c. If > P-6, continue to operate and monitor pumps frequently
d. If < P-10 trip the reactor and trip the NC pumps within 5 minutes.

(1 pt) 22. To gain control of the CA regulating valves for the TD CA pump following an auto start (caused by a blackout) the operator must: (Choose One)

a. Reset the CA valve reset and the TD CA pump reset
b. Reset the CA valve reset and the sequencer reset
c. Reset the sequencer and the TD CA pump reset
d. Reset the SM Isolation and the sequencer reset

(1 pt) 23. The first immediate action in AP/1/A/5000/02 Turbine Generator Trip states "Ensure Turbine Trip". How is this accomplished at CNS?

Verify stop valves closed, GVs, Intercept valve Generator Breaker A & B open

(1 pt) 24. To whom will the SA and SS go for resolution of any differences in opinion? (Choose One)

a. Superintendent of OPS
b. Assistant Shift Supervisor
c. Shift Operating Engineer
d. Assistant Shift Operating Engineer

(1 pt) 25. A SA shall be on duty on each shift that does meet the experience standard whenever:

a. Core alterations are taking place
b. The reactor is in Mode 4 or above
c. The reactor is critical
d. The reactor is in Mode 1

(1 pt) 26. Which of the following is not a duty nor responsibility of the Shift Advisor?

a. Participate in SS turnover
b. Review control boards
c. The SA will not directly manipulate equipment/controls, but may advise on manipulation of equipment/controls at the SS's request.
d. The SA will supervise licensed operators and direct assignments which require an operators license.

(5 pts) 27. List the five immediate actions for "Loss of All AC Power" (EP/1/A/5000/03)

1) Man trip Rx
2) Verify Rx trip
3) Verify turb trip
4) Generator D/G start
5) Get key, dispatch 2 operators to SSF to establish seal H2O to RCP's referring to SSF OP

(1 pt) 28. When would the operator enter the "Response Not Obtained" column in an emergency procedure?

Any time you answer the action expected as negative

(2 pts) 29. a. In the CNS Emergency Plan relocation site Bravo is [illegible] (fill in the blank)

b. In the CNS Emergency Plan relocation site Alpha is [illegible] (fill in the blank)

(6 pts) 30. During an unusual event, what six (6) outside agencies must be notified?

NC State Warning
SC State Warning
York County
Gaston County
Mecklenburg County
NRC

6

(6 pts) 31. Describe the difference in the following terms per OMP 1-4 "Use of Procedures":

a. Verify — means to something that should already be done
   Ensure — means about something that should already should be done but you may have to do it

b. Should — means you may or may not have to do something
   Shall — means you will do what ever it says

c. Refer — means go to another procedure temporarily perform in parallel
   Go — means go to another procedure completely

(1 pt) 32. For what period of time is Technical Memorandum valid?

a) A maximum of 6 months unless reissued

b) A maximum of 1 week unless reviewed by Operating Engineer

c) Until the expiration date

d) 1 year, so long as all performance items are complete and verified by the applicable group.

(1 pt) 33. How will you as a Shift Advisor know of any Temporay Modifications to plant systems?

review B.Book this day

16

(4 pts) 34. List four conditions that require immediate notification of management personnel per OMP 2-15 (Notification of Proper Authority).

ANY 1) PP implemented → Notification of Unusual Event
2) fatality on site
3) Exceed T.S. Safety Limit
4) ECCS Actuated

Alert
Site Emerg
Gen Emerg

130
LOCA
Rx trip

(2 pts) 35. Responsibility for limiting access to the Control Room rests with the CAT during normal operations and the SS or his designee during abnormal/emergency operations.

(5 pts) 36. List five (5) items the Shift Supervisor must review as soon as possible after turnover per the Turnover Sheet.

Work list –
RED trig Logbook –
White trig Logbook –
Brown trig Logbook
R & R's –

(1 pt) 37. Per OMP 2-29 (Tech Specs Action Items Logbook) if an item affects both units, how is this documented?

It is logged in both units T.S Log

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SHIFT ADVISOR ORAL EXAMINATION FORM

Student Craig Danny

Date 5-16-84

S.S. # 238-74-4085

Examiner Glenn Sorelia

Student Background MNS SRO

System Differences in MNS and CNS	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
NV	✓			
ND	✓			
KC	✓			
RN	✓			
CM	✓			
CF	✓			
CA	✓			
RC	✓			
RL	✓			
MAIN POWER	✓			
DIESELS	✓			

ADMINISTRATIVE	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operations Management Proc.	✓			
Duties and Responsibilities	✓			

PROCEDURES	SAT	MARG	UNSAT	REMARKS (REQUIRED FOR MARGINAL AND UNSAT)
Operating Proc.	✓			
Abnormal Proc.	✓			
Emergency Proc.	✓			

SHIFT ADVISOR ORAL

EXAMINATION QUESTIONS

DATE 5-16-84

STUDENT CRAIG, Danny

S.S. # 239-74-4085

STUDENT BACKGROUND MNS SRO

EXAMINER Glenn Spurlin

[illegible] & Deaerator level auto actions – ↑

What % [illegible] to [illegible] OFF – [illegible]

CA auto starts on E/C ↑ Generators [illegible] – ↑ Normal Suctions ↑ Controls – ↑

NCP seal supply during loss all AC ↑ Normal seal flow control ↑

NV System differences – ↑

ND – [illegible] control ↓ ND suctions – ↑ Interlocks – ↑

KC – LoLo Surge Tk Level – ↑ KC leak – ↑

13.8 KV [illegible] loads – ↑

EP – Auto [illegible] of 1TA ↑ Man [illegible] of 1TA ↓ D/G auto trips ↑ Auto starts ↑ permissive

C[illegible] LoLo level [illegible] – ↑ Auto [illegible] to [illegible] ↑

[illegible] – Differences ↑ [illegible] trips ↗ [illegible] 53 ops – ↑ Condenser arrangements – ↑

RL – Pressure Control – ↑

RP – General procedures – ↑ Dose Assessment – ↗

Duties & Responsibilities – ↑

when in SF Cond – ↑