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NOWICKI,S Operating Reactors Branch 5

SUBJECT: Forwards info re specific training of shift technical advisors & licensed operators,in response to NRC 800508 request.Resumes of licnesed operators enrolled in training encl.

DISTRIBUTION CODE: A042S COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 19
TITLE: Resp to Lesson Learn Task Force - Comb Eng & 50-267

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	18 CORE PERF BR	1	1	19 ENG BR	1	1
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	22 EEB	1	1	23 EFLT TRT SYS	1	1
	IMBRO,G.	1	1	OELD	1	0
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CJS
6/26/80

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649

LEON D. WHITE, JR.
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

May 12, 1980

Mr. Stan Nowicki, Project Manager
Operating Projects Branch 5
Division of Project Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject Shift Technical Advisors
R. E. Ginna Nuclear Power Plant, Unit No. 1
Docket No. 50-244

Dear Mr. Nowicki:

This information is being provided in response to your request during our May 8, 1980 telephone conversation concerning the Shift Technical Advisors (STA's) at Ginna Station.

The attachment addresses specific training that our designated STA's and other licensed operators have received to date and will receive during the year 1980. Also attached are the resumes of those licensed operators enrolled in the training that may function as STA's under the criteria of our December 28, 1979 submittal to the NRC.

One of the five presently designated STA's, Candidate A, does not hold a Senior Reactor Operator (SRO) license. Candidate A currently holds an operator (RO) license and in our opinion, as evidenced in his resume, is qualified to fill the STA position.

Sincerely yours,

L. D. White, Jr.

Attachment

Training received by licensed personnel including the Shift Technical Advisers through the license requalification program at Ginna dealing with accident assessment.

I. Heat Transfer and Fluid Flow

A lesson on heat transfer and fluid flow was given in the normal training cycle. This lesson was based on the Technical Education Research Center-SW, Nuclear Technology Series entitled "Heat Transfer and Fluid Flow". This lesson included the basics of:

A. Property of fluids including density, specific volume, specific weight, viscosity, specific heat, void fraction, enthalpy, quality, etc.

B. Heat transfer types including conduction, convection and radiation and types of boiling. This lesson also included an introduction to the use of steam tables.

C. Fluid flow including - Reynolds Number, laminar and turbulent flow, friction and ΔP in a flowing system and the relationships of ΔP to flow in the Ginna feedwater system.

D. Heat transfer in a fluid system including area to volume ratios, resistance to heat flow for conduction and convection and the development of "U", the overall heat transfer coefficient. This section also included a discussion of the use of the formulas $Q = UA\Delta T$ and $Q = CpM\Delta T$ and their application to the Ginna NSSS and calorimetric.

E. DNB, Burnout and Flow Instability including - DNB, Burnout, DNBR, Ginna Technical Specification DNBR and limits, factors affecting DNB and burnout.

F. Reactor Heat Transfer Limits including - the means of approximating KW/ft at Ginna, Ginna peaking factors (F_Q, $F_{\Delta h}$, F_z) and the means of checking that the Ginna core is within those limits. The ways hot channel factors can be exceeded and how Ginna is protected from exceeding those limits and a discussion of Ginna procedure O-6.4 the quadrant to average power tilt calculation and limits.

II. Emergency Procedure Review

The emergency procedures for LOCA, S/G tube rupture and loss of secondary coolant were covered in detail with the Westinghouse background information on the emergency procedures. Each licensed individual was also "walked-through" the instrumentation used for accident assessment, containment isolation reset, initiation of the recirculation phase and usage of the PORV's on the pressurizer using the overpressurization system from the control board.

III. A second Heat Transfer Introduction was also given which included the secondary heat cycle calculations for turbine, condenser, pump and steam generator. An introduction into the use of the T-S and H-S diagrams. The calculations of Q out and work done by specific components and cycle efficiencies. This lesson was an exercise in Mollier diagram and steam table usage.

This lesson was based on chapter 11 of the textbook "Engineering Thermodynamics with Applications" by M. David Burghardt; Harper & Row Publishers, Copyright 1978. The title of chapter 11 is Vapor Power Cycles.

All Shift Technical Advisers have not attended this lesson to date but it is intended that they will in their normal training cycle.

IV. Safety Analysis for selected accidents including the background for safety analysis, catogories and assumptions.

A. Uncontrolled control rod withdrawal - involving possible causes, safety features to protect from transient, inherent characteristics and consequences of a transient of this nature.

B. Drop of a control rod - involving causes, safety features to protect from transient, inherent characteristics, immediate effects and long term effects.

C. Loss of reactor coolant flow - involving causes, automatic and mechanical features designed to protect from the accident, circumstances that will affect the severity of the accident and immediate effects on the reactor.

D. Loss of external electrical load - involving possible causes, protective features to reduce effects and consequences of the accident.

E. Rupture of a steam line - involving automatic features, inherent characteristics and consequence of this accident.

F. Loss of normal feedwater - involving consequences and protection provided for the accident.

G. Excessive heat removal due to feedwater temperature decrease - involving consequences of addition of positive reactivity and safety features designed to mitigate this accident.

V. Operating Characteristics, Reactivity

A lesson was given on core reactivity and how it changes with temperature, fission products and voids. Many aspects of changing reactivity were covered in this lesson and are as follows:

1. General effect of fission products on reactivity
2. Equations for production and removal of Xe^{135}
3. Xenon effects and concentrations versus time following power changes
4. Sm^{149} effect on reactivity
5. Effects of temperature and voids on reactivity
6. Review of the makeup system, including dilution and boration
7. Calculations on amount of boron and water to be added

VI. Power Plant Chemistry

A lesson was given on power plant chemistry and included the following:

1. Electronic structure of atoms
2. Sources of water
3. Scale formation
4. Corrosion (types)
5. Activation products
6. Ion exchange
7. Demineralization

VII. Radiation Control and Safety

A lesson was given to refamiliarize the student with Health Physics Procedures so that they would have a good working knowledge of their requirements and limits. The following H.P. Procedures were covered:

HP-1.1	Issuing Personnel Dosimeters
HP-1.2	External Exposure Limits
HP-1.4	Noble Gas Exposure
HP-1.5	Dosimeter Discrepancy Evaluation
HP-1.6	Neutron Exposure
HP-2.1	Whole Body Counting Guide
HP-3.1	Exposure Reports to Individuals and the Nuclear Regulatory Commission
HP-4.1	Controlled Area Entry
HP-4.3	Work Permit Use
HP-5.2	Posting of Radiation Areas and Container Labeling
HP-6.1	Contamination Surveys
HP-6.2	Posting of Contaminated and Airborne Areas
HP-6.3	Personnel Decontamination
HP-6.4	Contaminated Clothing Report Form Use
HP-6.5	Contaminated Laundry Operation
HP-9.2	Primary to Secondary Leakage Detection and Measurement
HP-9.4	Actions for an R-21 Alarm

VIII. Administrative, Operating and Emergency Procedures

A comprehensive review of selected Administrative, Operating and Emergency Procedures was completed. The class included the following procedures:

A-7	Procedure for Handling Illness or Injury at Ginna Station
E-1.6	CVCS Leak
E-4	Station Blackout Operation
E-4.1	Safeguard Buses Low Voltage Condition
E-4.2	RG&E Low System Frequency Condition
O-2.1	Normal Shutdown to Hot Shutdown
O-2.2	Plant Shutdown from Hot Shutdown to Cold Shutdown
O-2.3	Plant at Cold Shutdown
O-2.3.1	Draining the Reactor Coolant System
O-3	Hot Shutdown with Xenon Present
O-3.1	Boron Concentration for the Hot Xenon Free Shutdown Margin
O-5.1	Load Reductions

IX. Simulator training has been part of the Operator Requalification Program since 1973 for all licensed operators including Shift Technical Advisers. This training was provided at the Westinghouse simulator in Zion, Illinois or Consolidated Edison simulator in Buchanan, New York during 1979. This simulator training addressed emergencies and accidents for diagnostic and response by the operators. This type of simulator training will be repeated during 1980.

Future training to be provided for Shift Technical Advisers during 1980 dealing with accident analysis.

I. The Westinghouse Shift Technical Adviser Program modified to meet the Ginna Station needs will be provided during the fall of 1980. This program will be eight days of classroom lecture plus three days at the Westinghouse simulator for classroom lecture and simulator demonstration. The program will be in two segments.

A. Classroom lecture for all Shift Technical Advisers, relief Shift Technical Advisers and all Duty Engineers.

B. Simulator training - eight individuals to include all Shift Technical Advisers and three relief Shift Technical Advisers.

The classroom lecture will address such areas as:

Thermodynamics/Fundamentals and PWR Application

Heat Transfer/PWR Application

Fluid Flow/PWR Application

Nuclear Characteristics and Nuclear Peaking Factors

Instrumentation, Limitations and Alternatives

Operating Experience and System Assessment

Normal Plant Transients

Instrument Failure Assessment

The simulator portion will cover:

Transient Demonstrations

Instrumentation Failure and Accident Diagnostics

II. As part of the Operator Requalification Program, we expect to provide additional classroom lectures.

A. Introduction to Physics, Thermodynamics, Heat Transfer and Fluid Flow — To familiarize students with the basic concept and applications to the Ginna Nuclear Power Plant.

B. Radiation Monitoring System - To familiarize students with the response, method of detection and accuracy for radiation instruments available to Control Room Operators for evaluation of core damage.

C. Containment Isolation - To familiarize students with the method and isolation principles that prevent the release of radioactive material to the environment.

D. Instrumentation & Control Under Accident Conditions - To familiarize students with the methods of measurement, alternate means and failure response of instrumentation necessary during accident conditions.

CANDIDATE A

Educational Background

Rochester Institute of Technology, College of Continuing Education, 1 Lomb Drive, Rochester, New York. September, 1979 to present completing courses with quarter credits as noted.

Technical Mathematics	4
Elements of Electricity and Electronics	4
Data Processing I	4
Data Processing II	4
Business Communications	4
Managerial Accounting I	4
Managerial Accounting II	4
Industrial Psychology	4

Monroe Community College, 1000 East Henrietta Road, Rochester, New York. September, 1977 to May, 1979. Received an associates degree in Business Administration.

Attended: Naval Basic Propulsion, Machinist Mate "A" School, 1967. Covered operation of steam plants, distilling plants and basic mechanical engineering.

Naval Nuclear Power School and Prototype, 1968. Covered reactor theory, reactor plant technology, water chemistry, and radiological controls.

Monroe Community College, 1000 East Henrietta Road, Rochester, New York. September, 1965 to January, 1967 as a business major.

East High School, Rochester, New York. Graduated June, 1965 with a New York State Regents Diploma.

CANDIDATE A (continued)

Pertinent Experience

August, 1973 to present - Employed by Rochester Gas & Electric Corporation at the R.E. Ginna Nuclear Power Plant. He has held the following positions as noted.

Candidate A is presently a Shift Technical Adviser.

January, 1980 to April, 1980 - Head Control Operator - In charge of reactor manipulations.

June, 1978 to January, 1980 - Control Operator - In charge of turbine generator controls.

For the past three years he has also participated in the steam generator inspections as a supervisor directing activities of a twenty man crew.

August, 1974 to June, 1978 - Auxiliary Operator.

Candidate A received his USNRC Reactor Operator License in November, 1974. He has held the USNRC Reactor Operator License for greater than five years and participated in the R.E. Ginna Operator Requalification Program during this period. This program is directed toward Senior Reactor Operator requirements.

1967 to 1973 - U.S. Navy - Served on the USS Bainbridge DLG(N)25. Qualified as Reactor Auxiliary Watch and Engineering Watch Supervisor. Responsible for supervision and training of twenty-three man engineering room crew.

CANDIDATE B

Educational Background

Rochester Institute of Technology, College of Continuing Education, 1 Lomb Drive, Rochester, New York. January, 1980 to present completing courses with quarter credits as noted.

Technical Mathematics	4
Elements of Electricity and Electronics	4

Navy Military Service Schools completed 1966 to 1970.

Instructors School - covered methods and practices of teaching, preparation of lesson plans and effective instructing.

Steam Component School - covered maintenance of steam valves and pressure reducers.

Inspection and Cleaning Methodology School - covered grade A cleaning.

Engineering Laboratory Technician School - covered water chemistry, radiochemistry, radiological controls, handling radioactive materials, and calibration of radiation survey meters.

Nuclear Power and Prototype School - covered reactor theory, reactor plant technology, water chemistry, and radiological controls.

Submarine School - covered basic submarine construction, operation, hydrodynamics, pneumatics, hydraulics system technology and electrical power distribution.

Machinist Mate "A" School - covered operation of steam plants, distilling plants and basic mechanical engineering.

June, 1963 graduated from David B. Oliver High School, Pittsburgh, Pennsylvania.

CANDIDATE B (continued)

Pertinent Experience

1973 to present - Employed by Rochester Gas & Electric Corporation at the R.E. Ginna Nuclear Power Plant. He has held the following positions as noted.

January, 1980 to present - Head Control Operator - In charge of reactor manipulations.

June, 1979 to January, 1980 - Control Operator - In charge of turbine generator controls.

September, 1973 to June, 1979 - Auxiliary Operator.

Candidate B has been activily involved in the R.E. Ginna refueling for three of the years, both as a fuel handler and directing activities of the refueling personnel

Candidate B received his USNRC Reactor Operator License in November, 1974. He has held the USNRC Reactor Operator License for greater than five years and participated in the R.E. Ginna Operator Requalification Program during this period. This program is directed toward Senior Reactor Operator requirements.

1970 to 1973 - Westinghouse Nuclear Services Department. He performed as a Supervisory Service Engineer involved in reactor refueling at many commercial power plants. He was the Shift Supervisor during eddy current testing of Southern California Edison steam generator and welding phase of Wisconsin Electric Power steam generator cladding repairs.

1966 to 1970 - U.S. Navy as Machinist Mate 1st Class on Polaris Submarine USS Ethan Allen SSBN608. Qualified as Engineroom Supervisor and for standing radiation control point watches. Responsible as Leading Engineering Laboratory Technician to supervise staff of ELTS in performing reactor plant water chemistry studies, steam generator chemistry, radiation surveys, transfer of radioactive materials and ships dosimeter program.

CANDIDATE C

Educational Background

Rochester Institute of Technology, College of Continuing Education, 1 Lomb Drive, Rochester, New York. January, 1980 to present completing the following courses with quarter credits as noted.

Technical Mathematics	4
Elements of Electricity and Electronics	4

Monroe Community College, Rochester, New York 1972 - 1973 enrolled in accounting program.

Military Naval Service Schools 1966 - 1972.

Navy Nuclear Power School and Prototype covering physics, heat transfer, fluid flow, reactor theory, reactor plant control, reactor plant chemistry and radiation control.

Basic Electrical and Electronic School covered basic AC and DC circuits, power and transformers including laboratory experiments.

Electronics Technician "A" School covered electronics theory and circuit analysis, training on installed electronic equipment such as radar and communication gear.

Wayne Central High School, Ontario, New York. Graduated with New York State Regents diploma June, 1965.

CANDIDATE C (continued)

Pertinent Experience

1973 to present - Employed by Rochester Gas & Electric Corporation at R.E. Ginna Nuclear Power Plant. He has held the following positions as noted.

January, 1980 to present - Head Control Operator - In charge of reactor manipulations.

September, 1979 to January, 1980 - Control Operator - In charge of turbine generator controls.

September, 1974 to September, 1979 - Auxiliary Operator.

Candidate C spent two years preparing operational procedures for the SNUPPS Organization Power Plants. This involved the analysis of responses for a variety of system operations.

Candidate C received his USNRC Reactor Operator License in November, 1974. He has held the USNRC License for greater than five years and participated in the R.E. Ginna Operator Requalification Program during this period. This program is directed toward Senior Reactor Operator requirements.

1966 to 1972 - U.S. Navy - Stationed aboard USS Long Beach CGN9. Qualified as a reactor operator and enclosed operating station shutdown watch. Involved in training program for reactor technician.

CANDIDATE D

Educational Background

Rochester Institute of Technology, College of Continuing Education, 1 Lomb Drive, Rochester, New York. January, 1980 to present completing courses with quarter credits as noted.

Technical Mathematics	4
Elements of Electricity and Electronics	4

Military Navy Service Schools - 1970 to 1976.

Managers Course for Preventive Maintenance Program covered preventive maintenance, scheduling of work, coordination of maintenance work and quality control of maintenance.

Naval Nuclear Power School and Prototype School covering reactor theory, reactor plant technology, water chemistry and radiological controls.

Basic Electrical & Electronic School covering basic AC and DC circuits, power and transformers including laboratory experiments.

Electrican "A" School covering circuit breaker theory, transformer theory, transistor theory, motor and generator theory.

Suffolk County Community College 1967 - 1968 enrolled in liberal arts program.

Seton Hall High School, Patchogue, New York. Graduated June, 1967.

CANDICATE D (continued)

Pertinent Experience

1976 to present - Employed by Rochester Gas & Electric Corporation at the R.E. Ginna Nuclear Power Plant. He has held the following positions as noted.

January, 1980 to present - Control Operator - In charge of reactor manipulations.

June, 1978 to January, 1980 - Auxiliary Operator.

Candidate D received his USNRC Reactor Operator License in November, 1978. He has held the USNRC Reactor Operator License and participated in the R.E. Ginna Operator Requalification Program during this period. This program is directed toward the Senior Reactor Operator requirements.

1970 to 1976 - U.S. Navy - Served on the USS Pollack SSN603 as an Electrician Mate and power plant operator.

1968 to 1970 - Quality Control Inspector at Flair Manufacturing Company, Long Island, New York.

CANDIDATE E

Educational Background

Rochester Institute of Technology, College of Continuing Education, 1 Lomb Drive, Rochester, New York. January, 1980 to present completing courses with quarter credits as noted.

Technical Mathematics	4
Elements of Electricity and Electronics	4

Military - Army Service Schools from 1968 - 1971.

Generator Operator/Mechanic School covered operation and maintenance of gas generators and diesel generators.

Advanced Generator/Mechanic School covered theory of operation for gas and diesel generators, maintenance of generators.

Rochester Institute of Technology, College of Continuing Education 1967 enrolled in math and communication courses.

West High School, Rochester, New York. Graduated June, 1967.

CANDIDATE E (continued)

Pertinent Experience

1967 to present - Employed by Rochester Gas & Electric Corporation. Assigned to R.E. Ginna Nuclear Power Plant in March, 1976. He has held the following positions as noted.

January, 1980 to present - Control Operator - In charge of turbine generator controls.

March, 1976 to January, 1980 - Auxiliary Operator.

Candidate E received his USNRC Reactor Operator License in November, 1978. He has held the USNRC Reactor Operator License and participated in the R.E. Ginna Operator Requalification Program during this period. The program is directed toward the Senior Reactor Operator requirements.

1971 to 1976 - Employed by Rochester Gas & Electric Corporation as a boiler operator at a fossil steam station.

1968 to 1971 - U.S. Army - Reaching the rank of E-4.

1967 to 1968 - Employed by Rochester Gas & Electric Corporation as an operator at a fossil steam station.