

NINE MILE POINT NUCLEAR STATIONNUCLEAR TRAINING PROCEDUREPROCEDURE NO. NTP-10TRAINING OF LICENSED OPERATOR CANDIDATES

		<u>DATE AND INITIALS</u>		
<u>APPROVALS</u>	<u>SIGNATURES</u>	<u>REVISION 0</u>	<u>REVISION 1</u>	<u>REVISION 2</u>
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SUMMARY OF PAGES

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	1	December 1985
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NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE
USED AFTER MARCH 1988
SUBJECT TO PERIODIC REVIEW

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TRAINING OF LICENSED OPERATOR CANDIDATES

1.0 PURPOSE

This procedure describes the training program for replacement of licensed operator personnel as called for in ANSI N 18.1-1971, ANSI/ANS 3.1-1978 and 10CFR-55.

2.0 REFERENCES

- 2.1 ANSI N 18.1-1971 for NMP Unit I
- 2.2 10CFR-55
- 2.3 NUREG 0094
- 2.4 USNRC Letter, Harold Denton to all Power Reactor Applicants and Licenses.
Subject: Qualifications of Reactor Operators, March 28, 1980
- 2.5 NUREG 0737
- ✓ 2.6 ANSI/ANS 3.1-1978 for NMP Unit II
- 2.7 NUREG 1021
- 2.8 INPO TQ.3 and TQ.4 - January 1985 - "Performance Objectives and Criteria for Operating and Near-Term Operating License Plants"

3.0 TRAINING PROGRAM

3.1 Technical training for candidates for the NRC Operating License shall consist of scheduled classroom sessions to cover the following subjects:

- 3.1.1 Theory and principles of reactor operation.
- 3.1.2 General and specific plant operating characteristics.
- 3.1.3 Plant instrumentation and control systems.
- 3.1.4 Plant protection system.
- 3.1.5 Engineered safety systems.
- 3.1.6 Normal, abnormal and emergency operating procedures.
- 3.1.7 Radiation Protection and Site Emergency Plan and Procedures.
- 3.1.8 Technical Specifications.
- 3.1.9 Applicable portions of Title 10, Chapter 1, Code of Federal Regulations.
- 3.1.10 Heat transfer, fluid flow and thermodynamics.
- 3.1.11 Use of installed plant systems to control or mitigate an accident in which the core is severely damaged.
- 3.1.12 Reactor and plant transients and accidents.
- 3.1.13 Plant Chemistry



3.2 Technical training for candidates for NRC Senior Operator License will consist of scheduled classroom sessions in addition to those listed in 3.1 above. These sessions shall include and place increased emphasis on the following subjects:

- 3.2.1 Reactor Theory
- 3.2.2 Heat Transfer, Fluid Flow and Thermodynamics.
- 3.2.3 Procedures and equipment available for handling and disposal of radioactive materials and effluents.
- 3.2.4 Specific operating characteristics of the operating plant.
- 3.2.5 Mitigation of Core Damage, Reactor and Plant Transients and Accidents.
- 3.2.6 Fuel handling and core parameters.
- 3.2.7 Administrative Procedures, Conditions and Limitations.

3.3 Technical training for candidates for Shift Technical Advisor (STA) Certification will consist of all areas listed in Sections 3.1 and 3.2 and, additionally, STA responsibilities and authority.

3.4 ON-SHIFT TRAINING/OJT

- 3.4.1 Candidates who are not already assigned to a regular operating shift shall be given an assignment which will provide for regular participation in day-to-day operations. Operations shall include manipulation of the reactor and reactor equipment controls.
- 3.4.2 Senior operator candidates shall have three (3) months of shift training as an extra person on shift.
- 3.4.3 Reactor operator candidates shall have three (3) months training on shift as an extra person in the Control Room.
- 3.4.4 Each candidate shall be furnished a training manual which shall contain tasks to be completed prior to the candidate being presented for the written and operating tests as outlined in 10CFR55. Information relative to the completion of the manual shall be included. The manuals shall be kept in a centralized location as designated by the Training Supervisor.



3.4.5 Whenever a candidate performs a plant evolution he/she shall log the date of the exercise and note whether he/she actually performed or simulated the manipulation. Each entry shall be initialed by the Licensed Operator or Licensed Senior Operator supervising the training.

3.4.6 The Training Supervisor or his designee shall review each individuals training manual quarterly.

3.5 Reactor Operator and Senior Reactor Operator candidates shall have successfully completed the appropriate training manuals prior to being presented for the written and operating tests as outlined in 10CFR55. For those Senior Reactor Operator candidates who have not previously held a Reactor Operator License, they shall, in addition, complete task qualification on selected tasks, as identified by job analysis, for which they may be responsible.

3.6 SIMULATOR TRAINING

A simulator shall be used to supplement the technical and on-shift training specified in Section 3.0. Detailed records of this simulator training shall be placed in the individual's training file. When a simulator is used, the candidate shall actually perform all logged operations listed below:

*3.6.1 Plant or reactor start-ups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.

*3.6.2 Plant shut-down.

3.6.3 Manual control of feedwater during start-up and/or shutdown.

*3.6.4 Any significant (>10%) power changes in manual rod control or recirculation flow.

*3.6.5 Loss of coolant including:

- 1) Inside and outside primary containment.
- 2) Large and small, including leak-rate determination.

3.6.6 Loss of instrument air.

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

3.6.8 Loss of core coolant flow.

3.6.9 Loss of condenser vacuum.

3.6.10 Loss of service water.

3.6.11 Loss of shutdown cooling..

3.6.12 Loss of RBCLC.

*3.6.13 Loss of normal feedwater or normal feedwater system failure.



- *3.6.14 Loss of all feedwater.
- 3.6.15 Loss of protective channel.
- *3.6.16 Mispositioned control rod or rods (or rod drops).
- 3.6.17 Inability to drive control rods.
- 3.6.18 Failure of Reactor to Scram.
- 3.6.19 Fuel cladding failure or high activity in reactor coolant or offgas.
- *3.6.20 Turbine or generator trip.
- *3.6.21 Malfunction of automatic control system(s) which affect reactivity (unexplained reactivity changes).
- *3.6.22 Malfunction of reactor pressure control system.
- *3.6.23 Reactor scram.
- *3.6.24 Main steam line break (inside or outside containment).
- 3.6.25 Nuclear instrumentation failure(s).
- 3.6.26 Inadvertent isolation of MSIV while at power.
- *3.6.27 Inadvertent opening of relief valve.
- *3.6.28 Turbine bypass valve failure to open following trip.
- *3.6.29 Demonstration of natural recirculation capabilities.

* Special emphasis to be placed on these items by SRO License Candidates and Shift Technical Advisors Certification Candidates.

4.0 EVALUATIONS

- 4.1 Periodic Audits consisting of written and/or oral exams shall be conducted. Continued trainee participation recommendations will be based on these audits utilizing walk throughs and weekly quizzes and the NRC established 80/70 criteria.
- 4.2 The Training Supervisor or his appointed representative shall conduct oral examinations and evaluations of demonstrated or simulated performance for each candidate prior to formal presentation to the licensing examiner. On the basis of these examinations and demonstrations, a written evaluation shall be placed in the individual's training file.
- 4.3 Certifications completed, pursuant to Section 55.10 (a) (6) of 10CFR-55 shall be signed by the Vice President - Nuclear Generation.



5.0 DOCUMENTATION

5.1 An individual training file shall be maintained for each candidate for the NRC Operator or Senior Operator License. This file shall contain the following materials:

- 5.1.1 Checklist listing the formal training lectures presented, length of lecture, the instructor presenting the lecture and the date of attendance.
- 5.1.2 A log of tests administered which shall include the general subject or system covered and the specific items, if applicable. Results shall be recorded as to whether the candidate has mastered the subject or requires further study.
- 5.1.3 A log of reading assignments.
- 5.1.4 A checklist used to document the manipulations or evolutions which the candidate should be required to demonstrate or simulate is shown on Pages 7 & 8. The results of this evaluation is used to determine whether or not the candidate has successfully mastered the operation or requires additional practice and/or study. This record may be obtained in part from the candidate's training manual and On-the-Job Training Manual.
- 5.1.5 Transcript of off-site training results.
- 5.1.6 A general evaluation of the candidates readiness to be presented for the written examinations and operating tests outlined in 10CFR, Sections 55.21 and 55.22 and 55.23.

A. APPENDICES

A.1 Appendix A - Requirements

- A.1.1 Education and Experience for a Reactor Operator License
RO Candidates must comply with the requirements of 10CFR55, NUREG 1021 and any other applicable regulations and/or guides.
- A.1.2 Education and Experience for a Senior Reactor Operator License
SRO candidates must comply with the requirements in 10CFR55, NUREG 1021 and any other applicable regulations and/or guides.

