POWER AUTHORITY OF THE STATE OF NEW YORK

10 COLUMBUS CIRCLE NEW YORK, N. Y. 10019

(212) 397-6200

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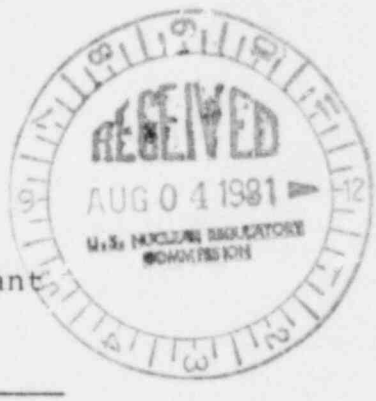
July 31, 1981
JPN-81-57

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555



Attention: Mr. Thomas A. Ippolito, Chief
Operating Reactors Branch No. 2
Division of Licensing

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Long-term STA Training Program
NUREG-0737 Item I.A.1.1

Reference: 1. NRC letter, D.G. Eisenhut to all Licensees of Operating Plants, dated October 31, 1980.

2. Letter J.P. Bayne (PASNY) to T.A. Ippolito (NRC) dated January 8, 1981 (JPN-81-5)

3. NRC letter, H.R. Denton to all Operating Nuclear Power Plants, dated October 30, 1979.

Dear Sir:

Enclosed is a description of the JAFNPP long-term STA training program as required by Reference 1. The description includes selection criteria, qualifications, education, training and re-qualificaton. Also as required, the program is compared to the INPO recommendations for a program of this type. All future shift technical advisors for the JAFNPP will be selected and trained in accordance with this program.

The short-term STA program was described in a previous submittal (Reference 2). As required, this program conformed to the criteria of Reference 3.

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The Authority's position regarding eventual phase-out of the STA program remains unchanged. The STA position will be retained until the numbers and qualifications of the operating shift complement conform to requirements still under development.

Should you or your staff have any questions, please contact us.

Very truly yours,

J.P. Bayne
Senior Vice President
Nuclear Generation

ATTACHMENT

1. SELECTION AND QUALIFICATION CRITERIA

a. JAFNPP Program Requirements

At the time of appointment to the responsible position, STA's shall possess a Bachelor's degree or equivalent in an engineering or scientific discipline. The STA shall have 18 months of nuclear power plant operating, maintenance or engineering experience of which 6 months shall be at the James A. FitzPatrick Plant, or 9 months of experience at the James A. FitzPatrick Plant in a structured training program.

Waivers for education and experience requirements or the establishment of degree equivalency will be evaluated on a case-by-case basis for STA candidates. Waivers and equivalencies shall be approved by the Senior Vice President for Nuclear Generation.

STA's shall complete 3 months of on-the-job training performing the duties of the STA under instruction.

b. Comparison with INPO Recommendations

INPO recommends "1 year of nuclear power plant experience, including at least 6 months on site." JAFNPP procedures require more unstructured experience than INPO recommendations, or 9 months of structured on-site experience which is considered to be equally valuable in qualifying STA's. In all other respects, JAFNPP procedures meet or exceed INPO recommendations.

2. EDUCATION

a. JAFNPP Program Requirements

Prior to appointment to the responsible position, the college-level education required by this section shall be provided for STA's through an accredited institution or by degreed training engineers and instructors whose education and experience would lead to confidence in technical capability for the subject matter being presented. For non-accredited education, the Training Coordinator shall maintain the resumes of training engineers and instructors as part of the permanent record of the STA qualification program. Wherever practical, education for STA's shall be tailored for applicability to the James A. FitzPatrick Plant.

1) The STA shall be provided with the following college-level fundamental education to the extent it does not appear in documented formal education:

   a) Mathematics- Engineering mathematics through the solution of first order linear differential equations

   b) Reactor Theory- Atomic and nuclear physics; statics; dynamics; point kinetics; reactivity feedback

   c) Chemistry

   d) Materials- Strength of materials; properties of materials

   e) Thermal Sciences- Thermodynamics; laws of thermodynamics; properties of water and steam; steam cycles and efficiency; fluid dynamics; Bernoulli's equation; fluid friction and head loss; elevation head; pump and system characteristics; two-phase flow; heat transfer; heat exchangers; boiling heat transfer

   f) Electrical Sciences- Circuit theory; digital electronics; motors; generators; transformers; switchgear; instrumentation and control theory.

2) The STA shall be provided with the following education at the college level specifically tailored to boiling water reactor power plants.

   This education may be completed separately or integrated with the education required in Part 1, a) through f), above.

   a) Reactor technology, including core physics data.

   b) Plant chemistry and corrosion control.

   c) Reactor instrumentation and control.

   d) Reactor plant materials.

   e) Reactor plant thermal cycle.

   A comprehensive vendor course in reactor engineering, appropriately tailored, may be used to satisfy this requirement.

a. Comparison with INPO Recommendations

JAFNPP requirements meet or exceed INPO recommendations with two exceptions.

1) Where INPO recommends accredited education, JAFNPP procedures permit non-accredited education provided that certain controls are placed on the qualifications of instructors.

2) JAFNPP requirements do not contain guidance for contact hours in order to provide flexibility in program construction and administration.

3. TRAINING

b. JAFNPP Program Requirements

Prior to appointment to the responsible position, STA's shall complete the training specified in this section. Waiver of these requirements will be evaluated on a case-by-case basis for STA candidates with equivalent training or experience. Waivers shall be approved by the Senior Vice President for Nuclear Generation.

1) JAFNPP Systems Technology

STA's shall be trained in system design, function and operational characteristics specific to the James A. FitzPatrick Plant. This training may be accomplished through formal classroom training or a combination of classroom training and structured in-plant training. Topics shall include:

a) NSSS and NSSS auxiliary systems

b) Nuclear instrumentation

c) Containment and support systems

d) Main steam, condensate and feed systems

e) Main turbine-generator and auxiliaries

f) Normal and emergency electrical power distribution, AC and DC

g) Reactor protection system

h) Reactor control and instrument systems

i) ECCS systems, including ADS and RCIC

j) Normal and emergency service water

k) Closed-loop cooling systems

l) Vessel inventory control

m) Control air systems

n) Radioactive waste disposal systems (liquid, solid, gaseous)

o) Process computer

p) Seismic monitoring system

q) Process and area radiation monitoring

r) Plant ventilation systems.

Whenever appropriate, Systems Technology Training shall include governing technical specificatons, control and instrumentaion, and discussion of operating procedures.

2) Administrative Controls

Topics shall include:

a) Responsibilities for safe operation and shutdown

b) Equipment outages and clearance procedures

c) Use of procedures

d) Plant modifications

e) Shift relief, turnover and manning

f) Containment access

g) Maintaining cognizance of plant status

h) Physical security

i) Control Room access

j) Administrative requirements of the STA

k) Radiological emergency plan

l) Title 10 Code of Federal Regulations (appropriate sections)

m) Radiological control instructions.

3) Transient and Accident Analysis

Topics shall include:

a) Design-basis accidents

b) Analyzed transients

c) Abnormal and emergency procedures

d) Role of the STA under abnormal conditions

e) Use of installed systems and instruments to recognize and mitigate the consequences of severe core damage.

4) Simulator Training

STA's shall be trained on a power plant simulator whose operating characteristics and arrangements of controls approximate those of the FitzPatrick Plant. Each of the evolutions listed below shall be discussed, demonstrated or performed on the simulator, and followed by a post-discussion and summary. Simulator training shall be directed toward familiarity with operating characteristics under normal and abnormal conditions rather than development of manipulative skills. Evolutions shall include:

a) Reactor and plant startup

b) Load changes at power (using flow control when applicable)

c) Shutdown

d) Load rejection of greater than 40%

e) Turbine trip from full power

f) Turbine bypass valve failure to open following trip

g) Inadvertent closure of MSIV's while at power

h) Reactor scram from full power

i) Reactor pressure control failure

j) Dropped control rod while at power

k) Cold water transient at power

l) Inadvertent opening of relief valve

m) Loss of main feedwater pumps at power

n) Inadvertent start of idle recirculation pump

o) Inadvertent trip of recirculation pump(s)

p) Loss of reactor coolant (small break- large break)

q) Steam line break (inside-outside containment)

r) Loss of offsite power

s) Loss of shutdown cooling with RCS temperature 100°F - 300°F

t) Demonstration of natural circulation capabilities

u) Malfunction of reactor water level automatic controls.

5) Management/Supervisory Skills

Topics shall include:

a) Leadership

b) Interpersonal communication

c) Motivation

d) Problem and decision analysis

e) Stress and human behavior.

b. Comparison with INPO Recommendations

JAFNPP requirements meet or exceed INPO recommendations except that JAFNPP requirements do not contain guidance for contact hours in order to provide flexibility in program construction and administration.

4. RETRAINING

a. JAFNPP Program Requirements

Retraining for STA's shall consist of:

1) Regular participation in appropriate portions of the licensed operator requalification program lecture series

2) Simulator contact time each calendar year, such that each of the evolutions specified in Part 4 of this description are repeated over each 2-year period

3) Inclusion in appropriate self-study and required reading assignments for licensed operating personnel such that STA's remain cognizant of significant plant modificaton, procedure changes, and site and industry events which could have led to more serious consequences.

b. Comparison with INPO Recommendations

JAFNPP requirements meet or exceed the INPO recommendatons.