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ACCESSION NBR:8407060081 DOC.DATE: 84/06/29 NOTARIZED: NO DOCKET #
FACIL:STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528
STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Publi 05000530
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KNIGHTON,G. Licensing Branch 3

SUBJECT: Forwards proposed changes to Chapter 13.2 of FSAR re cold license operator training. Proposed changes will be included in future amend to FSAR.

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Arizona Public Service Company

ANPP-29862-EEVBJr/WFQ/GEC
June 29, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. George Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Proposed Changes to Chapter 13
Docket Nos. STN 50-528/529/530
File: 84-056-026; G.1.01.10

Dear Mr. Knighton:

Attached please find proposed changes to Chapter 13.2 of the PVNGS FSAR relating to cold license operator training. These proposed changes have been discussed and agreed upon with E. Licitra and D. Schome of the NRC Staff and will be included in a future amendment to the PVNGS FSAR.

Yours very truly,

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVBJr/WFQ/GEC/mb
Attachment

cc: Robert Pate, Section Chief OLB Office of Inspection and Enforcement
Region V
A. C. Gehr
E. A. Licitra - NRC Project Manager
J. B. Martin, Office of Inspection and Enforcement
R. Zimmerman - Senior Resident Inspector PVNGS

Boo!
1/1

Insert (A) The related technical training specified in paragraph 5.2.2 of ANSI/ANS 3.1-1978 has been included in various courses as appropriate. The training will be maintained for subsequent cold license candidates.

Insert (B) The heat transfer, fluid flow, and thermodynamics portions of the PVNGS Operators Training Programs were established in accordance with the guidance provided in enclosure 2 to the Harold R. Denton letter of March 28, 1980 to all power reactor applicants and licensees.

Insert (C) This training will not be provided to subsequent cold license senior operator candidates. If a shift supervisor has not received advanced engineering training, a shift technical advisor shall be present on-site during this supervisor's shift.

Insert (D) They are trained in the use of normal and abnormal operating procedures, emergency procedures, and recovery procedures.

13.2 TRAINING

13.2.1 PLANT STAFF TRAINING PROGRAM

A training program for the staff of PVNGS has been developed based on the guidance provided in ANS 3.1-1978. This program will provide the necessary training and knowledge to supplement each individual's background and experience, thus enabling him/her to perform competently and safely. The program will be periodically reviewed to assure that it continues to meet station needs.

Members of the PVNGS training staff who routinely provide instruction on systems related to plant safety, integrated responses, transients and simulator courses shall demonstrate their technical competence by successfully completing an approved training program. These instructors shall also be enrolled in appropriate requalification programs. 8

The PVNGS Training Manager, under the direction of the Administrative Support Manager and the Manager of Nuclear Operations, has overall responsibility for the conduct and administration of the training program for staff personnel. Specific procedures for the conduct of this training are provided in the Station Manual. 9

13.2.1.1 Cold License Operator Training

The training program for the operator and senior operator cold license candidates is outlined in table 13.2-1 and described in detail in the following paragraphs. (INSERT (A)) Previously experienced operators may participate in a modified plant specific program determined by an evaluation of their education, training and experience. 8

13.2.1.1.1 Nuclear Fundamentals

For the initial group of licensed operators the basic nuclear fundamentals program has consisted of 650 contact hours. This program has been taught on site by the Center for Nuclear

Table 13.2-1

COLD LICENSE PROGRAM OUTLINE

Phase 1

Nuclear Fundamentals

(Approx. 650 contact hours)
(Includes Subject 8 for SRO)*

Advanced Engineering Training (SRO & Initial Group only)

(Approx. 450 contact hours)

Research or Training Reactor Training

Observation Training

PHASE II

Nuclear Steam Supply Systems

(Approx. 160 contact hours)

12 Balance of Plant Systems

(Approx. 180 contact hours)

Radiation Health Physics
(Approx. 40 contact hours)
(Includes Subject 9 for SRO)*

Refueling Equipment
(Approx 20 contact hours)
(Includes Subject 11 for SRO)*

Phase III

Simulator Training approximately 320 contact hours
(Includes Subjects 10 and 12 for SRO)*

Mitigating Core Damage approximately 80 contact hours

Phase IV

On-the-Job Training approximately 1040 contact hours

Phase V

Review and Evaluation approximately 200 contact hours

* Training in accordance with referenced requirements of Article 5.2.2 of ANSI/ANS-3.1-1978.

Studies of Memphis State University, supervised by the Training Department. The following courses were taught:

A. Mathematics
B. Physics-Mechanics
C. Heat and Thermodynamics
D. Fluids
E. Electricity
F. Nuclear Physics
G. Instrumentation
H. Chemistry and Materials
I. Radiation Protection

Insert (B)

Equivalent training will be provided to subsequent cold license operator candidates, modified to account for their previous training and experience.

13.2.1.1.2 Advanced Engineering Training

For the initial group of Unit I senior operator candidates the advanced program has consisted of 450 contact hours of instruction. It has been taught onsite by the Center for Nuclear Studies of Memphis State University, supervised by the Training Department. The following courses were included in this program: 8

A. Differential Calculus
B. Integral Calculus
C. Materials Science
D. Corrosion Chemistry
E. Advanced Reactor Physics
F. Thermodynamics I
G. Thermodynamics II
H. Heat Transfer
I. Fluid Mechanics
J. Human Behavior

Insert (C)

~~Equivalent training will be provided to subsequent cold license senior operator candidates, modified to account for their previous training and experience.~~

13.2.1.1.3 Research or Training Reactor Training

This one-week course provides operator experience in operating a research reactor, including observations of various responses and operations. It is offered by several vendors and universities. A minimum of 10 reactor startups and shutdowns are required as part of this training.

13.2.1.1.4 Observation Training

This ten-week course consists of assignment to an operating PWR to study and participate in the day-to-day operations, surveillance testing, administration, and radiological protection evolutions.

13.2.1.1.5 Nuclear Steam Supply Systems (NSSS) Training

This eight-week course has consisted of approximately 160 contact hours. It has been conducted on-site by Combustion Engineering, 8 Inc., supervised by the Training Department. The Training Department or a consultant will conduct subsequent equivalent courses. In addition to lectures on the NSS Systems, training is given on core operating characteristics, thermal-hydraulics, LOCA, safety analysis, chemistry, NSSS response, and Technical Specifications.

13.2.1.1.6 Balance of Plant Systems

This six-week course has consisted of approximately 180 contact hours. It has been conducted onsite by General Electric and the Training Department Staff. The Training Department or a consultant will conduct subsequent equivalent courses. Training is given on the turbine-generator and related systems.

13.2.1.1.7 Simulator Training

PVNGS will take full advantage of the onsite, plant-specific simulator. This eight-week course is conducted by the Training

Department staff and consists of approximately 50% classroom and 50% control room operations. Trainees perform control room operations under realistic conditions. Insert (D) ~~utilizing plant operating and emergency procedures.~~ Operations conducted include startups, heatups, power escalation, power changes, shutdown, cooldown, abnormal and emergency conditions. The final stage of this training is conducted in a manner that permits integration of the training of reactor operators, shift supervisors and shift technical advisors.

13.2.1.1.8 Mitigating Core Damage

The training for the mitigation of core damage will be as described in Section II.B.4 of the LLIR.

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13.2.1.1.9 On-The-Job Training

The schedule of the on-the-job training program for cold license candidates varies depending on when the individual completes the various portions of the formal training program. On-the-job training involves participation in startup testing, procedure preparation, and qualification on plant systems under the direction of the Operations Superintendent.

13.2.1.1.10 Review and Evaluation

This program will include written examinations and an evaluation of the candidate during a plant walkthrough. These evaluations will determine the content of a subsequent three-week classroom review period. A one-week review and evaluation for each candidate will be conducted on the simulator. In the event the NRC operators exams are delayed from the presently scheduled date, this program will either be delayed or repeated, depending on the length of delay.

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