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 STOLZ, J.F.                      Operating Reactors Branch 4

SUBJECT: Submits response to 820115 request for addl info re shift technical advisor academic qualifications & training programs. Review of engineer function & shift technical advisor training program encl.

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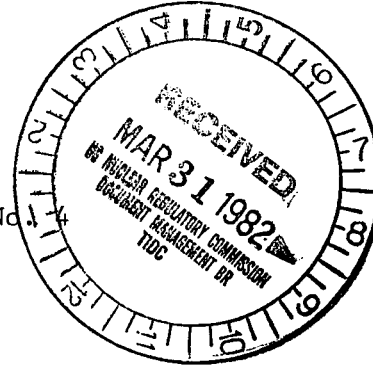
March 26, 1982

TELEPHONE: AREA 704  
373-4083

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Mr. J. F. Stolz, Chief  
Operating Reactors Branch No. 4

Re: Oconee Nuclear Station  
Docket Nos. 50-269, -270, -287



Dear Sir:

By letter dated January 15, 1982, the Staff requested additional information for review of Shift Technical Advisor (STA) academic qualifications and training programs. Specifically requested was information on how Oconee Nuclear Station STAs meet the guidelines that each have a bachelor's degree or its equivalent. This response is provided pursuant to that request.

As defined by NUREG-0660, the Shift Technical Advisory function has two main areas of responsibility, accident assessment and operating experience assessment. Per Technical Specification 6.1.1.7 a & b the accident assessment function is performed by the STA while the operating experience assessment function is performed by the Safety Review Engineer (SRE). The qualifications and training of the SRE are specified in Oconee Nuclear Station Directive 4.2.7 (TS), a copy of which is enclosed as Attachment A. As indicated in this attachment the SRE interfaces with all facets of Oconee Nuclear Station operation, and specifically with the STA, especially with information meant for control operator review.

Oconee Nuclear Station STAs are currently selected from highly experienced Senior Reactor Operators (SRO) who receive additional academic instruction, on-the-job training, and simulator instruction to fulfill the accident assessment responsibility. STAs are selected from SROs with a minimum of four years experience, and are provided additional training as indicated in Attachment B which shows initial STA training, current (1981) training, and projected (1982) training. This training is specifically designed to provide additional instruction in General Technical Education, Reactor Operations, and Transient and Accident Responses. The Oconee STA experience requirements and training programs represent education directly related to nuclear power plant theory and operations, and provide a superior technical capability for accident assessment. Since NUREG-0660 does not divide the

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Mr. Harold R. Denton, Director  
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two functions with accompanying educational requirements, and since there is no definition of how much reactor operating experience equates to a directly related college degree, it is difficult to assess the educational plateau of Duke STAs. However, the purpose of the STA is not to attain a certain academic degree, but to provide accident assessment, and for that job the Duke STAs are very well prepared.

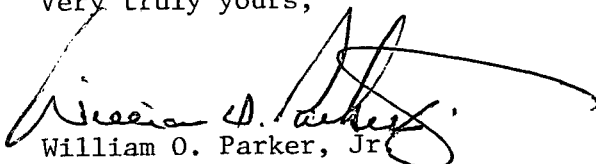
This same conclusion has been reached by independent analysis of the Oconee STA program. For example, a detailed evaluation of the Oconee Nuclear Station total operations was conducted by the Institute of Nuclear Power Operations in May - June 1981, and specifically examined the STA training. In addition to finding that all criteria of their evaluation were met, the INPO report contained the following laudatory comment:

"The shift technical advisors have a superior level of operational understanding, apparently because senior reactor operator personnel are used for this function."

In addition, the NRC Staff evaluated for Oconee Nuclear Station the Duke Power Company actions to satisfy TMI-2 Lessons Learned and reported the results in an April 7, 1980 letter from Mr. Robert W. Reid. The Staff specifically evaluated the Oconee Nuclear Station STA training, availability and job requirements, and concluded that "the licensee has satisfied the Category 'A' requirements for the STA."

NUREG-0737 Section I.A.1.1 Shift Technical Advisor clarifies the goal of the STA requirements as reaching a point where SROs can be upgraded in qualifications so the STA position can be eliminated. The Oconee Nuclear Station STA program is specifically designed to provide such a transition in the future while currently providing a superior Shift Technical Advisory capability for accident assessment. A degreed engineer (or equivalent) is provided in the SRE position to provide the operating experience assessment function. Duke Power believes this is an optimum utilization of highly experienced personnel with additional technical education to provide accident assessment complemented by experienced degreed engineers to provide reviews of operating experience. Since the current Technical Specification (TS) 6.1.1.7 reflects this division of the original STA functions, no change is required. The goal of this program is to enhance safety, and no enhancement of safety would be achieved by changing the current Technical Specification.

Very truly yours,

  
William O. Parker, Jr.

JFN/php  
Attachment

Oconee Nuclear Station Directive 4.2.7 (TS)

Approved Tony B. OwenOriginal Date 6/14/80Revised Date 7/10/81

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

SAFETY REVIEW ENGINEER FUNCTION

### 1.0 Purpose

This directive describes the Safety Review Engineer (SRE) function at Oconee Nuclear Station per NUREG-0660 Section I.C. 5 - Requirement for Operation Experience Assessment.

The SRE with the assistance of other ONS Personnel will review operating experience information for the purpose of identifying generic and Oconee - specific design, equipment, procedural, and personnel deficiencies relating to nuclear safety, and recommend corrective actions as necessary.

The SRE will provide a review and screening function at the station for operating experience information coming into the station from outside sources. He will also distribute this information to the proper station personnel for further review and/or action.

The SRE function will operate on authority of the Station Manager.

### 2.0 Qualifications and Training

The SRE should have a Bachelor's Degree in Engineering or equivalent experience in related areas and two years of nuclear power plant experience. Specific areas of knowledge which should be developed through training and/or job related experience are:

- thermodynamic requirements for core protection
- reactor control
- reactor operating and safety limits
- operating procedures and guidelines for off-normal transients
- Reactor Protective System (RPS), Engineered Safeguards System (ES), and Integrated Control System (ICS) function and design
- familiarity with control room operating conditions
- familiarity with functions of various groups within the station organization

The following training is available to the SRE and can be used to further his level of experience.

- selective participation in Duke operator training programs, including simulator training
- selective participation in training for other station groups
- participation in reactor operating activities during transients and testing
- training from vendors and other outside sources

### 3.0 Organization

The Safety Review Engineer serves as one of the functions of the Shift Technical Advisor according to Technical Specification 6.1.1.7 b, i.e., Operating Experience Assessment. Safety Review Engineering is the responsibility of the Licensing and Projects Section, Technical Services Group. Representatives from Operations, Maintenance, Technical Services and Administrative Services will be utilized as necessary to determine operating experience applicability to Oconee Nuclear Station.

### 4.0 Communications

The block diagrams on Page 4 show the flow paths for operating experience information to and from SRE's and for SRE recommendations. Sources of operating experience information include the Technical Review Committee, the Institute Nuclear Power Operation, the Nuclear Safety Analysis Center, the Nuclear Regulatory Commission and other utilities. The SRE or acting SRE will screen and route this information to Group Heads and/or other appropriate personnel and coordinate comments from each. The Licensing and Projects Section in the General Office will provide an initial review of all information from INPO/NSAC and "Nuclear Notepad" and will provide comments along with that information to the SRE. This review serves as a coordinating and or screening function with other departments of Duke Power Company. All information will be transmitted, reviewed and action or inaction taken will be documented by Attachment 2.

Information meant for control operator review will be sent to and coordinated by the Shift Technical Advisors. They will be responsible for assuring that pertinent information is covered with their shift personnel. Certain information will require documentation of shift review. This can be accomplished by the STA's initialing the cover letter from the SRE and returning it to him. This documentation will be filed in the SRE files.

Information meant for review by staff SRO's and backup SRO's will be forwarded to the Superintendent of Operations who will have the responsibility for providing documentation of review. This documentation will be filed in the SRE data base file.

Certain information that is reviewed by the SRE requires review and/or action by the Training Services Department. This review and/or action will be documented and filed in the SRE Data Base file.

The information requiring review by Maintenance personnel will be sent to the I&E Support Engineer and the Maintenance Support Engineer. They will

be responsible for returning to the SRE documentation of review and/or action as necessary. This documentation will be filed in the SRE files.

Major SRE recommendations (i.e., those requiring significant expenditure of money or manpower) will be submitted to the Station Manager for approval by Attachment 4 and implemented via the appropriate Group Heads. Minor recommendations will be made directly to the affected Group(s) Head via Attachment 4.

#### 5.0 Safety Review Criteria

Information reviewed will relate to matters which could lead or contribute to a situation in which the Reactor Core is not adequately cooled, shut-down, or monitored, and/or which could result in release of large amounts of radiation to the environment.

Abnormal events as designated by the SRE will be evaluated by the STA on shift and he will provide the SRE a copy of this evaluation for the SRE Data Base file. The evaluation can be brief and should address the immediate concerns for core safety that arose from the event.

Events at Oconee will be analyzed in detail to determine whether:

- any core safety limits were exceeded
- worst case analysis of this type event would be bounded by the FSAR safety analyses
- the response of the RPS, and/or ICS was correct (according to design) and appropriate to enhance safety
- operator (or other station personnel) actions were appropriate
- equipment important to safety operated properly and was not damaged during the event
- instrumentation and monitoring equipment were adequate
- station procedures and/or administrative guidelines for this type event were adequate
- comprehensive action to prevent recurrence of undesirable events (especially major RCS upsets causing RPS or ES actuation) has been taken

Reviews of conditions (e.g., identification of a likely failure mode of equipment important to safety) will be made using the same criteria, where applicable.

This detailed review will be performed by the SRE or Acting SRE in the Licensing and Projects Section. Assistance from knowledgeable individuals in other areas may be requested on information transmittal letters as necessary.

Safety significant events at other sites will be reviewed to determine their applicability to Oconee, based upon design and operating practice similarity. For relevant events, the possible severity of such events at Oconee will be determined by Attachment 5. As appropriate, means to prevent or mitigate such occurrences will be evaluated.

## 6.0 Documentation of Reviews

As information is received by the SRE it will be reviewed and logged. The information will be filed in a data base file maintained by the SRE.

Appropriate information will be forwarded to station personnel via Attachment 2, with a request for documentation showing that the information was reviewed and action or inaction taken. This documentation will be placed in the data base file.

Other information can be transmitted for information only.

As a SRE identified abnormal event occurs, a review will be initiated using Attachment 3. This attachment and comments will be filed in the SRE data base file.

Recommendations for action which result from SRE and station personnel reviews will be transmitted to the Station Manager or the affected Group Head (as indicated in Section 4.0) via Attachment 4. These recommendations will also be placed in the SRE data base file.

STA's, Safety Analysis Unit G.O., Projects and Licensing G.O., Projects and Licensing ONS, System Operations G.O. and other affected groups will be copied on SRE Recommendations. File No. OS-100.74 should be used for SRE material.

## 7.0 Review and Audit

The Safety Review Engineering and Operating Experience Assessment Programs will be periodically reviewed for effectiveness by the Nuclear Safety Review Board. The intent will be to identify and correct problems that arise during the administration and coordination of the programs.

ATTACHMENT B

Shift Technical Advisor Training Program

The current STA Training Program has been integrated with the SRO License Preparatory Training. Thus, all future SRO licensees will be qualified to the level of our current STA. A comparison of programs appears below:

<u>SHORT TERM</u> <u>INITIAL S.T.A. 1979</u>	<u>CURRENT</u> <u>SRO/STA 1981</u>	<u>PROJECTED</u> <u>SRO/STA 1982</u>
SRO Training Classroom 5 weeks On Job Training 4 weeks	SRO/STA Training Classroom 8 weeks On Job Training 12 weeks	SRO/STA Training Classroom 9 weeks On Job Training 12 weeks
Simulator - None	*Simulator 40 Hrs. Sim 40 Hrs. Class	**Simulator Hrs. 60
STA Training Classroom 92 Hrs. *Simulator 20 Hrs.		
Experience - Variable	Experience - 4 years (Minimum)	Experience - 4 years (Minimum)

- \* Simulator - B&W, Lynchburg, VA.
- \*\*Simulator - Duke Power Company  
Oconee Nuclear Station Site Specific  
Oconee Unit #1  
Delivery Scheduled 1982

A comparison of S.T.A. Short Term, initial training classroom with current SRO/STA training follows:

STA-SHORT TERM Initial Training  
CLASSROOM

CURRENT SRO/STA

Topics:

A) Mathematics Review } . . . . . covered in Basic Training

B) Thermodynamics  
D) Thermo/Heat Transfer  
Core Thermal Hydraulics } . . . . . added new topic of Thermodynamics/  
& Critical Heat Flux Heat Transfer/Fluid Flow which  
E) Fuel Cycle Design includes nine (9) lessons covering  
F) Thermal Hydraulic Analysis applicable material



G) Large Break Analysis } . . . . . added new topic of Plant Transient  
L) Safety Analysis } . . . . . Response including a lesson on  
Safety Analysis

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I) Small Break Analysis } . . . . . added lesson concerning Abnormal  
J) LOCA Guidelines } . . . . . Transients to Plant Transient  
M) TMI 2 Incident } . . . . . Response topic

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P) Administrative Duties } . . . . . added new topic of Management Super-  
T) Introduction to Problem } . . . . . visory Skills which includes seven(7)  
Decision Analysis } . . . . . lessons covering applicable material

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C) Nuclear Operating Limits } . . . . . Covered by topic of Administrative  
H) Derivation of Operating } . . . . . Procedures and Controls lesson in  
Limits } . . . . . Technical Specifications

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K) ICS Failure Analysis } . . . . . Covered by ICS lesson and new  
lesson titled Normal Transients in  
the Plant Transient Response  
topic

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N) Core Protection Techniques } . . . . . added new lesson titled  
Q) "Key" Parameter Identification } . . . . . Accident Mitigation in the  
& Control Room Instrument } . . . . . Plant Transient Response topic  
Location } . . . . .  
R) Safety Sequence Diagram } . . . . .

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S) Operation of Transient Monitor } . . . . . added to lesson concerning  
Reactor Coolant Instrumentation

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U) Administrative organization } . . . . . covered by Station Directives  
lesson

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The STAs continue to attend requalification training for licensed operators which has been adjusted to provide upgrade to STA level training for all SROs. This upgrade training encompasses the following:

Upgrade in the areas of:

Thermodynamics/Heat Transfer & Fluid Flow	Requal lecture series for 1981 & 1982
Core Accident Mitigation	Requal lecture series for 1981
B&W NSS ATOG Guidelines	Requal lecture series for 1982
Operating Experience Evaluation Program (includes INPO/NSAC/TAP/etc.)	Ongoing and continuous
Management Supervisory Skills	Evaluate for upgrade and complete in 1983/1984
Simulator Training Upgrade	Implementation of site specific simulator training in 1982

FLOW OF INFORMATION AND SRE RECOMMENDATIONS

