

INDUSTRY EVALUATION OF  
OPERATING SHIFT EXPERIENCE REQUIREMENTS

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For: NRC Commissioners  
11th Floor Conference Room  
1717 H. Street, Northwest  
Washington, D.C.

February 24, 1984

## INTRODUCTION

Good afternoon Chairman Paladino, Commissioners, Staff Members and fellow utility representatives. My name is J. H. Miller, Jr. and I appreciate the opportunity of addressing you today. As the President of Georgia Power Company, I have a great professional and personal interest in the future of the nuclear industry. Georgia Power has committed major resources to nuclear generation and currently has a two-unit BWR in commercial operation and a two-unit PWR under construction scheduled for a 1986 startup. In addition, I serve as the Chairman of the Association of Edison Illuminating Companies Committee on power generation. Today, however, I am acting not only as a representative of Georgia Power Company, but also as an industry representative for utilities with current NRC Operating License Applications on the subject of operating shift experience. The list of utilities which support our position is included in your handout. At this point, I'd like to introduce several utility executives who have expertise associated with shift operating experience levels.

Hal Tucker, VP Duke Power

Cordell Reed, VP Commonwealth Edison

Don Schnell, VP Union Electric

In addition, a number of executives from utilities seeking an operating license are members of our audience, and several executives from other utilities who have interest in nuclear operations are also present.

#### PERSPECTIVE

Before presenting the industry position on operating shift experience, I want to put the issue in proper perspective. Past operating experience is only one component in the qualifications of operators. Other components that all of us commit substantial resources to involve selection of very talented individuals to be operators, extensive formal classroom education and training, observation and participation at similar nuclear plants away from our service areas, professional simulator training on normal evolutions to develop proficiency and on abnormal evolutions that can not be experienced at an operating plant, direct involvement of our operations personnel in own plant testing and hot functionals, demanding written and oral examinations administered by both the utilities and NRC, extensive requalification training including examinations and simulator retraining and continuing management involvement to assure that our qualification programs provide high quality professional operators to help assure protection of the health and safety of the public and the environment.

To highlight our continuing extensive commitment to having very professional operators manipulate the controls of our plants, I will briefly describe some of the elements of Georgia Power's Plant Vogtle operator qualification program.

This program is typical of NTCL's. Recently Georgia Power interviewed and tested more than 400 applicants for positions that lead to operator licensing. Less than 8 percent of the applicants passed our selection testing and only 5 percent were interested in operator jobs after shift requirements were explained. This selection process results in the retention of people with the special talent to become operators. But it is only the first step in a long process. The Plant Vogtle Training Center has more than 40,000 sq. ft. dedicated to training. This modern facility supports comprehensive classroom training programs for our operators. Even Georgia Power's four year degreed engineers who are scheduled to be licensed for the startup receive more than 600 hours of classroom instruction in the fundamentals of nuclear theory and Vogtle Plant system operation. Our programs are demanding and our examinations are tough. To date we have removed 30% of the initial class of degreed personnel from our operations programs for failing to meet our standards.

Plant specific simulator training on the Vogtle simulator will have been used by Georgia Power to develop operator knowledge and proficiency during the four years prior to fuel load. Our Vogtle specific simulator has been in operation since mid 1982. Extensive participation training and experience has started for our operators at similar operating plants. These programs are structured and scheduled to ensure that our operators will be involved with the important aspects of hot experience. Then, our operators return to Plant Vogtle to directly participate in the extremely valuable preoperational testing program. Operators manipulate controls of Vogtle



equipment when plant systems are first placed in service. When equipment is started for the first time, problems are encountered and resolved. Having our operators involved with test supervisory personnel provides the startup experience to our operators and enables them to receive hands-on experience to become intimately familiar with Vogtle specific equipment and systems. Further, during this period the operators will use and correct procedures which they helped develop. In fact, our procedure development effort will first check out our procedures by having our operators use them on the simulator before they are used in the plant.

Like other utilities, Georgia Power feels that we have structured a very comprehensive qualification program for our operators. When completed, Georgia Power will have operators who know how to manipulate Vogtle controls to produce power safely and efficiently.

With that perspective, I am now going to present the industry position concerning the much narrower issue of operating shift experience.

#### BACKGROUND

During the past few months, the NRC expressed concern over the operating shift experience levels for Near Term Operating License (NTOL) plants.

(SLIDE 1 BACKGROUND)

Such concerns led to a NRC staff meeting with the NTOLS on January 26, 1984. As a result of that meeting 33 representatives from 21 utilities met at INPO in Atlanta on February 2 to discuss operating shift experience. During this meeting an Industry Work Group was formed which consisted of 16 representatives from 15 utilities. The mission of the Industry Work Group was to define components of operating shift experience and establish acceptable methods of meeting this experience. The group also reviewed the availability of the industry's licensed personnel and evaluated the potential effects of implementing the NRC staff objectives, provided in the January 26 meeting in Bethesda. After accomplishing its mission, the working group presented its findings to representatives of the NTOL companies.

PURPOSE

(SLIDE 2 PURPOSE)

My purpose in addressing you today is to present the industry position on the level and type of operating shift experience required for the safe startup and initial operation of a nuclear generating plant. In order to do this, I will discuss the various considerations examined by the group in light of the NRC Staff Objectives.

There are several general areas which I will address in considering shift experience. These are: first, elements of experience; second, types of nuclear experience and weighting factors; third, operating shift experience requirements, and finally, evaluation of staff objectives.

#### PLANT SHIFT EXPERIENCE CONSIDERATIONS

##### (SLIDE 3 ELEMENTS OF PLANT EXPERIENCE)

A way to describe shift experience necessary to startup a nuclear power plant and place it in service is to consider five elements of experience.

First, licensed members of the operating shift must have experience with power plant machinery and controls; but it is not necessary for that type of knowledge and experience to be gained only in nuclear power plants. Much of the equipment in a large nuclear power plant is very similar to that used in other power plants. Very valuable power plant equipment experience can also be gained through preoperational testing of equipment at the operators' own nuclear power plant. Military plant experience also provides a good base for hands-on equipment experience.

A second element of experience, which is considered essential is knowledge of the plant-specific layout and design parameters. Participation in the preoperational test program using plant specific procedures and equipment is an excellent way to assure thorough plant and equipment knowledge. This is the preferred way to obtain such experience.

Third, licensed operators should be able to respond quickly and effectively to plant transients. We believe that the most effective way shift crews can acquire this skill is through the use of plant simulators. The reason is that many transients can be simulated and resimulated in a short time; unlike "hot" plant experience where, in one year, relatively few transients might occur while personnel are on shift. Even time spent on a non-plant specific simulator can provide valuable experience in reacting to transients. Furthermore, simulators are the only way operators can be trained to react to and correctly handle many transients which would not be possible to schedule during plant operation.

Fourth, previous experience in a highly-disciplined, tightly-controlled environment is important in assuring shift competence. Licensed personnel should acquire and demonstrate skill working within the confines of a tightly-controlled plant, including technical specifications, procedures, quality assurance and radiation protection. Obviously, working on shift at an operating commercial plant would establish this experience. But this is not the only way; experience can also be gained at military and other reactors.

Fifth, an SRO must have supervisory experience in managing events and people. Although this experience can be obtained at a nuclear plant, it can also be obtained in the military, and to a great extent, from other plant supervisory experience.



Finally, these elements of plant experience when combined in a shift team provide effective nuclear shift management. This shift team experience concept is much preferred to the one-man concept of plant "experts".

#### NUCLEAR EXPERIENCE AND WEIGHTING FACTORS

(SLIDE 4 -TYPES OF NUCLEAR EXPERIENCE AND WEIGHTING FACTORS)

We believe that some types of experience are more effective in helping to provide operating competence than others. To appropriately combine different types of nuclear experience, the Industry Working Group developed weighting factors and a method of applying them to experience. The formula is:

Nuclear Experience = (Type of Nuclear Experience ) x (Weighting Factor)

Following my presentation Don Schnell will present the details of and background of the weighting factors. The Working Group considered the full range of experience and the more significant types of nuclear experience were listed on this slide.

## OPERATING SHIFT EXPERIENCE REQUIREMENTS

(Slide 5 - OPERATING SHIFT EXPERIENCE REQUIREMENTS)

Slide 5 shows the experience that the License Applicants consider would help assure protection of the health and safety of the public and environment. The experience figures were derived in part from appropriate elements of ANS 3.1-1981 supplemented to provide a practical solution to the "Hot" experience concern. It requires a minimum of 13 years total power plant experience and six years nuclear plant experience on each shift. By applying experience factors that Mr. Schnell will describe, the industry's position is that each shift will have the experience competence necessary to provide a high level of operator proficiency. Further, as the unit operates over time, the people on shift will become more and more experienced. Their performance will, in the normal course of business, be monitored by the plant management so that their competence should improve with operation of the unit.

### SHIFT ADVISOR

For many of the near term plants, the NRC has required that an experienced advisor be assigned to each shift. This advisor was to augment the utility organization until suitable experience could be developed by the utility staff. To strengthen the advisor role and to provide an approach to replace advisors with utility personnel, the industry has developed the following.

Advisors will have standard qualifications which include previous "Hot" licensed experience, and utility training on the unit to be started up. There will be a clear definition of the advisor's duties. They will be experienced people and will receive formal training as required, with specific training about their duties and responsibilities, and the shift crews will also receive training on the advisor's duties and responsibilities. They will not perform licensed operator duties unless they are licensed on that specific reactor. Mr. Schnell will also present the details of the advisor qualifications and duties.

#### EVALUATION OF STAFF OBJECTIVES

(SLIDE 6 - NRC STAFF OBJECTIVES)

The Industry Working Group has reviewed the NRC Staff Objectives and considered their potential impact on the industry. We do not agree that meeting these objectives would necessarily improve the safety margin of the industry's plants.

(SLIDE 7 - EFFECT OF NRC STAFF OBJECTIVES)

We believe that meeting the staff objectives would result in a large movement of licensed personnel from operating plants to NTOL plants which would obviously dilute the operating plants' level of shift expertise. Alternatively, the movement of some of the license candidates in training at NTOLs to operating plants for the purpose of undertaking a long license/experience program would cause those candidates to miss important

portions of preoperational testing at their home plant. This loss of preoperational test experience would in our opinion reduce the margin of safety for plants in startup. The overall margin of safety for both operating and startup plants would therefore be adversely impacted.

Also, plant startups could be delayed by the need to acquire, train, and license people not previously identified to fill the shift experience levels specified in the staff objectives. This would result in very large capital costs without apparent offsetting benefits.

#### SUMMARY

In summary the owners and operators of nuclear power plants with current NRC Operating License Applications are committed to providing a high level of on-shift operating experience. This will help assure safe operation of our plants.

(SLIDE 8 - SUMMARY)

We endorse stated experience requirements shown in the previous slide #5 which Mr. Schnell will discuss. In addition, we recognize the need for defining the types of experience contributing to fulfilling such requirements and we plan to use weighting factors as Mr. Schnell will also discuss.



We plan to provide two SROs per shift, one of whom has at least six months of "Hot" participation. For those plants that cannot provide the "Hot" participation requirements for SROs, a qualified advisor would be used until such time as their shift personnel are qualified. Of course, these advisors would be trained as Mr. Schnell will describe. The shift crews will also be trained on the duties and responsibilities of such advisor.

Further, we would like to eliminate advisors by meeting the stated shift experience levels with our own people within three years of acceptance of this position by the NRC.

To conclude, each of us has a large investment in our facilities. We are addressing today the subject of operating shift experience. This is only one component in the lengthy, complex, and demanding job of qualifying our operators. Each of us is determined to place these units in operation safely. We believe that the position we have outlined today will accomplish our mutual goals and will result in improved safety margins, and help assure the protection of the health and safety of the public.

Don Schnell V. P. Nuclear, Union Electric Company will present Nuclear Operating Experience Requirements, Plant Experience Weighting Factors and the Shift Advisor qualifications.