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The Operator Feedback Workshop: A Technique for Obtaining Feedback from Operations Personnel

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ABSTRACT

This report presents the results of three workshops that were designed, conducted, and assessed for the Nuclear Regulatory Commission. The purposes of the workshops were to (1) examine the effectiveness of workshops as mechanisms for obtaining feedback from utility personnel, including comparison of several different workshop procedures; and (2) obtain feedback for the NRC on topics of interest and concern.

The workshops were held in NRC Regions I, II, and III between December 1981 and May 1982. A total of 60 utility personnel attended the workshops and offered comments and suggestions concerning staffing, engineering support in the control room, training tools, training programs, and licensing examinations. Workshop participants and observers evaluated the workshops favorably. Further assessment of the workshop process and content suggested that the workshops were effective in obtaining useful feedback for the NRC.

THE OPERATOR FEEDBACK WORKSHOP: A TECHNIQUE FOR OBTAINING FEEDBACK FROM OPERATIONS PERSONNEL

EXECUTIVE SUMMARY

The purpose of this report is to describe the results of three operator feedback workshops. These workshops were conducted for the Division of Human Factors Safety of the U.S. Nuclear Regulatory Commission (NRC) as part of the Operator Feedback Project.

* * * * *

The Operator Feedback Project staff designed, conducted, and assessed three workshops for the NRC in order to (1) examine the effectiveness of workshops and other techniques as mechanisms for obtaining feedback from utility personnel, including a comparison of several different workshop procedures; and (2) obtain feedback for the NRC on topics of interest and concern.

The three workshops were held in NRC Regions I, II, and III between December, 1981, and May, 1982. A total of 60 utility personnel attended these workshops and discussed several issues concerning staffing practices, licensing, and training in the nuclear industry. The comments and suggestions, or feedback, offered by participants included the following:

- Staffing. Operations crews have suffered from high turnover and the demands of overtime and shift work. Crews could benefit by adding other positions on shift rotation, including in some cases an additional SRO (as opposed to an STA), mechanical and instrument technicians, electricians, communicators, and a health physicist/chemist.

- Engineering Support in the Control Room. An individual with engineering expertise and strong experience in operations could be valuable in offering operations crews assistance and perspective. An engineering degree was not considered essential, however, and the current STA position was often described as being of limited value. Shortcomings attributed to STAs included their lack of operations experience, limited authority, and insufficient responsibility to justify a separate position.

- Training Tools. Plant drills can be useful and simulators, particularly plant-specific simulators, were considered to be very helpful training tools.

- Training Programs. Qualified, experienced instructors and practical, plant-oriented programs were considered essential for good initial and requalification training programs.

- Licensing Exams. Qualified, experienced examiners were judged extremely important. Participants urged that one

examiner should prepare, administer, and evaluate the entire exam; exam content should be oriented to the particular plant; and examiners should clarify what is expected of operators prior to the exam.

Individuals attending the workshops were also asked to provide evaluative information about the workshop process. These evaluations were favorable. Both participants and observers found that the workshops were well organized, focused on important topics, and were successful in providing participants an opportunity to express their views. It appears that the workshop format, involving the use of large and small discussion groups and focus questions, was generally well received.

Leaders of small groups appeared to perform a useful function when they were provided, and focus questions that were specific but not too difficult were preferred. Participants wanted detailed, advance information about the workshops; they appreciated preworkshop information when it was provided, and they familiarized themselves with the information prior to the workshop. Participants also wanted representatives of the NRC to be included in the workshops, permitting a direct line of communication between participants and NRC personnel. Furthermore, participants noted that the workshops provided them an opportunity to interact and exchange information with each other, as well as with NRC representatives. This information exchange function appears to be a popular and valuable result of the workshops.

An assessment of the effectiveness of the workshops as feedback mechanisms found the workshops effective in obtaining feedback. Although only 60 utility personnel participated in the workshops, 81% of the utilities with operating plants in NRC Regions I, II, and III were represented. Also, participants and observers indicated that (1) participants were able to express their views during workshop discussions; (2) their comments were understood by workshop leaders; and (3) the workshops were a good way of obtaining input. The information collected at the workshops appears to have been fairly useful. This information was actually used as raw data for reports, to formulate regulatory decisions, and as background for other decision making and report preparation. Examples of such decisions, rules, and reports include the Draft Commission Policy Statement on Engineering Expertise on Shift, Federal Register, Vol 48, No. 143, Doc 83-20028, July 25, 1983; rule on Licensed Operator Staffing at Nuclear Power Units, 10 CFR 50.54, Effective Date: January 1, 1984; PNL Report 4751, The Role of the Shift Technical Advisor: Utility Practices and Perceptions, by Bryan F. Gore and Barbara D. Melber, June 1983; and Safety Technology Program Drills Task: Briefing Report, Draft #6, by P. A. Bolton, L. L. Southwick, and W. L. Rankin, August 1982.

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The Operator Feedback Project and the preparation of this report have been facilitated by a number of people at Battelle, at the U.S. Nuclear Regulatory Commission, and in the nuclear industry. The utility staff who supported and participated in the operator feedback workshops and the workshop observers provided valuable information and perspective on the workshop effort. Dr. A. L. Nieves and Mr. R. M. Fleischman, of the Battelle Pacific Northwest Laboratory (PNL), deserve special thanks for serving as workshop facilitators. Drs. B. D. Melber and M. T. Wood, of the Battelle Human Affairs Research Centers, and Dr. B. F. Gore and Mr. R. J. Sorenson, of the PNL, were a great assist in planning for, interpreting the results of, and documenting the workshops. The time and efforts of our colleagues who assisted in evaluating their personal interviews with utility personnel are also much appreciated, as is the marvelous assistance provided throughout the project by Mrs. C. Sager. Additionally, this project has profited from the guidance, hard work, and thoughtfulness of Ms. D. S. Morisseau and Dr. J. J. Persensky, both of the U.S. Nuclear Regulatory Commission, Division of Human Factors Safety.

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1. INTRODUCTION

1.1 Purpose

The purpose of the Operator Feedback Project was to explore the effectiveness of selected mechanisms for providing the NRC with feedback--information on operators' experiences--from licensed operations personnel. During its first year, the project focused primarily on workshops as a feedback mechanism; three feedback workshops were developed, convened, and assessed.[1] The principal objective of this effort was to evaluate workshops as a mechanism for obtaining feedback from licensed reactor operators. At the same time, however, the workshops sought to obtain operators' viewpoints, feedback, and experiences involving several issues of immediate concern to the NRC.

1.2 Background

This project was one of several research projects initiated in response to the NRC Action Plan Developed as a Result of the TMI-2 Accident (NUREG-0660, Vol. 1, May 1980). In response to the NRC Action Plan, a Safety Technology Program was established at Battelle in 1981, funded by the NRC Division of Human Factors Safety. The program contained some dozen projects, including the Operator Feedback Project. Specifically, the project was intended to respond to Action Plan Item I.A.2.6.(4), which is concerned with the long-term upgrading of the training and qualifications of operating personnel, and which refers to the TMI-2 Lessons Learned Task Force Final Report, NUREG-0585, Recommendation 1.4(5). This recommendation set the stage for the Operator Feedback Project. It called for "an annual workshop for licensed operators to be attended by at least one representative of the licensed shift personnel at each unit. The purpose of this workshop is to provide an opportunity for exchange of information on operating experiences between the NRC staff and the utility shift personnel" (NUREG-0585, October 1979, p. A-6). Thus, the project included development of a workshop format, comparison of different workshop procedures and techniques, and assessment of the workshops conducted.

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[1]Currently, the major thrust of the Operator Feedback Project involves a mailed survey. The process of survey design and development and the survey results will be discussed in a later report.

1.3 The Scope of the Project

The three Operator Feedback workshops generated discussion and comment on a number of topics concerning either staffing practices or licensing and training of operations personnel. Additionally, evaluative information concerning the workshops was gathered during and after the workshops. Thus, consistent with its purpose, the Operator Feedback Project has yielded two different types of findings: information concerning the viewpoints of utility personnel (workshop participants) on selected topics; and information concerning the effectiveness of the workshop as a feedback, or information collection, technique.

This report describes the workshop effort, its results, and the assessment of the workshops. First, an overview of the project, conclusions, and recommendations are presented. Second, the approach taken in developing and conducting the workshops is discussed, including a description of the workshop participants and procedures used in holding and evaluating the workshops. Third, the perspectives and feedback obtained from workshop participants concerning staffing practices, licensing, and training are presented, along with conclusions that may be drawn from this feedback. Fourth, the assessment of the workshops is presented. This includes a description of the assessments offered by workshop participants and observers, comparisons of several variations in workshop procedures, a review of several indicators of the workshops' ability to obtain feedback from operations personnel, and an assessment of the usefulness of the feedback information collected at the workshops.

The text of this report synthesizes the three workshops and focuses on information and conclusions resulting from the entire workshop effort. The report does not present a step-by-step account of each workshop. However, workshop reports prepared following each workshop are included as Appendices A, B, and C; these reports provide a detailed account of the proceedings at each workshop.

2. OVERVIEW, RESULTS, AND CONCLUSIONS

2.1 Description of Project: Approach and Procedures

The Operator Feedback Project staff designed and convened three workshops for 60 utility personnel in NRC Regions I, II, and III. These workshops focused on topics of interest and concern to the NRC and yielded information concerning (1) the experiences and opinions of utility personnel concerning those topics and (2) the strengths and weaknesses of the workshops themselves.

The workshops were assessed in an effort to determine their effectiveness as mechanisms for obtaining feedback from operations personnel for the NRC. The assessment relied primarily upon evaluative comments provided by workshop participants and observers. Two other sources of information were identified as being accessible to project staff and potentially fruitful resources for assessing the workshops. These also were used to assess the workshops. First, several indicators of workshop effectiveness were explored: attendance at the workshops; participation in workshop discussions; and workshop attendees' perceptions of the feedback. Second, the perceived usefulness of the information collected at the workshops was explored by means of interviews with individuals who were in a position to use (or to try to use) the workshop-generated information, e.g., NRC staff.

2.2 Results and Conclusions

The results and conclusions drawn from these project activities are outlined below. Next to each conclusion is a reference to the page(s) of this report at which the conclusions are discussed in more detail.

2.2.1 The Results of the Workshops: Participants' Viewpoints and Feedback to the NRC (Chapter IV)

- Staffing. Operations crews have suffered from high turnover and the demands of overtime and shift work. Crews could benefit by adding other positions on shift rotation, including in some cases an additional SRO (as opposed to an STA), mechanical and instrument technicians, electricians, communicators, and a health physicist/chemist. (Pages 9-11, 14)

- Engineering Support in the Control Room. An individual with engineering expertise and strong experience in operations could be valuable in offering operations crews assistance and perspective. An engineering degree was not considered essential, however, and the current STA position was often described as being of limited value. (Pages 11-12, 14)

- Training Tools. Plant drills can be useful and simulators, particularly plant-specific simulators, were considered to be very helpful training tools. (Pages 12, 14-15)

- Licensing Exams. Qualified, experienced examiners were judged extremely important. Participants urged that one examiner should prepare, administer, and evaluate the entire exam; exam content should be oriented to the particular plant; and examiners should clarify what is expected of operators prior to the exam. (Pages 12-13, 15)

2.2.2 Assessment of Workshop Effectiveness (Chapter V)

- The workshops designed and conducted by the Operator Feedback Project staff were evaluated favorably by workshop participants and observers. Workshop techniques that seemed particularly helpful in obtaining feedback include providing small group discussion leaders, providing advance information about the content of the workshop, and including NRC representatives at the workshops. (Pages 17-26)

- The workshops also appeared effective in obtaining input from utility personnel along three dimensions: the level of representation at the workshops of sites with operating plants was high; participation in workshop discussions was extensive; workshop participants and observers judged the workshops to be good means of obtaining feedback from operations personnel. (Pages 26-27)

- The information collected at the workshops was described as moderately useful by workshop observers and other individuals who read or reviewed workshop materials and results. The information obtained was actually used in several reports by NRC contractors and staff and as background for other activities. (Pages 27-31)

- Workshops afford a unique opportunity for exchange of information between the NRC and utility operations personnel. (Pages 25-26)

- In general, workshops convened in Regions I, II, and III demonstrated that workshops can be an effective means of obtaining information from utility personnel on topics of interest and concern to the NRC. (Page 31)

3. WORKSHOP METHODOLOGY

A workshop format for the three feedback workshops was developed and then modified, prior to each subsequent workshop, in an attempt to increase the effectiveness of the workshops and to determine the relative efficacy of several different workshop procedures. Therefore, the workshop procedures varied somewhat from workshop to workshop. The number and nature of the participants and observers present at the workshops also varied somewhat. However, these varied partly as a function of changes in the circumstances and needs of the various workshops, rather than solely as a conscious manipulation of workshop procedure or design. The workshop procedures and participants are discussed separately, below.

3.1 Workshop Format and Procedures

Three feedback workshops were conducted. The first workshop was held in Chicago on December 8-9, 1981, for representatives of utilities in Region III. The second workshop was held in Boston on March 16-17, 1982, for Region I utility representatives. The third workshop was held in Atlanta on May 25-26, 1982, for Region II utility representatives.

The two-day workshops were divided into four sessions, each of which addressed a different discussion topic. For the first two workshops, all four topics were selected in planning the workshops. For the third workshop, only three topics were preselected, and the fourth workshop session permitted a less structured discussion of several issues, which included participants offering suggestions for discussion topics at future workshops.

All three workshops involved a similar format. That is, the workshop leader or facilitator followed prepared outlines in leading large group discussions, organizing participants into smaller groups for discussion, and occasionally asking participants to provide their individual comments in writing. The workshops used a series of focus questions to direct the discussions and comment. For example, the first session at the Boston workshop opened with a discussion among all workshop participants about the strengths of three types of simulators as training tools: The initial focus question used to stimulate this discussion read, "Consider the following types of simulators as training tools: Part Scope, Generic, Plant Specific. What are their strengths?" Later in that workshop session, participants were divided into three groups and asked to address the following focus question to one of the three types of simulators: "How can this particular type of simulator be used most effectively for operator development (i.e., auxiliary operator through SS)?"

In addition to using this procedure which combined the use of focus questions with large and small group discussions, all three workshops included requests for evaluative information at the close of each workshop session. Following the discussion of a topic, participants were asked to complete a one-page form describing the session on several dimensions, including the importance of the discussion topic and whether the topic was discussed effectively. Also, at the close of the workshop

participants were asked to complete an evaluation form about the workshop as a whole. Copies of the workshop reports were circulated to participants for their review and comments, which were incorporated into the final workshop reports. At the conclusion of the Boston and Atlanta workshops, observers were asked to provide their assessments of the workshops on overall workshop evaluation forms. Additionally, observers at all three workshops were able to provide input through their notes taken during workshop sessions and by their comments and input to individual workshop reports.

Table 1 summarizes the features of and procedures used in each feedback workshop. While the formats, procedures, and evaluation techniques were similar at all workshops, this table summarizes the common features of the workshops and workshop procedures, and it outlines the differences between the workshops. These variations and their impacts will be discussed in more detail in Section IV, below, which presents the assessment of the workshops.

3.2 Workshop Participants and Observers

A total of 60 representatives of utilities in NRC Regions I, II, and III participated in the feedback workshops. Additionally, 16 individuals attended at least one workshop as observers. The workshop reports (Appendices A, B, and C) contain more detailed information describing workshop attendees, and Appendix D contains several tables that summarize the participants' and observers' backgrounds.[2] However, those individuals attending the workshops provided the information which forms the basis of Sections III and IV of this report, describing participants' viewpoints and feedback and the workshop assessment, respectively. Therefore, it is worthwhile to note here the types of individuals attending the workshops.

Participants in the workshops included licensed reactor operators, senior reactor operators, shift supervisors, training staff or supervisors, operations or unit supervisors, and one shift technical advisor. A greater number of supervisory and training personnel attended the Boston workshop than the other two workshops. However, the majority of participants at all three workshops were operations shift personnel (Chicago, 73%; Boston, 53%; and Atlanta, 85%).[3]

Participants ranged in age from 25 to 55 years, with the majority of participants between 31 and 40 years of age. Well over half (65%) of all

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[2]Tables D-1 through D-5 present the workshop participants' job/position titles, age, educational background, control room experience, and nuclear navy experience, in that order. Table D-6 details the numbers and institutional affiliations of workshop observers.

[3]This includes one STA in Boston; all other positions are RO, SRO, and SS.

Table 1

Features of Feedback Workshops

	WORKSHOP I CHICAGO	WORKSHOP II BOSTON	WORKSHOP III ATLANTA
FORMAT	Focus questions; large and small group discussions	Focus questions; large and small group discussions	Focus questions; large and small group discussions
DISCUSSION TOPICS	1. Plant Drills 2. The Licensing Process 3. The Role of the STA 4. Power Plant Staffing	1. Simulator Training 2. Licensing Exams and Requalification 3. The Role of the STA 4. Control Room Engineering Support	1. Overtime Practices and Implications 2. Need for Additional SRO in the Control Room 3. RO Licensing Exams 4. Open Topic
GROUP LEADERS PROVIDED	For large and small groups	For large groups only	For large and small groups
INFORMATION PROVIDED BEFORE WORKSHOP	Via telephone only	Listing of topics in letter of invitation	Packet of workshop information sent with letter of invitation
NUMBER OF PARTICIPANTS	15	32[a]	13
NUMBER OF OBSERVERS	4	7	10
NUMBER OF WORKSHOP FACILITATORS	1	2	1

[a]Given the large number of participants in Boston, they were divided into two groups with 15 and 17 participants. Two workshop sessions were run simultaneously.

participants had completed at least some college education. Slightly under half (47%) of the participants indicated that they had nuclear navy experience, and over half (58%) indicated that they had at least five years of control room experience in commercial plant operations.

The number of observers present at the workshops varied from 4 to 10, as noted in Table 1. Of the 16 individuals who observed at least one workshop, many were representatives of the NRC (7 observers). Also represented were NRC contractors (Battelle, 6 individuals; Oak Ridge National Laboratory, 1 individual). Additionally, two representatives of the Institute of Nuclear Power Operations observed the third workshop.

4. THE RESULTS OF THE WORKSHOPS: PARTICIPANTS' VIEWPOINTS AND FEEDBACK TO THE NRC

The workshop discussion sessions addressed several issues relating to staffing or licensing and training of nuclear plant operations crews. The particular topics were carefully selected prior to each workshop with the input of NRC personnel. Outlines and focus questions for discussion of the topics were designed in an effort to generate useful, interesting information on each topic. More specifically, the workshop sessions were intended to generate feedback that could be used by NRC staff members investigating particular questions and by various Safety Technology Program projects, for example, the plant drills, manpower and staffing, and STA projects.

The topics discussed at each workshop fall within two areas: staffing, and licensing and training. Table 2 organizes the discussion topics into these two areas, shows the workshops in which the topics were addressed, and references the page numbers in the workshop reports on which the workshop discussion sessions are described. These workshop reports should be consulted for details of the discussion sessions summarized in the following sections.

4.1 Staffing Practices

4.1.1 Power Plant Staffing

The first workshop, held in Chicago, included a discussion session on power plant staffing. Workshop participants cited two sources of staffing-related problems: overstaffing day shifts, and understaffing the other shifts. They recommended spreading staff over all shifts, and adding some types of staff positions to the back shifts (i.e., swing and graveyard shifts), including electricians, a mechanic and an instrument technician, a communicator, and a health physicist/chemist. Participants preferred a requirement of a second SRO on shift to the current STA requirement. Participants urged similar staffing configurations for both single and multiple unit plants, but with larger numbers of staff suggested for the multiple unit plants.

4.1.2 Overtime Practices and Implications

The Atlanta workshop addressed overtime practices and implications, and revealed a great deal of variation in overtime arrangements, scheduling, and requirements among the plants represented at the workshop. For example, some participants indicated that overtime was routinely scheduled well in advance, while others reported typically having only a few hours' notice prior to being expected to work overtime. Workshop participants indicated that overtime demands interfered with their personal and family lives. It was suggested that there might be some negative impact on plant safety, as well, depending in particular on the number of hours worked consecutively and the number of hours off between duty assignments. In discussing overtime, participants repeatedly turned to other staffing concerns: inadequate staffing levels, high turnover

Table 2

Workshop Discussion Topics

Area	Topic	Workshop	Reference to Workshop Report
Staffing Practices	Power Plant Staffing	Chicago	Appendix A, pp. A-5, A-13 to A-14
	Overtime Practices and Implications	Atlanta	Appendix C, pp. C-3 to C-6
	The Role of the STA	Chicago	Appendix A, pp. A-4 to A-5, A-11 to A-12
		Boston	Appendix B, pp. B-17 to B-22
	Control Room Engineering Support	Boston	Appendix B, pp. B-22 to B-24
	The Need for Additional SRO in the Control Room	Atlanta	Appendix C, pp. C-6 to C-8
Licensing and Training	Plant Drills	Chicago	Appendix A, pp. A-3, A-6 to A-7
	Simulator Training	Boston	Appendix B, pp. B-4 to B-10
	The Licensing Process	Chicago	Appendix A, pp. A-3 to A-4, A-7 to A-10
	Licensing Exams and Requalifications	Boston	Appendix B, pp. B-10 to B-17
	RO Licensing Exams	Atlanta	Appendix C, pp. C-8 to C-12

rates, and shift work. In fact, some participants pointed to shift work as being a more significant cause of high turnover than overtime.

4.1.3 The Role of the STA

Two workshops, Chicago and Boston, had sessions that specifically addressed the role of the Shift Technical Advisor.[4] Workshop participants discussed two ways in which there was marked variation among their plants. First, there was variation in the nature of the position including whether the STA was required to have a degree and whether the STA position was separate or performed in addition to other duties, e.g., SRO. Second, there was variation in the shift schedule of the STA, including rotating with the operations shift crew, and rotating on some other rotation schedule, e.g., a 24-hour rotation. In general, participants were quite critical of the STA position at their plants. The STA was seen as having little authority, not enough real responsibility to justify a separate position, and little functional value as implemented. Furthermore, participants indicated that STAs too often lack sufficient operational experience to make a significant contribution to the shift crew, despite the STAs' educational background in engineering. There was a great deal of variety in participants' suggestions for an "ideal" STA. Nevertheless, participants expressed support for the concept of providing engineering assistance on shift, or for having available a person who could provide a broad, "big picture" perspective in the control room. It was suggested that this role might be performed better by an additional SRO on shift, by providing additional training to SROs or SSs, or by the technical support center, than by the current STA position. Participants urged that a degree in engineering was not a necessary requirement for this function, but operations experience was.

4.1.4 Control Room Engineering Support

The discussion of engineering support for the control room crew provided participants at the Boston workshop an opportunity to elaborate on some of the views they expressed during the STA discussion session. Participants indicated that a degreed engineer should not be required on shift--that requiring a degree *per se* offered little to the control room. In the control room, there was, according to participants, insufficient work for degreed engineers without requiring them to do busy work.

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[4]The workshop findings concerning the STA position are also discussed in PNL Report 4751, The Role of the STA in Nuclear Power Plants: Utility Practices and Perceptions, by Bryan F. Gore and Barbara D. Melber, June 1983.

4.1.5 The Need for an Additional SRO in the Control Room

One session at the Atlanta workshop focused on the need for an additional SRO in the control room. The majority of participants felt that a senior reactor operator should be in the control room at all times, but this was not necessarily seen as requiring additional staff on the operations crew.

4.2 Licensing and Training

4.2.1 Plant Drills

Plant drills were discussed at the Chicago workshop. As might be expected, participants did not limit their comments to plant drills, but also commented on training procedures generally. Participants urged upgrading training to make it more practical and to include systems training. Well-qualified trainers were considered essential, and simulators a valuable training tool. Also, it was suggested that having work teams review procedures and planned drills would increase the effectiveness of these tools. Participants suggested that plant drills be realistic and scheduled so as to minimize interference with plant operations. Also, complete drills, that follow an "accident" from its initiation to stabilization, were considered most valuable.

4.2.2 Simulator Training

The Boston workshop devoted one session to a discussion of the use of simulators in training. Participants indicated that the most useful simulator, not only for training but also for accident analysis, evaluation of procedures, and problem solving, was the plant-specific simulator. The generic simulator, however, was seen as providing good general training, and the part-scope simulator as a useful classroom training device. Participants indicated that they spent widely varying amounts of time on simulators, and they were most likely to be familiar with generic simulators. Additionally, participants indicated that when using simulators in licensing examinations, it was important to have knowledgeable and experienced examiners, to test information specific to the operator's plant, to allow for plant-simulator differences, and to make clear in advance of the exam what is expected of the operator. Additionally, participants suggested that it would be helpful to have one examiner handling the entire exam process.

4.2.3 The Licensing Process

One session at the Chicago workshop addressed the licensing process. Participants indicated that they felt the process was good, when done properly: the written portion of the exam permits coverage of range of topics; the oral exam permits questions that are not well suited to a written format, since the orals allow rephrasing and clarification of questions; and, the simulator exam can test an individual's familiarity with the control room and responses under stress. Participants stressed the importance of having operations-trained, experienced examiners. They felt that examiners should clarify what is expected of operators on the

exams, and one examiner should administer all three parts of the exam (written, oral, simulator). Also, participants suggested changing the written exam so as to make it less like an endurance test, and to limit the extent to which it focuses on heat transfer, fluid dynamics, reactor theory, and radiation control.

4.2.4 Licensing Examinations and Requalification

The Boston workshop session on licensing and requalification generated a good deal of discussion about the appropriate content of licensing exams (see particularly pages 10 to 15, Appendix B). Regardless of the particular content of the exam, however, participants indicated that exams should be tailored to the plant and relevant to the operator's job. Operators should know, in advance, what will be expected of them on the exam. Participants at the Boston workshop also felt that it was important for examiners to have operations experience. Requalification, or "reeducation" as some termed it, was considered valuable for upgrading skills, reviewing plant changes, and reviewing other plants' experiences. Participants felt that requalification training should be conducted throughout the year and that qualified, capable instructors were important. Simulator time was considered an important part of requalification training. It was also suggested that the NRC role in requalification should be limited to occasional audits of requalification programs, materials, and tests.

4.2.5 Reactor Operator Licensing Examinations

During the Atlanta workshop discussion of licensing, participants noted that the simulator portion of an exam is useful for testing and that operators should be able to spend some time on the simulator prior to the exam. Most participants also felt that the oral sit-down examination was useful, particularly as it affords the opportunity to rephrase questions and probe for further information. Participants indicated that procedures used in preparing and administering the exam were very important, particularly with the written exam. Thus, for example, participants indicated that examiners should be well trained and qualified; that the same person should write, administer, and evaluate the exam; that the exam should be tailored to the particular plant; and that the areas to be covered in the exam should be well defined prior to the exam. Finally, participants indicated that requalification practices varied at their plants; participants' recommendations for requalification programs also varied. However, the majority of participants supported the notion of a requalification program that involves training throughout the year, e.g., spending one shift of each rotation on retraining, rather than receiving intensive retraining only occasionally.

4.3 Conclusions and Lessons Learned from the Workshops

Since the workshops were attended by only a fraction of the utility staff in three regions, and some plants and two NRC regions were not represented at all, it is impractical to draw conclusions about plant practices or industry sentiment on the basis of these workshops.

Nevertheless, the fact that several common themes emerged at all three workshops, within different NRC regions, suggests that conclusions drawn from the workshop discussions may well be instructive. These conclusions are, therefore, outlined below.

4.3.1 Staffing Levels

- Shift crews may benefit from the presence of a number of other positions on shift (i.e., electricians, technicians, etc.).

- Operations shift crews can suffer high turnover and other problems as a result of the demands of shift work and of overtime.

- Requiring that one SRO be in the control room at all times, which for some plants would entail adding another SRO, was seen as a potentially useful requirement.

4.3.2 Engineering Support in the Control Room

- The concept of a shift technical advisor is a good one--operations crews could benefit from the perspective of an individual with some engineering expertise.

- More important than engineering expertise per se is plant specific expertise and operations experience. Therefore, a person with an engineering degree was not considered essential.

- The current implementation of the STA position is not helpful. STAs rarely have enough operations experience to be of assistance, and there is rarely enough engineering work in the control room to justify the separate engineering position.

- The engineering expertise, or technical advice, and perspective that would help in the control room might best be provided by giving SROs or SSs some engineering training (though a degree is unnecessary), by providing an additional SRO on shift, or by relying on the technical support center.

4.3.3 Training Tools

- Simulators are important training tools, both initially and during retraining.

- Part scope or mini simulators may be most useful in early classroom training.

- Generic simulators are good for general training and retraining, but they have shortcomings, e.g., the need to adapt to the differences between the simulator and the operator's plant can be problematic.

- Plant-specific simulators are best as training tools.

- Plant drills should be carefully planned, reviewed, and scheduled.

4.3.4 Training Programs

- Qualified experienced instructors are essential for a good training program.

- Requalification training should take place regularly, throughout the year.

- Initial and requalification training should be practical and oriented to the particular plant.

4.3.5 Licensing Exams

- Examiners should be experienced, well qualified, and familiar with the operator's plant.

- One examiner should write, administer, and evaluate an individual's test.

- Exams should be tailored to the specific plant.

- Content of exams--what is expected for the exam--should be clarified in advance of the test.

- All three types of exam (oral, written, simulator) are useful and complementary.

- NRC reformatting of the written exams in January, 1982 (streamlining content areas and shortening the exam), appears to have accomplished changes that answer some criticisms of the exam voiced during the workshops.

- Differences between a simulator and a plant should be taken into consideration in evaluating an operator's performance.

In summary, conclusions suggested by workshop discussions fall into five areas: staffing levels and related problems, the provision of enginering expertise in the control room, training tools, training programs, and the licensing examination process. It is important to remember that the statements noted above in each of these areas are no more (and no less) than some conclusions based on the views expressed by participants at the feedback workshops held in Regions I, II, and III.

5. ASSESSMENT OF WORKSHOP EFFECTIVENESS

In addition to producing a good deal of information concerning workshop participants' viewpoints on a number of topics, the feedback workshops provided information that can be used to assess the procedures and techniques used in the workshops, and to examine the effectiveness of the workshops at generating feedback. The assessment of workshop techniques and procedures is discussed first, below. This is followed by a discussion of the effectiveness of the workshops as a means of obtaining feedback. Finally, the workshops are assessed in terms of the usefulness of the information they generated.

5.1 Effectiveness of Feedback Workshop Techniques and Procedures

As mentioned in Section II, above, workshop participants were asked to complete an evaluation form for every workshop session and for the workshop as a whole. Observers' assessments of the workshops were requested on evaluation forms at the close of the Boston and Atlanta workshops and gathered from their notes and comments following all three workshops. The evaluation forms used during the workshops are included in the workshop reports (see Appendices A, B, and C).

The evaluative information provided by participants and observers on evaluation forms supplies information concerning workshop effectiveness. This information is summarized, first, and then used to compare various workshop procedures, below. The workshop reports should be consulted for a detailed description of the evaluative comments concerning each workshop session, however.

5.1.1 Participants' and Observers' Assessments of the Workshops

In general, all three workshops were rated very favorably by participants and observers. Their comments and ratings suggest that the workshops were well run and that they addressed important topics.

Table 3 shows the percent of workshop participants at each workshop who strongly agreed or agreed with several statements about the workshop as a whole. This table shows that, in spite of some variation between workshops, the majority of participants found the workshop sessions well organized and gave workshop leaders high ratings for encouraging participants and for keeping discussions focused on important topics. Participants also indicated that the workshops were a good vehicle for obtaining feedback. According to this table, the most serious problem with the workshops was the workshop facilities, particularly at the Boston workshop. The vast majority of participants at the Boston (Group 1, 100%; Group 2, 86%) and Atlanta (100%) workshops favored including small discussion groups in the workshop format. (Chicago workshop participants were not specifically asked about the two sizes of discussion groups.) The use of focus questions generally elicited little comment; however, particularly in Boston, some participants criticized the questions for being leading. Nevertheless, as Table 4 shows, a strong majority of participants felt they had ample opportunity to

Table 3

Participants' Assessment of Some Features of the Workshops

Statements About the Features of the Workshops	Percent of Participants in Each Workshop Who Strongly Agree or Agree with the Statements			
	Workshop I Chicago	Workshop II Boston		Workshop III Atlanta
		Group I	Group II	
The workshop was well organized.	100%	86%	86%	92%
Workshop leaders encouraged operators to participate in discussions.	100%	93%	100%	100%
Workshop leaders kept the discussions focused on important topics.	100%	100%	71%	77%
The workshop facilities (meeting room, etc.) were comfortable.	57%	36%	46%	62%
This sort of workshop is a good way to obtain input from operators.	100%	100%	93%	100%

Table 4

Assessments of Participation in Workshop Discussion Sessions[a]

Workshop	Discussion Session	Individuals who strongly agreed or agreed that participants had ample opportunity to express their views on these topics				Individuals who strongly agreed or agreed that the workshop leaders understood participants' comments made during workshop sessions			
		Percent of Participants		Percent of Observers		Percent of Participants		Percent of Observers	
Workshop I Chicago	Plant Drills	100%		--		93%		--	
	The Licensing Process	86%		--		93%		--	
	The Role of the STA	100%		--		100%		--	
	Power Plant Staffing	93%		--		93%		--	
		Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Workshop II Boston	Simulator Training	88%	86%	75%	80%	75%	93%	100%	100%
	Licensing Exams and Requalification	67%	15%	40%	50%	80%	77%	80%	67%
	The Role of the STA	100%	93%	75%	80%	94%	71%	100%	100%
	Control Room Engineering Support	86%	77%	20%	80%	85%	69%	60%	100%
Workshop III Atlanta	Overtime Practices and Implications	92%		40%		92%		100%	
	Need for Additional SRO in Control Room	83%		80%		67%		80%	
	RO Licensing Exams	77%		50%		100%		100%	
	Open Topic	92%		67%		83%		100%	

[a]Observer ratings of these items are not available for the Chicago workshop.

express their views during every discussion session but one in Boston; they felt that their comments in each session were understood by workshop leaders.

Observers' comments and reactions to the workshops were similar but slightly more critical of the workshops than those of participants. Nevertheless, Table 5 shows that the majority of observers in Boston and Atlanta found the workshop to be well organized and a good way to obtain input from operators; observers indicated that workshop leaders were able to encourage operators' participation and to keep the discussions focused on important topics. Observers also voiced some complaints about the workshop facilities. Several observers noted that some focus questions could have been more specific, particularly at the third workshop. Table 4 shows that the majority of observers felt that workshop leaders understood participants' comments during each workshop session. Table 4 suggests, however, that a number of observers questioned whether participants had ample opportunity to express their views during several of the discussion sessions at the Boston and Atlanta workshops; observers commented that this was the result of time constraints or dynamics within the groups.

Participants and observers were also asked to comment on the content of the workshop (see Table 6). With only two exceptions, the overwhelming majority (if not all) of the participants (88-100%) agreed or strongly agreed that the discussion sessions focused on important topics. Table 6 shows that the exceptions were the staffing session in Chicago and the discussion of control room engineering support in Boston. It seems that the former was somewhat outside the immediate areas of interest and concern to operators. The latter, on the other hand, is of interest, but that session followed a session focused on discussion of the STA and was therefore redundant. Observers at the Boston and Atlanta workshops, who were also queried about the importance of the topics, agreed with participants: 80-100% of the observers agreed or strongly agreed that each discussion topic--except the discussion of control room engineering support--was important.

In short, both participants and observers gave high ratings to the workshop procedures that were used. They indicated that the workshops which utilized these procedures appeared to them to be good ways of obtaining feedback from operators for the NRC. They also indicated that the feedback obtained by the workshops reflected participants' views concerning a number of important topics.

5.1.2 Comparisons of Various Workshop Procedures

One of the reasons for conducting these feedback workshops was to compare different workshop procedures or techniques. The apparent impacts on participant and observer perceptions of four different procedures are discussed below. First, the licensing discussion sessions at each workshop are compared. Second, the differing amounts of information provided prior to the workshops are discussed. Third and fourth, differences in the numbers of NRC representatives and of discussion topics are discussed. Finally, some general observations and comments

Table 5

Observers' Assessment of Some Features of the Workshops

Statements About the Features of the Workshops	Percent of Observers at Each Workshop Who Strongly Agree or Agree with the Statements		
	Workshop I Chicago[a]	Workshop II Boston	Workshop III Atlanta
The workshop was well organized.		67%	100%
Workshop leaders encouraged operators to participate in discussions.		100%	100%
Workshop leaders kept the discussions focused on important topics.		67%	40%
The workshop facilities (meeting room, etc.) were comfortable.		11%	80%
This sort of workshop is a good way to obtain input from operators.		100%	100%

[a]This information is unavailable for the Chicago workshop.

Table 6

Participants' and Observers' Assessment of the Importance of Workshop Discussion Topics

Workshop	Discussion Topic	Percent of participants who strongly agreed or agreed the topics were important		Percent of observers who strongly agreed or agreed the topics were important[a]	
Workshop I Chicago	Plant Drills	93%		--	
	The Licensing Process	100%		--	
	The Role of the STA	100%		--	
	Power Plant Staffing	29%		--	
		Group 1	Group 2	Group 1	Group 2
Workshop II Boston	Simulator Training	94%	100%	100%	80%
	Licensing Exams and Requalification	100%	100%	100%	100%
	The Role of the STA	88%	100%	100%	100%
	Control Room Engineering Support	29%	38%	40%	40%
Workshop III Atlanta	Overtime Practices and Implications	100%		100%	
	Need for Additional SRO in Control Room	100%		100%	
	RO Licensing Exams	100%		100%	
	Open Topic	100%		83%	

[a]This information is not available for the Chicago workshop.

are made. Throughout the following discussion, it is important to remember that there were many variations between workshops and that the demands of actually conducting three workshops in different regions necessarily resulted in diminished experimental rigor and control.

5.1.2.1 Comparing the Discussions of Licensing Examinations

All three workshops devoted one discussion session to problems and issues associated with reactor operator licensing. While the topic of licensing was constant, and participants unanimously described it as an important topic, there were several differences between the three sessions. Perhaps most pronounced among these were the particular focus questions and the fact that there were no small group leaders assigned from the ranks of observers to facilitate the small group discussions at the Boston workshop.

There were also differences between Boston and the other two workshops in terms of participants' and observers' assessments of the licensing sessions. Table 4, above, shows that participants and observers less often agreed that there was ample opportunity for participants to express their views on licensing in Boston than in Chicago and Atlanta. More participants in Chicago (93%) and Atlanta (100%) found the discussion session worthwhile than in Boston (Group 1, 80%; Group 2, 62%). Similarly, more participants in Chicago (86%) and Atlanta (100%) indicated that they thought that licensing was discussed in an effective way than did participants in Boston (Group 1, 67%; Group 2, 38%). In short, both the Chicago and Atlanta participants indicated that they perceived their licensing sessions as more effective and worthwhile than Boston participants, particularly Boston Group 2.

Participants' and observers' comments suggest that the focus questions in Boston may have been more difficult than at the other two workshops. In Boston, participants were asked to specify the general subject areas that should be included on written operator exams, and then to detail the particular content that should be included. Participants remarked that, particularly without preparation time, these tasks were too difficult and time consuming to be undertaken in just a few hours. Also, the absence of small group leaders may have contributed to some dissatisfaction in Boston, where at least one small group seemed to get bogged down in discussing current licensing practices rather than identifying preferred exam content areas. A small group leader would very likely have been able to identify the problem (i.e., that the group was wavering from the topic at hand) and correct it, by leading the group back to the subject of the focus question.

Thus, while little was said about small group leaders at any workshop, their absence in Boston coincided with at least one problem that need not have occurred. It appears that small group leaders are helpful and useful at the feedback workshop. Also, it appears that focus questions should not only be carefully constructed to direct comment on areas of particular interest and concern, but that the difficulty of the questions should be monitored as well.

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5.1.2.2 Preparing for the Workshop

Prior to the first two workshops, participants received only a minimum of information. For the Chicago workshop, invitations were handled entirely via telephone; not only was the content to be covered unclear, but there was apparently some confusion about the sponsorship of the workshop as well. Invitations to the Boston workshop were handled primarily by mail by the NRC. While there was no confusion concerning sponsorship, only those participants who obtained copies of the letters of invitation sent to utilities knew of the titles of the four discussion sessions. Participants in Boston indicated that a listing of topics was insufficient to prepare them for the workshop. Particularly since some participants considered themselves to be representatives of their colleagues and crew members, they wanted to receive detailed pre-workshop information. Therefore, descriptions of each workshop session were sent in advance to participants in the Atlanta workshop. All but one participant received the pre-workshop packets. Everyone who received a packet read it prior to the workshop, and considered the packet helpful. Still, nine participants would have liked to have received the information sooner--weeks in advance of the workshop.

It appears that participants prefer receiving detailed information about feedback workshops, as soon as possible. The absence of such information can lead to confusion, as well as to the frustration and annoyance of workshop participants. If preworkshop materials are made available, it appears that participants will prepare for the workshop by reviewing the materials.

5.1.2.3 NRC Representatives at the Workshops

Table 1, above, indicated that the number of observers at the workshops varied from 4 in Chicago to 10 in Atlanta. The number of NRC representatives at the workshops was 1 in Chicago, 3 in Boston, and 5 in Atlanta (see Table D-6, Appendix D). After the Chicago workshop, participants reported both favorable and unfavorable opinions concerning the value of having additional NRC staff present at the workshops. However, the majority of participants at the Boston workshop (Group 1, 80%; Group 2, 92%) felt that NRC representatives at the workshop were helpful. Reasons offered for wanting NRC representatives present included facilitating dialogue between operations personnel and the NRC, and assuring participants that their comments were being heard by the NRC (i.e., so that participants need not rely on the efforts of a contractor to relay participants' viewpoints to the Commission staff). In Atlanta, where the greatest number of NRC representatives were present, and where the NRC-participant ratio was quite high (5:13), all of the participants felt the NRC should be present at workshops of this sort. All comments made in Atlanta concerning NRC presence were favorable, indicating that participants enjoyed the direct input to and from the NRC that took place at the workshop. In fact, 12 participants (at least one from each workshop) used their session evaluation forms to write in favorable comments about the exchange between participants and NRC personnel that occurred during that workshop session. Only two participants (both at

the Boston workshop) made negative comments about this exchange on their evaluation forms.

It appears that an important component of a feedback workshop, then, is the obvious presence of the NRC. This may lend legitimacy to the stated purpose of the workshops, that of obtaining feedback for the NRC. What appears to be foremost in participants' minds, however, is that the presence of the NRC representatives offers participants an opportunity for direct input to and exchange of information with the NRC.

5.1.2.4 Number of Discussion Topics

The first two workshops addressed four topics, each of which was discussed during a separate workshop session. The third workshop included three formal topics only. This variation was effected primarily because of observers' comments following the first two workshops. Observers in Chicago and Boston noted that four topics appeared to be too many for a two-day workshop, where fatigue on the part of participants and observers alike can be a problem at the close of the second day. It is curious to note that the only comments offered by participants in Chicago about the number of topics were favorable. In Boston, 85% of Group 1 and 50% of Group 2 indicated that four topics seemed to be a good number for the two-day workshop. However, in Atlanta, fully 77% of the participants indicated that three topics were too many for a two-day workshop.

It appears that participants and observers do not agree on the appropriate number of topics for inclusion in a two-day workshop. There is no consensus suggested by workshop participants or observers as to how many topics may be too many for a two-day workshop, or what determines how many is too many.

5.1.2.5 General Comments

There are many questions that this workshop effort cannot answer, for example, the effects, if any, of the location of the workshop. The workshop facilities were criticized at all three workshops, but the facilities varied dramatically. Nevertheless, it does appear reasonable to conclude that the workshops were enhanced when small group leaders were provided and when focus questions were both specific and of manageable scope. Participants preferred being informed of the nature of the workshop in advance, and came prepared for the workshop if given an opportunity to do so. NRC representatives also enhanced the quality of the workshops, at least from participants' perspectives.

These workshops were designed to gain feedback from operations personnel, and to learn something about how best to obtain that feedback. Despite the TMI-2 Lessons Learned Task Force Final Report recommendation that spawned this project (see p. 2, above), little thought was given to the value of providing a vehicle for exchange between operations personnel when planning and developing the workshops. Yet, the most frequently mentioned feature of all three workshops that participants considered

"best" was the opportunity the workshop provided to interact with and share ideas with personnel from other utilities, as well as with representatives of the NRC. This was definitely a positive consequence of the workshops, foreseen in the Lessons Learned Task Force Report.

5.2 Effectiveness of the Workshop as a Means of Obtaining Feedback: Indicators of the Workshops' Ability to Obtain Feedback

Most measures of the effectiveness of a particular approach to obtaining feedback require comparing that approach to others. However, there are several indicators of the extent to which the workshops were able to obtain feedback that derive from the workshops themselves: attendance at the workshops, the level of participation in the workshop discussions, and the workshop attendees' perceptions of the workshops' ability to obtain feedback. These are discussed separately, below.

5.2.1 Attendance at the Workshops

The percentages of utilities and plants represented at the workshops offer one measure of the extent to which the workshops were successful in obtaining feedback from operations personnel. (Details concerning representation at each workshop are presented in the tables contained in Appendix E.) The representation varied at the workshops, with the Boston workshop showing the highest level of representation both of utilities and of sites with at least one operating plant. Less than half of the utilities in Region III (47%) were represented in Chicago; 60 percent of the utilities in Region II were represented in Atlanta; and 84 percent of Region I utilities were represented in Boston.[5] However, of those utilities not represented at the workshops, only 5 had any operating plants (Chicago--1; Boston--2; Atlanta--2). Thus, of the utilities' 42 sites in Regions I, II, and III with operating plants, 34 (81%) were represented at the workshops.

In other words, while the workshops did not appear to draw particularly good overall utility representation, a very high percentage of the utilities with operating plants were represented at the workshops. This high level of representation is surprising for several reasons. First, the process of invitation took place shortly before each workshop, and therefore utilities and participants had very little lead time in which to make arrangements to participate in the workshops. Second, participation in the workshops was voluntary, not mandatory. Third, participation in the workshops was done at the utility's--or the individual participant's--expense. Therefore, the high rate of representation of operating sites appears to indicate that the workshop is a potentially very powerful feedback tool. At least, input can be

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[5]It should be noted that the utilities in Region III had the shortest lead time between notification and the actual date of the workshop. Region I had the longest lead time. This may have affected utility representation at the workshops.

obtained from a very high percentage of operating sites with a minimum of notice and incentive for participation.

5.2.2 Participation in Discussions

Obtaining the attendance of plant and utility representatives at workshops is just the first step in gathering feedback. The second step involves elicitating representatives' input during the workshop. One measure of the extent to which that input was obtained derives from workshop participants' descriptions of whether or not they were able to express their views on the topics under discussion and whether their comments were understood by workshop leaders. This information was summarized in Table 4, above (see p. 21); with few exceptions, participants and observers agreed that the workshops afforded participants ample opportunity to express their views and that their comments were understood by workshop leaders. This is mirrored in the overall evaluations of the workshops in which participants and observers indicated that workshop leaders encouraged participation in discussions (see Tables 3 and 5, above).

In short, most participants at the workshops reported being able to express their views to individuals who seemed to understand what was being said. Furthermore, it appeared to observers that most participants were able to express their views and that workshop leaders appeared to understand those views.

5.2.3 Workshop Attendees' Perceptions of Feedback

All workshop observers and all participants but one (a member of Group 2, Boston) agreed or strongly agreed that the workshops were a good way of obtaining input from operators. As noted above, the majority also felt that participants were able to express their views, and those views were understood by workshop leaders. It appears that workshop attendees judged the workshops as good vehicles for obtaining feedback.

5.3 Usefulness of Feedback Obtained at the Workshops

One other indicator of the effectiveness of the workshops as feedback mechanisms was explored: the usefulness of the information actually generated by the workshops. This was examined via a survey of individuals who observed one or more workshops or read/reviewed the workshop report(s), raw data, and notes collected at the workshops.

5.3.1 Survey Methods

Structured interviews were conducted personally or by telephone using the interview protocol contained in Appendix F. During the 10- to 20-minute interviews, respondents described the nature of their contact with the workshops, the information sought and obtained from the workshops, how that information was used, how useful the information was, and their judgments of the effectiveness of workshops as mechanisms to obtain input

for the NRC from operations personnel. All interviews were conducted by one of two project staff members.

The sample of probable respondents comprised the users, or potential users, of the information generated by the operator feedback workshops. The sample therefore included: (1) all observers at the workshops and (2) individuals who received copies of workshop report(s), workshop notes, or "raw" data (completed focus questions or worksheets). A total of 19 individuals were identified as possible respondents. One of these (an observer at the Chicago workshop) had changed jobs, moved out of state, and could not be contacted for an interview.

The 18 others were contacted and interviewed between November 1982 and March 1983. Table 7 describes the nature of the contact these respondents had with the workshops and the respondents' institutional affiliations. Eleven of the interviews were conducted in person; seven were conducted by telephone (one Battelle, one Oak Ridge National Laboratory [ORNL], two Institute of Nuclear Power Operations [INPO], and three NRC employees were interviewed by telephone).

Table 7

Usefulness Survey Respondents' Contact with Workshops and Institutional Affiliation

Institutional Affiliation	Nature of Contact with Feedback Workshops			
	Observed One or More Workshops	Read/Reviewed Workshop Reports, Notes, or Data	Both	Total
NRC		1	7	8
Battelle		4	3	7
Other (INPO, ORNL)	2		1	3
Total	2	5	11	18

5.3.2 Survey Results

All respondents felt that it is useful for the NRC to obtain feedback from operators, though one individual expressed concern lest operators become the only source of feedback for the Commission. The respondents rated the usefulness of the specific information obtained on a scale of 1 to 10, where 10 is high (very useful). The ratings ranged from a low of "1 to 3" to a high of "10." The averages and ranges of the ratings are as follows:

Subject Area of Workshop	Average "Usefulness" Rating	Range Low	Range High
Topics concerning manpower and staffing	(n = 17) $\bar{X}$ = 6.6	3	9.5
Topics concerning licensing and training	(n = 27) $\bar{X}$ = 6.5	"1-3"	10
Information concerning workshop process	(n = 8) $\bar{X}$ = 6.8	4	"8-10"

These ratings represent respondents' judgments of the usefulness of the feedback they obtained from the workshops. The ratings involved a large range, and moderate averages. These results suggest that the feedback was not particularly useful. However, when respondents described the ways in which the information they obtained was used, it began to appear that the feedback generated at the workshops was both usable and useful. Table 8 lists the ways in which workshop information was used by respondents. As this table shows, most respondents used the information in some way. The information was frequently used to "increase understanding" or "develop thinking" in a particular area. Just as frequently, the information was used directly in several reports prepared by contractors for the NRC on topics discussed at the workshops or in reports prepared by NRC staff. The information also served as background for other reports and for regulatory decisions.

The majority of respondents judged the workshop to be an effective means of obtaining feedback: 15 of the 18 respondents said that the workshop is, or can be, an effective means of obtaining feedback information from reactor operators. Relative to other feedback mechanisms, the workshop was consistently described as "more effective" by eight respondents, and "effective depending upon the nature of the information being sought" by another six respondents. Several of these individuals noted that workshops would be most effective when the topic of discussion and inquiry would benefit from information exchange, group interaction, and group discussion.

In short, a sizeable majority of individuals who observed the workshops, or worked with the information generated at them, considered the workshops effective, obtained information that they rated as moderately useful, and used the information in a variety of ways. All of these people felt that the NRC should obtain input from licensed operators.

Table 8

Usefulness Survey Respondents' Descriptions of How They Used the Information Obtained at Workshops

Use of Information	Number of Respondents Mentioning This Use
To develop thinking; to increase understanding	9
As raw data, input for reports	9
As background information for policy or regulatory decisions	4
As background information for reports	3
To develop other information sources	2
To establish line of communication	1
Not used yet; didn't know how to use	3
Couldn't use the information	1

5.4 Summary and Conclusions

In general, the workshops were evaluated very favorably by workshop participants and observers. Workshop techniques that appear particularly helpful include providing small group discussion leaders, providing advance information about the content of the workshop, and including NRC representatives at the workshops. Several different indicators suggest that the workshops are an effective means of obtaining feedback from operations personnel. The level of representation of operating sites at the workshops was high; participation in the workshop discussions appeared complete; workshop attendees rated the workshops as a good means of obtaining feedback; and a survey of users or potential users of information generated at the workshops revealed that (1) the workshop-generated information was perceived as moderately useful and (2) the information was used (and therefore proved useful) in several ways.

On the basis of the workshop experience described in this report, feedback workshops appear to be a promising means for the NRC to obtain input from utility personnel. The workshops also offer participants a valuable opportunity to exchange information and ideas concerning their experiences, practices, and policies.

APPENDIX A

OPERATOR FEEDBACK WORKSHOP
DECEMBER 8-9, 1981
CHICAGO, ILLINOIS

February 1981

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I. INTRODUCTION

Pursuant to the NRC Task Action Plan I.A.2.6, the first in a planned series of Operator Feedback Workshops was held in Chicago, Illionis, December 8 and 9, 1981. The principal objectives of this workshop were to: 1) collect operator viewpoints and feedback on selected issues of concern to the NRC; and at the same time, 2) determine operators' experiences, reactions and ideas concerning selected topics of concern in the NRC program on safety technology. The issues considered in this workshop were: plant drills, the licensing process, the role of the STA, and manpower and staffing.

The workshop was attended by fifteen operators with RO or SRO licenses. They represented the following plants: Davis-Besse, Monticello, Dresden, Duane Arnold, Point Beach, Zion, Palisades, Lacrosse, Quad Cities, and Kewaunee. Seven of the operators were ROs, and eight were SROs. Four served as shift supervisors at their plants. There was one training supervisor and one operations superintendent in the group. Several had Navy nuclear experience. There was a good balance of operators from single-unit plants and from multiple-unit plants. Two of the operators had some involvement with PROS. The operators had an average 6 years of commercial nuclear plant experience. Their average age was 34. Thirteen percent were college graduates.

Overall, the first attempt at soliciting operators' feedback and viewpoints through a workshop format could be judged as having been highly successful. The quality of the feedback as well as the responsiveness of the operators was excellent. The operators appreciated the opportunity to express to the NRC their viewpoints and opinions on matters which directly affect them.

The workshop format also allowed operators to learn from one another. It was found, much to their surprise, that they all had common problems such as overtime. Potential solutions to the problems were discussed during their breaks and as a result, a great deal of rapport was established between the operators. From a safety standpoint, this kind of dialogue between reactor operators is significant, but we have just touched the tip of the iceburg in

this area. The operators would like to participate in more of these workshops. The opportunity to make a real contribution to improving the safety of their jobs was worth their time.

The majority of operators felt that more representatives from the NRC with "horsepower" should be present at these workshops. The workshop discussions are important to the NRC and the operators prefer talking to those who will have a direct impact on what is discussed.

II. SUMMARY

Four topics were presented to the operators for discussion. These topics were 1) plant drills, 2) the role of the Shift Technical Advisor (STA), 3) the licensing process and 4) manpower and staffing. The agenda for this workshop can be seen in Appendix A.

Each session began with individual written responses to a focus question. The focus question was used to stimulate thought and provide specific direction to the subsequent discussions. The following summarizes the content, process and recommendations of each session.

PLANT DRILLS

After discussing the individual responses to the focus question the participants broke into three small groups to discuss issues more specifically. Each group was lead by a Battelle staff member, with an operator assuming leadership for reporting the small group's results back to the whole group.

The small group discussion produced the following suggestions: 1) drills should be scheduled to minimize operational problems; 2) drills should avoid unrealistic scenarios or multiple failures; 3) simulator training should be scheduled for intact crews; 4) drills, emergency operating procedures, and their rationale should be reviewed by intact crews: 5) simulators should be plant-specific and more thoroughly used and 6) training should be improved in terms of trainer qualifications and having interesting, functional and practical training.

THE LICENSING PROCESS

For this session, the 15-operator group stayed intact to discuss the issue of licensing. The operators responded to the focus question, "What are the strengths of the license process?" Strengths of specific parts of the exam process were that: 1) simulator exams test response under stress, familiarity with the controls, and comprehensive abilities in the control room

environment; 2) oral exams allow questions that cannot be asked in written form and allow rephrasing and clarification of questions and answers, 3) written exams provide an initial screening of unqualified operators and permit some standardization in the industry with respect to the knowledge required of reactor operators.

Following the discussion on the strengths of the licensing process, those areas that need improvement were addressed. Recommendations for improving the license exam process included the following suggestions (see pp. 31-33 of Appendix D for complete list of recommendations): For the simulator exam, increase time spent on the simulator and provide guidelines for simulator exams. For the oral exams, suggestions for improvement were to eliminate redundant parts of the oral and written exam, have more explicit guidelines on what operators are expected to know, and let trainers proctor the oral exam. Recommendations for the written exam dealt with structuring it and grading it. Questions relating to heat transfer, fluid dynamics and reactor theory should be limited to operational aspects. Operators suggested that passing grades should be 60 on individual parts and 70 overall; as an alternative there could be more questions with less weight placed on each one.

There was some disagreement over the value of the requalification process. Operators generally felt it was important, but that the exams should concern new information, procedures and LERs, and not be a repeat of the original license exam.

THE ROLE OF THE STA

This session began with the responses to the focus question, "What responsibilities and activities are STAs involved in at your plant?" Some of the useful services currently being provided by STAs included: assisting the shift supervisor, doing accident analyses in the control room, reviewing transient assessments from other plants, maintaining technical support areas, etc. The group then split into small group discussions to define the ideal STA role as they would like to see it. The small group discussions showed substantial commonalities in preferred STA roles. Elements of that role include: no operational responsibility or supervisory authority; thorough working knowledge of

the plant; observation, assistance and communication during transients; experience at the SRO level of competence; and additional training (see specifics in Appendix D, pp. 35-37). The group generally agreed that while the STA concept is good it was not being properly implemented in terms of qualification requirements by the NRC.

POWER PLANT STAFFING

The whole group-small group process was also used for discussion of this topic. The operators began by filling out sheets that requested numbers of staff, in different categories, in their plants.

The small groups identified the following key factors that influence staffing: short-staffing on the backshift and overstaffing on the day shift; plant status (startup, shutdown, refueling); size and layout of the plant; training and maintenance requirements.

III. FEEDBACK RESULTS

PLANT DRILLS

Process

The operators began by writing down, then conveying to the group, suggestions in response to the focus question, "What is the best way to prepare plant personnel for emergencies?" After general discussion of about 25 suggestions produced in that fashion, the participants filled out a brief questionnaire on plant drills, then broke into three small groups to discuss issues more specifically. The groups were structured to include BWR operators in one group, PWR operators in another group, and a third group with mixed BWR and PWR operators. Each group was led by a Battelle staff member, with an operator-member assuming leadership for reporting the small group's results back to the whole group.

Content

Recommendations and ideas concerning preparation for emergencies, including plant drills, are shown on pages 27-30 of the appended notes. The central issues focused, generally, on systems training; the use of procedures; the use of simulators; operator and management involvement in plans, critiques and reviews; transient analysis; and making drills complete by following through from initiation of an accident to stabilization.

The small group discussions produced additional suggestions that 1) drills should be scheduled to minimize operations problems; 2) drills should avoid unrealistic scenarios or multiple failures; 3) simulator training should be scheduled, where possible, for intact crews; 4) drills, emergency procedures, and their rationale should be reviewed by work teams; 5) simulators should be plant-specific and more thoroughly used; and 6) training should be improved in terms of trainer qualifications and having interesting, functional and practical training.

Evaluation

For each of the four workshop sessions, operators were asked to agree or disagree, on a five-point scale, with statements that: the topic was

important, the discussion approach was effective, they had an opportunity to express their views; their comments were understood, and the time spent was worthwhile. Possible responses were: strongly agree, agree, neutral, disagree, strongly disagree.

The participants reacted very favorably to the first session. Responses to the evaluation questions were all agreement or strong agreement. There was one response of "neutral" to whether comments were understood and to whether the time spent was worthwhile. The distribution of agreement responses showed about 27% strong agreement and 73% agreement.

From the perspective of the Battelle staff, the session went well and was productive. Initially, there was some mix of enthusiasm and lack of focusing, which is natural among groups of strangers getting to work for the first time. The discussion, however, quickly became lively and relevant. There was broad participation in the group and a good flow of ideas. The operators were giving their own individual views and were not apprehensive about doing so. They were articulate in talking and attentive in listening to others. The small group discussions were especially useful in talking about specifics and in enhancing the informality of the workshop. The wrap-up descriptions of those small group discussions were well done and apparently very useful for the other groups to hear and consider in relation to their own groups' ideas.

THE LICENSING PROCESS

Process

The process for this portion of the workshop did not use breakouts to small-group discussions. Rather, the 15-operator group stayed intact to discuss the issue of the licensing process. The discussion proceeded from responses to a focus question, to a ranking of the importance of the eight (content area) parts of the license exam, (see page 10) to recommendations for improving the simulator, oral and written examinations.

Content

The focus question asked, "What are the strengths of the license process?" General strengths mentioned included its thoroughness, exposure to technical aspects of operation, setting a base line for training programs and assuring a

level of competence and understanding of plant systems. It was generally concluded that the license exams are good, if they are done right. Strengths of specific parts of the exam process were that: 1) simulator exams test response under stress, familiarity with controls and comprehensive abilities in a control room environment; 2) oral exams allow questions that cannot be asked in written form and allow rephrasing and clarification of questions and answers; 3) the importance of the parts of the written exam were ranked in the following order, from most important: safety and emergency systems, general operating characteristics, instruments and controls, features of facility design, standard emergency operating procedures, principles of reactor operation, principles of heat transfer and fluid mechanics, and radiation control and safety.

Recommendations for improving the license exam process included the following suggestions (see pp. 31-33 of Appendix D for complete list of recommendations). For the simulator exam: increase time spent on the simulator, provide guidelines for exam topics, differentiate uses of generic and specific simulators, allow operators to freeze simulator and talk out problems with examiners, and use qualified examiners with plant experience. The simulator exams should also test ability to stabilize the plant and reaction to failure of automatic trip systems.

The operators seemed to be generally most satisfied with the oral part of the exam. Their suggestions for improvement were to eliminate redundant parts of the oral or written exam, have more explicit guidelines on what operators are expected to know, have the same examiner write the written and give the oral, and let trainers proctor the oral exam like they review the written exam for misinterpretations.

Recommendations for the written exam dealt with structuring it and grading it. The operators felt the "endurance" aspect of the test should be reduced and that questions on heat transfer, fluid dynamics, and reactor theory should be limited to operational aspects. They would merge heat and fluid into other parts, merge systems and procedures, and drop radiation control. They noted, however, that restructuring the exam should not simplify it to the point of

reducing the calibre of licensees. They suggested that passing grades should be 60 on the parts and 70 overall; as an alternative there could be more questions with less weight placed on each one.

There was some disagreement over the value of the requalification process. Operators generally felt it was important, but that the exams should concern new information, procedures and LERs, and not be a repeat of the original license exam. Some suggested substituting peer reviews or examination by resident inspectors for the requalification; others suggested that tests during certified training programs would suffice. A general suggestion was that NRC move the responsibility for license exams to regional offices. The operators said they would be willing to help write exams.

Evaluation

Participant evaluations ranged from neutrality through strong agreement that the session was effective and useful. All felt the topic was important; in fact, 86% strongly agreed that it was. There was more agreement than strong agreement that their views were expressed and understood. About half agreed and half strongly agreed that the time they spent on this topic was worthwhile.

This session was also a productive one. Discussing the three portions of the exam in small groups might have generated more involvement as the large group began to "burn out" a little after their ranking exercise and during general discussion of oral and simulator exams. Nonetheless, many suggestions were offered, and few might have profited from more concentrated attention. The reaction to the initial focus question, which asked for strengths of the process, not problems with it, was interesting. There was a long "pregnant pause" in the proceedings, until one operator stated that "it sure is thorough!" (paraphrased). That comment stimulated further feedback on both the constructive features of the licensing process and its problems. The group was candid, open, seriusly concerned about the issues, and made useful comments.

OPERATOR WORKSHOP

FEEDBACK SESSION II

LICENSING PROCEDURES

Please rate the importance of each of the following written examination sections from 1 to 8, with 1 representing the most important, and 8 representing the least important. Place the appropriate number in the space to the left of each section title.

	Totals		
6	85	PRINCIPLES OF REACTOR OPERATION	0/0
4	55	FEATURES OF FACILITY DESIGN	3 ones
2	39	GENERAL OPERATING CHARACTERISTICS	5 ones
3	49	INSTRUMENTS AND CONTROLS	1 ones
1	38	SAFETY AND EMERGENCY SYSTEMS	5 ones
5	57	STANDARD AND EMERGENCY OPERATING PROCEDURES	1 ones
8	117	RADIATION CONTROL AND SAFETY	12 eights
7	100	PRINCIPLES OF HEAT TRANSFER AND FLUID MECHANICS	2 eights

THE ROLE OF THE STA (SHIFT TECHNICAL ADVISOR)

Process

The STA was discussed in the morning of the second day. Much like the process for the first topic, discussion started with responses to a focus question on the current activities of STAs. The group then split into three small groups (BWR, PWR and mixed) to define an ideal STA role and reconvened to further discuss the issue.

Content

The focus question, "What responsibilities and activities are STAs involved in at your plant?" generated a variety of responses. Those responses that indicated the STA provided useful services included: assisting the shift supervisor; doing accident analyses in the control room; reviewing transient assessments from other plants; doing phone communications; providing general engineering assistance; maintaining technical support centers; doing administrative work; adhering to technical specifications and procedures; reviewing logs and maintenance orders (see pp. 33-35 of Appendix D). Other comments reflected a concern that the STA makes little functional contribution in the way he is used, e.g., fulfills NRC requirements, babysits operators. There was substantial diversity in this group on their experiences with STAs, how they were integrated in the crew structure, and what duties they performed. Some plants, for example, have one STA per shift; others have the STA on a 24-hour duty day with housing facilities onsite for his use and from which he can be called to the control room.

A supplemental focus question asked what authority the STA has in the control room. The uniform response was "none," except where the STA is used as a senior control room engineer (SCREE), and there the authority is uncertain and conflicting with the shift supervisor, regarding, for example, authority to trip the plant.

The small group discussions showed substantial commonalities in preferred STA roles. Elements of that role include: no operational responsibility or supervisory authority; thorough working knowledge of the plant; observation,

assistance and communication during transients; experience and training to an SRO level of competence; and additional training pertinent to accident analysis (see specifics in Appendix D, pp. 35-37).

The group generally expressed a view that: 1) the concept of the STA--quickly available technical engineering advice--was good; but 2) it has not been properly implemented, in terms of qualifications requirements, by NRC. There was some disagreement in the group, however, on what those requirements should be, in terms of college degrees, licenses, and career paths. Most, however, emphasized the importance of an experience qualification.

The group agreed on the following recommendation: The STA could exist in plants presently by giving additional training in specific areas to the SS. This would meet the (7/82) requirement for a second SRO who would be an extra person in lieu of the STA but with the expertise of a SS.

Evaluation

This workshop session received the most favorable operator evaluation. All strongly agreed that the topic was important, and 69 to 85% strongly agreed with the four other evaluation statements; no one was neutral or negative in their reaction to this session.

The STA discussion was the most intense and dynamic of the workshop. Occurring when it did, the positive character of this session may be attributable to several things, including the inherent interest in the topic, the diversity of experience, the general agreement on prescriptions, and the fact that this conversation started the second day, and the operators seemed comfortable working with each other after the first day's experience. They clearly had some "bones to pick" on this topic, but also some constructive suggestions on how to bring needed engineering expertise to control room operations. Examination of commonalities and differences in viewpoints suggests that future workshop discussions of this topic might best organize small groups on the basis of whether the operators work in single or multiple-unit plants, rather than on the basis of type of plant (PWR, BWR).

POWER PLANT STAFFING

Process

The whole group-small group process was also used for discussion of this topic. The operators began by filling out sheets that requested members of staff, in different categories, in their plants. They noted the number of units and control rooms at their plants and gave their views of actual and ideal staffing (from the Shift Supervisor position downward in the structure). They then discussed key factors that influence staffing in two small groups; those from single unit plants comprised one group, and multiple-unit plants formed the second group.

Content

Most operators differed in their descriptions of actual and ideal staffing. Suggestions from the general discussion emphasized increasing the numbers of some types of staff and redistributing staff in a more balanced fashion across shifts. The operators endorsed the idea of a second SRO on shift (eliminating the STA) and suggested the need for two mechanic and instrument technicians, a health physicist/chemist, and a communicator on shift; they would also have two electricins on the backshift.

The small groups identified the following key factors that influence staffing: short-staffing on the backshift and overstaffing on the day shift; plant status (startup, shutdown, refueling); size and layout of the plant; training needs; maintenance requirements; and staffing dictated by the NRC and union agreements. The staffing factors were similar for single and multiple-unit plants; their shift complements, of course, differed in size. Interestingly, the operators felt ideal normal shift staff would be adequate for emergency conditions.

Evaluation

Although this session, too, was quite useful, it was the least satisfactory of the four. Half of the operators felt that the topic was unimportant and the time spent on it was not worthwhile. They did agree, however, that the way the topic was discussed was effective.

Once again, as with the STA session, the enthusiasm, or lack thereof in this case, can be attributed to several factors associated with both the topic and the workshop dynamics. The topic was seen as fairly uncontroversial by the operators and as being primarily in the decision domain of utility management. Perhaps more importantly, this was the fourth topic in a long and intense workshop. It occupied the afternoon of the second day, when there was some inclination by the operators to wrap things up. Moreover, the informal conversations among the operators, which were excellent for the overall atmosphere of the workshop, became somewhat intrusive on the task of focusing the last discussion. Lunchtime conversations about pay comparisons carried into the early portion of the afternoon, and it took a little longer for the facilitator to get the workshop going. Thus there was some time compression on the front and back ends of the afternoon.

However, it should be noted that in spite of those drawbacks, the operators actively discussed the issue. The information collected on staffing should be useful in examining practices at plants, how they differ, and what operators think about them.

OVERALL WORKSHOP EVALUATION

Reactor Operators

In their evaluations of the overall workshop, 79% of the participants strongly agreed (the others agreed) that the workshop was a good way to get operator input. They also tended to strongly agree that the workshop was well organized and that their participation was encouraged. Their opinions of the workshop facilities were mixed.

The beneficial features of the workshop were as follows:

- The group of operators was excellent. They represented a good cross section of plants and positions. They seemed committed, involved, constructive, intelligent, and articulate. They worked well together as a group and were highly participative. The group composition set the stage for a productive workshop.
- The workshop process was generally appropriate. The key features were: (a) the round table presentation of ideas in response to focus questions that got the discussion ball rolling; and (b) the small-group process that allowed more detailed analysis of issues as well as a change of pace.

Battelle PNL/HARC Staff

From the perspective of the Battelle Staff some of the paperwork (questionnaires, commonality sheets) may have been unnecessary although some gave a useful set of data for future NRC/STP work on certain issues.

- The workshop produced good quantity and quality of suggestions and recommendations. There was some disagreement on controversial issues, e.g., degree requirements, requalification exams. Some operator viewpoints tended to match NRC thinking; others diverged. However, the group did identify strengths and problems and reached consensus on several suggestions, especially on the topics of the licensing process and the role of the STA.

It is premature to make specific recommendations for future workshops based on the strengths of the first one. The reasons are twofold: 1) it may be a unique experience; and 2) it is the intent of the workshop project not only to collect operator feedback but to examine the merits of alternative techniques for gathering information on the workshop format. Thus, specific features will be varied in future workshops. Nonetheless, the present workshop does suggest some general considerations for future planning.

- The number of participants was effective and should be maintained at 12-15 operators.
- Given the size of the group, some combination of individual work, large-group discussion, and small-group discussion is important and should be maintained.
- The general composition of the workshop staff team should be maintained, i.e., a facilitator-leader, small-group facilitators, and assessment-oriented observer.
- The scope of the workshop should probably be reduced to three topics covering a half day each, with a final half day reserved for wind-down and wrap-up activities; this "open" session could also be used for operators to briefly suggest and discuss other topics of concern for future workshops. For purposes of this project, so long as the current topics

remain live issues, each workshop could keep two topics constant and add a new third topic. From the experience of the first workshop, those topics that can be most effectively treated are likely to be those that have the most direct bearing on the operators' performance and careers, while pertaining to safety issues; for example, training and requalification aspects of license acquisition.

APPENDIX A

AGENDA

OPERATOR FEEDBACK WORKSHOP
December 8-9, 1981
Chicago, Illinois

Tuesday

8:00 AM	Welcome and Introduction of Participants
8:15 AM	Background and Purpose of the Workshop. Including: focus, goals and expected products
8:45 AM	Questions and Answers, Discussion
9:00 AM	Feedback Session I - Plant Drills
9:45 AM	Coffee Break
10:00 AM	Feedback Session I Resumes - Plant Drills/Small Group
11:45 AM	Morning Wrapup
12:00 Noon	LUNCH
1:30 PM	Feedback Session II: Licensing Procedures
3:15 PM	Coffee Break
3:30 PM	Feedback Session II Resumes
4:30 PM	Wrapup
5:00 PM	Adjourn

Wednesday

8:30 AM	Introduction to Day 2 - Staffing
8:45 AM	Feedback Session III - The Shift Technical Advisor
10:00 AM	Coffee Break
10:15 AM	Feedback Sessin III Resumes.
11:45 AM	Morning Wrapup
12:00 Noon	LUNCH
1:00 PM	Feedback Session IV: Power Plant Staffing
3:00 PM	Coffee Break
3:15 PM	Summary, Conclusions and Workshop Assessment
5:00 PM	Adjourn

APPENDIX B

PARTICIPANTS

OPERATOR FEEDBACK WORKSHOP
December 8-9, 1981
Conrad Hilton Hotel, Chicago, Illionis

Rick Simpkins	Davis-Besse	RO	
Bill O'Connor	Davis-Besse	SRO, Op. Training Supervisor	Navy
Marv Onnen	Monticello	SRO, SS	13 years, BWR
Paul Planning	Dresden	RO	
Allen Checca	Dresden	SRO	Navy Nuc.
Marvin Evans	Dresden	SRO, SS	
Doug Gipson	Duane Arnold	SRO, SS	
Jim Zach	Point Beach	RO, Supt.	
Bill Demo	Zion	SRO, SS	
Don Stalls	Zion	RO	
Bill Drummond	Palisades	RO	Fossil plant
Dale Croonquist	Lacrosse (LACBWR)	SRO	Navy
Jim Crothers	Lacrosse	SRO	Navy
Frank Pollack	Quad-Cities	RO	Navy PROS
Jim Petersen	Kewaunee	RO	PROS

Al Nieves, Dave Brenchley, John Boegel (PNL)
Mike Wood (HARC)
Jay Persensky (NRC)

APPENDIX C

FEEDBACK SUMMARY AND
EVALUATION FORMS

Plant Drills	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Topic important	5	8			
2. Way we discussed it effective	3	10			
3. Opportunity to express my views	3	10			
4. My comments understood	1	11	1		
5. Time spent worthwhile	5	7	1		
Licensing Procedures					
1. Topic important	12	2			
2. Way we discussed it effective	5	8			
3. Opportunity to express my views	2	11	1		
4. My comments understood	2	11	1		
5. Time spent worthwhile	6	6	1		
STA					
1. Topic important	13				
2. Way we discussed it effective	11	2			
3. Opportunity to express my views	11	2			
4. My comments understood	9	4			
5. Time spent worthwhile	11	1			

Plant Drills	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Manpower					
1. Topic important		5	1	4	2
2. Way we discussed it effective	1	11	1	1	
3. Opportunity to express my views	1	12	1		
4. My comments understood	1	12	1		
5. Time spent worthwhile		6	1	6	1
Overall					
1. Topic important	9	4			
2. Leaders encouraged participation	12	1			
3. Kept discussions focused	6	5			
4. Facilities comfortable	1	6	2	2	2
5. Good way to get input	11	3			

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION I

PLANT DRILLS

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of plant drills was important for us to consider.				
The way we discussed plant drills was effective.				
I had ample opportunity to describe my views on plant drills.				
I think my comments on plant drills were understood by workshop leaders.				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION II

LICENSING PROCEDURES

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of licensing procedures was important for us to consider.				
The way we discussed licensing procedures was effective.				
I had ample opportunity to describe my views on licensing procedures.				
I think my comments on licensing procedures were understood by workshop leaders				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION III

SHIFT TECHNICAL ADVISOR

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of shift technical advisor was important for us to consider.				
The way we discussed shift technical advisor was effective.				
I had ample opportunity to describe my views on shift technical advisor.				
I think my comments on shift technical advisor were understood by workshop leaders.				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION IV

POWER PLANT STAFFING

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of power plant staffing was important for us to consider.				
The way we discussed power plant staffing was effective.				
I had ample opportunity to describe my views on power plant staffing.				
I think my comments on power plant staffing were understood by workshop leaders.				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION V

OVERALL WORKSHOP

Please rate the workshop as a whole:

	Strongly Agree	Agree	Disagree	Strongly Disagree
The workshop was well organized.				
Workshop leaders encouraged operators to participate in discussions.				
Workshop leaders kept the discussions focused on important topics.				
The workshop facilities (meeting room, etc.) were comfortable.				
This workshop was a good way to obtain our input.				

Please list any other topics you think should have been included:

Other comments or suggestions:

VI. Please check all that apply to you:

/__/ Shift Supervisor

/__/ Reactor Operator

/__/ Senior Reactor Operator

/__/ Other (Please explain) _____

Thank you very much for your comments and your participation.

APPENDIX D

WORKSHOP NOTES
OPERATOR FEEDBACK WORKSHOP I
December 8-9, 1981
Conrad Hilton Hotel, Chicago, Illinois

The group was highly participative. There was a good balance of: (a) ROs versus SROs; (b) BWR versus PWR plants; and (c) single versus multiple-unit plants. Background detail on each operator is available from Workshop Registration Forms.

INTRODUCTION

Boegel explained Workshop purpose--feedback on issues of concern to NRC, collecting information for related projects; stated four topics; noted evaluation forms to follow each half-day session; emphasized "your" (operators') meeting.

Persensky noted his role as contract monitor, responsibility for some content areas; wants to produce more reasonable regulations and guides; timely in light of ACRS request for information on STA this week; first in a series of workshops; region III selected for density; workshop report to be sent to operators.

Nieves passed out registration forms then had participants introduce themselves; an attendees' list was made and later distributed; noted our interest in aggregate reporting, not tying comments to names.

PLANT DRILLS

Started with focus question on "how to best prepare operators for emergency procedures." Group wrote ideas, presented them in round table fashion, then turned in their worksheets. Ideas stated were:

Experience/systems training; licensing is being pushed too fast.

GSEP drills to see what's working

Better written emergency procedures for guidance.

Generic simulators: teach operators to think.

The time that's spent on yearly requalification should instead be spent on emergency training by licensed, experienced staff.

Group drills, on crew-size, station-size, operating department, statewide.

Introduce casualties to plant--not in simulator or walk-through. Major disagreement on this (e.g., load dispatcher).

Use site-specific simulators; introduce casualties there.

Get immediate critiques of drills by those involved.

Get management more involved; operations get hit with too many drills.

Overall plant capabilities; know capabilities you can rely on.

Review events from similar plants.

Small-group discussions (control room staff) to critique emergency procedures.

All training by licensed, experienced people.

Procedure reviews by operators

More simulator time; 3 days per year is not enough.

Operators should select casualties for simulator training.

More transient analysis; group discussion of what happened and why.

Gear systems training more to plant staff than operators.

In training, follow through mistakes to get plant stable; don't stop after immediate actions follow casualty.

Get off the TMI emphasis; focus on own plants.

Focus on keeping good people in plant; must have thinkers; post-TMI syndrom produces complaint robots; don't make job onerous and exams screwy so good people leave.

Make training more interesting; boring, beating dead horses.

Stop modifying the plant; prints may not be current; operators don't input on retrofits; you can deviate but take rap for failure.

Owner's generic procedures don't account for plant differences.

Passed out a plant drills questionnaire, discussed ideas generally, then broke into small groups. In this transition, it was noted that the whole-group ideas fit three general categories: plant drills (5), simulator training, and systems training plus some "others." A comment was also made that personnel turnover hunts training--young guys have licensing problems ahead and need incentives.

BWR small group--Dave/Doug. Drills should be done off peak but involve problems of operator schedule changes, lack of operators, overtime requirements. Doing drills on the day shift upsets work requirements, load requirements; instrument technicians to backshift. Drills and training should be distributed throughout ROs, SROs and operating staff; often there are too few people to do drills. Drills are often unrealistic; they may not involve operations experience, not be consistent with procedures, or present scenarios not reviewed by experienced SROs. Drills should: be documented and critiqued for all operations people; be done on plant-specific simulators; and include prevention of core damage and recovery after incidents. No drill can effectively address multiple failures; the compounding of minor problems produces situations that generic drills don't cover. Another problem has been lack of input from ROs and SROs to NRC; a crew knows what it's been through and can identify criticals that have occurred and shouldn't be repeated; they might also go to the simulator as a crew. if the simulator group is not too big. Drills should be documented through the year.

PWR small group--John/Jim. Drills should be on-shift with time made available for the whole crew; team discussions should occur in reviewing emergency operating procedures. Drills can be walk-throughs; we should use common sense, watch mandates, avoid bureaucracy and resentment. Training departments are often too light and go too much "by the book." This often turns into drills for the sake of doing drills only; people turning valves in the plant, as well as SROs, should know why they are doing it.

Mixed Small Group--Mike/Bill. The group started by discussing training at their plants. These systems training similarities/differences suggested several areas for focusing attention: 1) qualifications should be phased by area (e.g. 160 hours in 4 areas); 2) there should be continual progression of training (hire license SRO); 3) there should be functional on-the-job training; 4) training should be less boring--many topics are old or taught just because they are required; 5) trainers should be (better) qualified--they should be licensed, experienced, have in-plant credibility and be good teachers; 6) negative attitudes toward training should emphasize more practical than theoretical information, and programs should be flexible in content to allow for differences in, e.g., plant status. Simulators should: 1) be plant specific; 2) be real-time; 3) be practical; 4) be used to carry-out mistakes to the end (stabilization); 5) be used to review LERs from other plants; 6) help diagnose individual weaknesses. Plant drills, especially "statewides," are often unrealistic. Casualties should be introduced in simulators, not plants. Implementation problems include: 1) overcoming action inertia (management); 2) overreaction to requirements; 3) appropriate and rational timing of drills.

The Licensing Process--Second Topic - Afternoon Session, 1:45 start
General comments at the start were that nobody here had been through the NRC simulator exam since October 1, though some had simulator certification for cold licenses. Responses to the focus question, "What are the strengths of the license process?"--(some had trouble writing on this one).

"At least it's (bleeping) thorough!
Operators get a better understanding of plant systems.
Assumes some level of competence before running a reactor.
Sets a baseline for training programs.
Needing RO before getting SRO increases experience.
Minimum standard weed out thouse who shouldn't be there.
Gives exposure to technical aspects that AO wouldn't see (e.g., heat transfer).
Oral and simulator exams are good for first license--if done right.

Plant-specific simulators demonstrate ability.

Correct walk-through adds beyond one's ability to answer in writing.

Oral exam lets operator see how he functions under stress.

Standardizes industry baseline (somewhat).

Required requalification is good since you don't know forever and required knowledge doesn't get ignored.

It is a stepping stone; makes operator more relaxed and confident in job.

Minimal medical standards screen out poor health.

The group ranked the importance of the eight exam parts (see form, p. 10), then discussed the oral and simulator exams.

The oral exam

Lets examiners rephrase questions and candidates clarify answers. However, written/oral content and examiners may differ.

Allows questions not easily asked in written form.

Plant walk-through is most important, if examiner asks right questions.

Note: Very few examiners hold licenses or have plant experience.

The simulator exam

Demonstrates all-around comprehensive ability and performance in control room environment.

Familiarity with controls.

Ability to act under stress.

Generic simulators check general operator responses, but it's often a problem being evaluated on someone else's plant design.

Recommendations for improvement were discussed in the large-group setting.

Simulator:

Time spent on simulator should be increased.

Should differentiate what to expect from generic and plant-specific simulators.

Need guidelines for areas to be covered in simulator exams.

Avoid situations operators can't deal with, like multiple events.

Run documented procedures on simulators.

Should have qualified examiners with plant experience.

Matters of plant policy should be taken up with management, not ROs.

Let operator freeze simulators and talk out problems.

Exam guidelines should involve safety, not efficiency.

Actions taken that are not in procedure should not be failure if RO can justify.

Recognize difference between simulator and real time; not bad to miss problem detection for a wnile if it does no harm.

Operator must bc able to stabilize plant after event.

Should test reaction to failure of automatic trip systems.

Should have site-oriented examiners who know plant and technology.

More exam responsibility to NRC regions.

Have an examining board with SROs from sister plant (peer evaluation).

Examiners should be at least as qualified as examinee. Note problems getting them and affording them.

The student manning in the exam should be the same as in their control room (team exam).

Examiner should probe possible deficiencies (innocent 'til proven guilty).

Utilities should avoid blitzing with 20 applicants to get 3 passed.

Oral Exam:

Trainers should be allowed to proctor and check misinterpretation of answers, like they review writtens.

Sit-down portion is redundant to written--eliminate one.

Examiner who writes the written should give the oral.

More explicit guidelines for what examiners expect operators to know. Some thought whole plant should be fair game.

Note--generally more satisfaction with this part of exam.

Written Exam:

Make pass score 60 on parts/70 overall because too many irrelevant questions.

Use more questions with less weight on each.

Requalifying with same high standards and exams drives people out. Restrict requalifying to new: information, procedures, LERs.

Substitute peer review or NRC resident examiner for requalifying written.

Certify training (via INPO); training quizzes should suffice. Mix of opinion on this.

Reduce the endurance-test aspect of nine hours paper and pencil.

Make reactor theory questions quicker, e.g., multiple choice.

Don't simplify test and reduce calibre of licenses.

Limit heat transfer, fluid dynamics questions to operating aspects.

About 50% of exam represents needed knowledge, 20% is nice to know, the rest is irrelevant.

Drop rad control and safety, merge heat and fluid into other parts, merge systems and procedures.

Get operators to help write exam questions.

Operators generally agreed it would have helped to have top NRC licensing people present for discussion.

The Role of the STA--Third topic - Morning of Second Day. The perspective was one of assuming STA exists and looking at the uses and potential for the STA. On the focus question page, operators indicated whether they were from BWR or PWR, and single or multi-plant.

Focus question: "What responsibilities and activities are STAs involved in your plant?" (Some operators wrote a lot, others little to none.)

Notified of abnormal operations and assists shift supervisor.

Responsible for accident analysis; observes in control room within 10 minutes of trip; makes recommendations; does not operate.

Review transient assessments from other plants; route through training or operations engineer.

Do phone notifications required by emergency plans.

General engineer-on-site assistance, e.g., look up electrical prints.

Observation, surveillance as licensed SRO in control room.

Write deviation reports.

Sign-off and monitor control room surveillances.

Fulfill NRC requirements and little else; view in at least one plant that they babysit operators, do 5 to 10 minutes work a day.

Maintain technical support center; communicate, keep manuals current.

Act as control room foreman, at least one plant; directs maintenance activity; receives and writes requests for out-of-service maintenance.

Responsible for adherence to technical specifications and procedures; does adminstrative work, reports to shift engineer, counts as second SRO in control room for some plants.

Act as second shift engineer at one plant; kept very busy.

Review plant modifications with operators.

Conduct training on shift.

Mediate, answer gray-area questions, run emergency until relieved by SS.

Review switching and tagging orders.

Maintain caution tag log.

Review outstanding EORs.

Study for license exam while working on shift.

Analyze and oversee charts for shutdowns.

Review and initial unit operator's logbook.

Verify operators through control panel checks during shift change.

Keep rough log of on-shift activities.

Inform NRC, obtain procedures in control room.

Some plants have one STA per shift; others use a 24-hour duty day with housing onsite (and pay them for 24 hours).

Supplemental question: "What authority does the STA have in the control room now?" Most said "none." Where they are used as a SCREE (shift control room engineer), most felt their authority was uncertain. They operate above the shift foreman, but below the shift engineer. The crew organization is generally like this (for a 3-unit plant):

Shift Engineer

Three SROs

One is the SCREE (STA)--originally had three foremen.

Other two are shift foremen--roam plant.

Four ROs in control room (4th has center desk)

Engineering Assistant

Rad. Waste foreman

Seven equipment attendants
One equipment operator } Auxiliary Operators

The SCREE's authority comes when the foreman is out of the CR: has as much authority as the SE gives him.

Comm. Ed. requires their STAs to be licensed.

Has authority to trip the plant but must answer for it, in some plants; in others he cannot trip without the SE. This implies real conflict and a reason why some utilities don't license their STAs.

The focus sheets turned in should indicate which functions STA performs at which plants.

The workship broke into three small groups to "define the ideal STA role;" group composition was the same as for plant drills discussion.

Mixed Group--Mike/Alan. Note this group either had little STA experience or was generally against the concept. These is a question whether there should be an STA, but if so, he (she) should have:

No responsibility for day-to-day operation.

No supervisory authority.

Good working knowledge and big picture of the plant in normal and abnormal conditions.

Ability to recognize not-normal plant response during transient.

Ability to communicate with operators and supervisors.

No degree requirement--Disagreement on this; some felt some special qualificiations, through education or experience, are needed.

Recognize problems, leave solutions to operators.

The STA duties are not new, but transferred from other jobs. Staffing problem: tradeoff between plant experience and degree. Seen as good hire-in job and stepping-stone out of CR to utility engineering. These operators would not put their lives in the STA's hands.

PWR Group:

Actual operating experience.

SRO level of competence.

No supervisory authority.

Degree requirement? This group also had some disagreement.

On-shift support; 8-hour shifts, not 24.

Training for accident analysis, heat transfer and fluid flow, instruments.

SS should have input to selection of STA.

BWR Group:

Provide full guidance in the control room

Be an SRO on shift with no administrative duties. Require experience as SS and two years in plant operations.

Have extra training in: instruments and control, electrical prints, thermal hydraulics, computer, plant design.

Further large-group discussions of STA. The problem isn't in what NRC means by the STA--it's in implementing it, especially with degree requirements.

There are disagreements on license and degree requirements, and authority.

Other commonalities are fairly strong, with differences depending on number of units in plant.

There should be some credibility and certification--some say STA should have been SRO, some say he should maintain SRO, some say he must be SRO at that plant.

Two career-progression paths were suggested.

1. Shift Foreman → STA (SCREE) → Shift Engineer (SS)
2. SF → SS → STA (suggested for a single-unit plants).

But: How do you take a full-power supervisor to an advisory role?

Incentives: Less administration, more money, reduced shift work.

Instead of degree requirement, might have additional in-depth training in specific areas.

The STA should come up through plant operating ranks and have "on-the-board" experience.

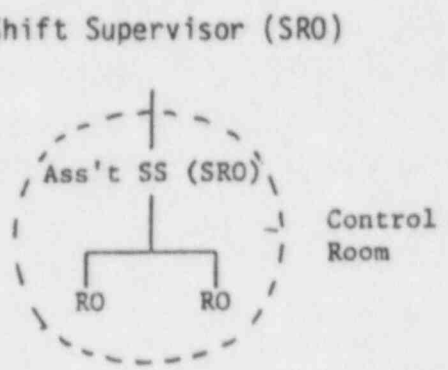
The operators want an extra SRO in CR (NRC requirement by 7/82); they think utility management does not.

The group agreed on the following recommendation:

The STA could exist in plant presently by giving additional training in listed areas to the SS. This would meet requirement for a second SRO, an extra person in lieu of the STA.

Avoids having two big-picture-lookers in the CR.

Two plants have (or plan) it this way:



SS comes into control room in accident situation to monitor the "big picture."

Power Plant Staffing--Fourth Topic - Afternoon of Second Day. The operators started by filling out sheets for staffing numbers (actual and ideal) and noting the number of control rooms and units at their plants.

Most differed in their actual vs. ideal numbers.

General discussion suggestions included:

Have mechanic and instrument technician (2) on each shift, instead of just weekends.

Have a second SRO on watch and eliminate the STA.

Have a health physicist and/or chemist on each shift.

Have a nuclear engineer on shift (to manipulate rods).

Spread maintenance staff across shifts--not just on days. But this may present union problems.

Have a communicator on shift.

Have 2 electricians on the backshift.

Have bigger maintenance crews to do repairs quickly.

Small-group discussion

Single-Unit Plants--Mike/Bill. Key staffing factors are:

* Backshift short staffing

  NRC-mandated increases

  Need for expertise in areas not now covered

  Plant status--startup, shutdown

* Distribution across shifts to spread workload

  One each of maintenance, mechanics, instrument techs, health physics, electrician, rad waste (water operations).

  Operating shift: 2 SRO, 2 RO, 4 EOs (2 in each building for BWR) or 8 EOs for PWR.

  Safety-dictated staff vs. management-desired staff.

* Day shift overstaffing

  Training needs

  Plant size

---

* = those considered most crucial.

Multiple-Unit Plants--John/Jim. Key factors are:

Size and layout of plant

What's required by NRC

What's dictated by union agreements

Unit evolutions--refuel, startup, emergencies

Equipment outages

Maintenance requirements

A normal shift as follows would cover emergencies:

Shift Engineer (1)

Control Room SRO (1)

In-plant SRO (1 per unit)

RO (1 per unit plus an extra)

Rad. waste foreman (1) - design dependent

Auxiliary Operators (3 to 6)

Health physicist (1 to 2, design dependent)

Electrician (2 per shift)

Instrument mechanics (2)

Maintenance mechanics (2)

Concluded with evaluation forms and comments that:

It was a good meeting (NRC)

Report of the workshop will go in draft form to participants and NRC; the final report will also go to utility managers.

The operators want to stay informed of subsequent workshops. They would like to keep PROs informed and INPO out of it.

OPERATOR FEED BACK WORKSHOP #1
CHICAGO, ILLINOIS
DECEMBER 8 AND 9, 1981

REGISTRATION FORM

NAME:_____

UTILITY:_____

POSITION TITLE:___RO ___SRO ___OTHER (INDICIATE)_____

PLANT:_____

PLANT TYPE: ___BWR ___PWR

YEARS CONTROL ROOM EXPERIENCE IN COMMERCIAL PLANT:_____

PRIOR NAVY EXPERIENCE: ___YES ___NO NO. OF YEARS:____

AGE:_____ YRS.

EDUCATION:

H.S. (GED)_____

H.S. GRADUATE_____

SOME COLLEGE_____ (NO. OF YEARS_____)

COLLEGE GRADUATE_____ DEGREE:_____ FIELD:_____

OTHER INDICATE:_____

LIST OF GENERIC DRILL TYPES

Reactivity addition accident

Small Break LOCA

Instrument failure

Loss of Main Feed

Reactor Trip/Turbine Trip

Loss of Primary System Flow (PWR)

Loss of Power to Selected Electrical Switch Gear

Fire in Vital Plant Components

Loss of Vital Auxiliary Systems

OPERATOR FEEDBACK WORKSHOP FEEDBACK SESSION I

PLANT DRILLS

This questionnaire has been designed to require a minimum of actual writing. We encourage you to elaborate on any point. Write your added comments on the back of this page. Any contribution you make will be given careful consideration. Your input could influence NRC policy concerning in-plant drills. For each of the following statements, place a check in the box corresponding to your opinion. Remember there are no right or wrong answers, only opinions.

PLANT DRILLS

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. The conduct of in-plant drills is necessary, in addition to simulator drills, to exercise the ability of the entire operating crew to work effectively as a team.				
2. The use of in-plant "walk-through" type drills, where an entire operating shift performs simulated actions in response to simulated emergencies, could enhance the operating crew's abilities to communicate and work together when comparing actual plant casualties.				
3. A program of plant drills should include the conduct of actual dynamic maneuvering of the plant to some carefully limited extent.				
4. The examination of Senior Reactor Operators should include the demonstration of his ability to direct shift operating personnel in combating a simulated plant casualty.				

PLANT DRILLS (contd)

	Strongly Agree	Agree	Disagree	Strongly Disagree
5. An additional duty of the Shift Technical Advisor should be to conduct individual walk-throughs of the emergency procedure with all operating personnel at some specified frequency.	_____	_____	_____	_____
6. In-plant drills should include exercising of the emergency plant.	_____	_____	_____	_____
7. A program of in-plant drills should address all operational modes of the plant, i.e., normal operations, shutdown, refueling.	_____	_____	_____	_____

The following two questions require that you circle all of the choices you consider appropriate. You may also add categories that may have been omitted.

8. Who do you believe should participate in drills conducted at an operating nuclear plant?

   (a) On-shift crews
   (b) Off-shift crews
   (c) All licensed operators
   (d) Plant support, including management
   (d) Non-licensed operators
   (e) Non-licensed operators
   (f) Operators engaged in requal training
   (g) Others (specify).

9. From your experience, who is most available to conduct and evaluate plant drills?

   (a) Day-staff
   (b) Other crews
   (c) On-crew personnel
   (d) Training department
   (e) Other (specify).

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION I

PLANT DRILLS

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of plant drills was important for us to consider.				
The way we discussed plant drills was effective.				
I had ample opportunity to describe my views on plant drills.				
I think my comments on plant drills were understood by workshop leaders.				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION II

LICENSING PROCEDURES

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of licensing procedures was important for us to consider.				
The way we discussed licensing procedures was effective.				
I had ample opportunity to describe my views on licensing procedures.				
I think my comments on licensing procedures were understood by workshop leaders				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION III

SHIFT TECHNICAL ADVISOR

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of shift technical advisor was important for us to consider.				
The way we discussed shift technical advisor was effective.				
I had ample opportunity to describe my views on shift technical advisor.				
I think my comments on shift technical advisor were understood by workshop leaders.				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR FEEDBACK WORKSHOP

FEEDBACK SESSION IV

POWER PLANT STAFFING

Indicate number for each position and shift.

I PRESENT PLANT STAFFING

Position	Shift			
	Day	Swing	Graveyard	Emergency
SS				
SRO				
STA				
RO				
AUX. OP.				
Power Plant Helper				
Health Physicist				
Instrument Technician				
Other (indicate)				

II IDEAL PLANT STAFFING

Position	Shift			
	Day	Swing	Graveyard	Emergency
SS				
SRO				
STA				
RO				
AUX. OP.				
Power Plant Helper				
Health Physicist				
Instrument Technician				
Other (indicate)				

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION IV

POWER PLANT STAFFING

Your input is valuable and necessary to assist us in evaluating the present session and improving any future ones. Please place a check in the box that is closest to your opinion for each of the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
The topic of power plant staffing was important for us to consider.				
The way we discussed power plant staffing was effective.				
I had ample opportunity to describe my views on power plant staffing.				
I think my comments on power plant staffing were understood by workshop leaders.				
I feel the time spent on this activity was worthwhile.				

One of the things I liked about this session was:

One of the things I disliked about this session was:

Additional comments:

OPERATOR WORKSHOP EVALUATION FORM

FEEDBACK SESSION V

OVERALL WORKSHOP

Please rate the workshop as a whole:

	Strongly Agree	Agree	Disagree	Strongly Disagree
The workshop was well organized.				
Workshop leaders encouraged operators to participate in discussions.				
Workshop leaders kept the discussions focused on important topics.				
The workshop facilities (meeting room, etc.) were comfortable.				
This workshop was a good way to obtain our input.				

Please list any other topics you think should have been included:

Other comments or suggestions:

APPENDIX B

APPENDIX B

BOSTON WORKSHOP REPORT

OPERATOR FEEDBACK WORKSHOP

MARCH 16-17, 1982

BOSTON, MASSACHUSETTS

September 13, 1982

JOHN BOEGEL

MARY V. McGUIRE

BARBARA D. MELBER

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I. INTRODUCTION AND SUMMARY

Pursuant to the NRC Task Action Plan I.A.2.6, the second in a planned series of four Operator Feedback Workshops was held in Boston, Massachusetts, March 16-17, 1982. The principal objectives of the workshop effort are: (1) to evaluate workshops as a mechanism for obtaining feedback from licensed reactor operators; (2) to collect operator viewpoints and feedback on selected issues of concern to the NRC; and (3) to determine operators' experiences, reactions, and ideas concerning selected topics of concern to the NRC. The issues considered at this workshop were: (1) Simulator Training, (2) Licensing Examinations and Requalifications, (3) the Role of the STA, and (4) Control Room Engineering Support.

The workshop was attended by 32 participants from Region I, which included licensed operators and licensed training and management personnel. In order to facilitate discussion among participants, two workshop groups were formed. Group I was composed of three reactor operators (RO); one senior reactor operator (SRO); seven shift supervisors (SS); four individuals involved in training; and two having operations management responsibilities. All 17 were high school graduates. Of these, seven had some college; another five were college graduates, one of whom is a Master of Science candidate in nuclear engineering. These participants had an average of eight years' operational experience. Nine of the 17 had prior Navy experience.

Group II consisted of one shift technical advisor (STA); one senior reactor operator qualified as a shift supervisor; three shift supervisors (SS); two operations supervisors with SRO licenses; one watch supervisor; and seven from training departments. All 15 were high school graduates. Of these, five had some college; another five were college graduates, one of whom has a Master of Science in nuclear engineering and another is a MBA candidate. These participants had an average of six years' operational experience. Six of the 15 participants in Group II had prior Navy experience.

The two-day workshop was conducted by representatives of both the Battelle Pacific Northwest Laboratory (PNL) and Battelle Human Affairs Research Centers (HARC). From PNL were John Boegel, Senior Research Engineer and Operator Feedback Workshop Project Manager; Group I leader Alvaro Nieves, Research Scientist, Ph.D. Social Psychology; and Group II leader Rod Fleischman, who has a technical background with graduate work in applied behavioral sciences and is currently manager of the Nuclear Energy Systems Section. Attending from HARC were Mary McGuire, Research Scientist, Ph.D. Social Psychology, who is responsible for assessing the effectiveness of workshops and other alternatives as a means of obtaining feedback; and Barbara Melber, Research Scientist, Ph.D. Sociology, currently working on the NRC project to develop guidelines for the Shift Technical Advisor. From the NRC Licensee Qualification Branch were J. Persensky, Technical Monitor of the Operator Feedback Workshop Project; and Clare Goodman, Technical Monitor of the Shift Technical

Advisor Project. John Munro, Reactor Engineer and Operator Examiner from the Operator Licensing Branch, also attended. Additionally, Audrey Fullerton, Ph.D. Experimental Psychology, a research associate at Oak Ridge National Laboratory, attended the workshop.

The following is a summary of the workshop sessions. A more detailed description can be found in Chapter II. Because of the large number of participants who attended this workshop, it was necessary to divide the participants into two groups. As a result, two simultaneous workshops were conducted using the same workshop materials and focus questions for each session. The topics for the workshops, however, were addressed in different order. On the morning of the first day, both groups discussed Simulator Training. Group I discussed the STA on the afternoon of Day 1, and licensing examinations on the morning of Day 2. These two topics were taken in reverse order by Group II, where licensing examinations were discussed on the afternoon of Day 1 and the STA during the morning of Day 2. On the afternoon of the second day, both groups discussed Control Room Engineering Support. This scheduling arrangement was designed to permit observers with a particular interest in the STA or in licensing to attend both the Group I and the Group II discussions of those issues.

Both large and small group discussions were used to obtain the feedback. Focus questions were used to stimulate thought and to provide direction for the discussions. Following each session participants were asked to evaluate the workshop session. At the end of the workshop, participants and observers completed evaluation forms concerning the entire workshop. A discussion of the evaluations for each session can be found in Chapter II and of the overall evaluation in Chapter III.

The objective of the Simulator Training session was to obtain operator feedback on the strengths of the Part Scope, Generic, and Plant Specific Simulators, and how these simulators might be used more effectively for training. Finally, the participants were asked what sort of guidelines should be used for simulator examinations.

The Licensing session focused on NRC's new examination format. The participants were asked to define those general categories that were essential to test the competency of a license candidate. Additionally, requalification programs were discussed. The operators were asked to comment on current programs as well as to define a requalification/ retraining program that would enhance reactor operator competency.

The STA session asked the operators to comment on current implementation policies with respect to the STA position. Participants also had the opportunity to define the STA position as they would like to see it.

Finally, the Control Room Engineering Support session was concerned with ways of implementing the potential requirement of having a degreed engineer on shift.

This workshop was successful in terms of gathering information from the participants on selected issues of concern to the NRC and providing participants the opportunity to interact with and learn from one another. All of the participants would definitely like to see these workshops continue. Each participant was asked to evaluate the workshop. Their evaluations will be discussed in more detail in Chapter II. The detailed discussion of the results can also be found in Chapter II. Chapter III summarizes the overall workshop evaluation and presents the conclusions drawn after completing two operator feedback workshops. Appendix A contains the list of attendees, and Appendix B contains copies of all workshop materials.

II. THE WORKSHOP SESSIONS: PROCEDURES, RESULTS, AND EVALUATION

The workshop began shortly after 9:00 a.m.* on March 16, 1982, with introductory remarks by John Boegel, Battelle Project Leader; by J. Persensky, NRC Project Monitor; and by Al Nieves, one of the two workshop facilitators. Participants at the workshop were then divided into two groups of roughly equal size, and one of the groups ("Group II") moved to its meeting room.

Once in separate meeting rooms, participants were asked to complete a registration form.** Brief introductions were made. In Group II, this included participants introducing themselves, while in Group I participant introductions were made after the first discussion session (on simulator training) was underway. The two workshop groups were conducted simultaneously and used identical workshop materials and focus questions for each discussion topic. As noted above, both groups participated in four workshop sessions devoted to discussions of (1) simulator training, (2) licensing examinations, (3) the shift technical advisor, and (4) control room engineering support. In short, the two workshop groups were very similar in focus, process, and often in the results obtained. Accordingly, the two groups are frequently discussed together in the following descriptions of the four workshop topics.

A. Simulator Training

In both workshop groups, the first discussion topic was simulator training. Four different focus questions were used to direct discussions of simulators.

1. Strengths of simulators as training tools. The first focus question used to stimulate discussion asked participants, "Consider the following types of simulators, as training tools: Part Scope, Generic, Plant Specific. What are their strengths?" Since only a few participants were familiar with part scope simulators, it was necessary to provide a brief introduction to these mini-simulators and their capabilities. Then, participants in both groups spent a few minutes working individually on Focus Question 1. In the discussion following, participants' comments on each type of simulator were noted by the facilitators on flip charts. Tables I and II describe the specific points raised by Groups I and II, respectively. These tables illustrate

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*The 8:30 a.m. meeting time noted in letters of invitation was delayed since the hotel reported 9:00 a.m. as the hour at which the workshop was to begin.

**Copies of the registration form and all other workshop materials mentioned in this report are found in Appendix B.

TABLE I

STRENGTHS OF SIMULATORS AS TRAINING TOOLS:
GROUP I

Plant Specific	Generic	Part Scope
Gives practice with own procedures	Observe integrated plant response/system interrelationships	Economical
Can observe and experience transients	Hand-eye coordination of operators	Theory application
Ability to upgrade simulator to correspond to own plant	Teaches basic responses and reactor theory	Good training aid, especially early classroom training
Good for licensing and requalification training	Teaches new concepts including procedure changes	Orientation, familiariization, especially for new people
Produces better operators	Exposure to transients--necessary for requalification	One person can use it
Cost effective: • reduces travel time, etc. • can reduce training time • less down time due to operator error	Exposure to large generic accidents/ extreme conditions	
Learn system interrelationships	Provides experience/training (initial and requalification): • responding to plant/thought processes • with specific systems • with emergency systems • with different turbine controls • identifying problems	
Learn plant operations		
Can increase time spent on simulator	Good stopgap	
Provide other staff with control room experience	Increases operators' confidence	
	Exchange ideas, solutions, etc., with other plants	

TABLE II

STRENGTHS OF SIMULATORS AS TRAINING TOOLS:
GROUP II

Plant Specific	Generic	Part Scope
Trend actual control room data	Trend actual control room data	Economical
Builds confidence	Opportunity to identify new problems and solutions	Generic transient/accident training
Little translation to operating situation	Overview of system/general training	Early training
Control locations/control room layout alarms are representative	Cost savings	Introduce concepts
Reinforcement		Training for non-operators
Aids testing (more valid, fair testing site)		
Provides accident recovery training		
Cheaper in the long run		
Don't need to learn new systems		
Procedures testing		

that the comments noted in Group I were somewhat more detailed than those of Group II.

In addition to these specific statements, the the following general sentiments were expressed in the discussions in both groups:

- Plant specific simulators are the best simulators available for training, problem solving, transient analysis, testing plant procedures, and administering licensing and requalification examinations.

- Generic simulators, while requiring operators to unlearn their own plant's procedures (and relearn their own procedures following work with the simulator), can provide good general training and provide an opportunity to learn about other plants' problems and practices (though this latter social, or communication, function could be accomplished in other ways).

- Part scope simulators are primarily useful as a training device, particularly during early training to introduce basic concepts to operators and in training for non-operators.

2. Time spent on simulator training. The second focus question had two parts. First, it asked participants to indicate whether they had operated, seen, and/or read about each type of simulator discussed (part scope, generic, and plant specific). As might be expected, participants were most frequently exposed to generic simulators. Second, Focus Question 2 asked participants to indicate the amount of time spent on each type of simulator as a part of their training programs. Typically, the concept simulators are not used now. Participants indicated that when plant specific simulators are available, they are used for as many as six full-time weeks of pre-licensing training and two weeks per year of post-licensing training. Participants reported that generic simulators are used for as little as seven days or as many as six weeks of pre-licensing training, and for two days--or up to two weeks--of post-licensing training.

3. Effective uses of simulators. Third, the discussion of simulator training turned to the question for each type of simulator, "How can this particular type of simulator be used most effectively for operator development (i.e., auxiliary operator through SS)?" Participants were divided into three small groups, each of which was asked to apply Focus Question 3 to one of the three types of simulators. These small groups raised a myriad of issues concerning simulators and suggestions for the most effective use of simulators in operator training and development. Several key themes emerging from these discussions are as follows:

- By way of background, it was noted in both groups that the knowledge and training necessary to pass licensing examinations were not as great as those required to operate

a plant safely. In other words, it was suggested that it takes more than a license to operate a plant safely--just as it takes more than a driver's license to drive a car safely.

- As with the discussion following Focus Question 1, plant specific simulators appeared as the strongest simulator training tool discussed. While plant-specific simulators are not always practical, they offer advantages beyond those of generic or part-scope simulators, such as important board familiarization and accident identification training for reactor operators. Also, these simulators do not have the disadvantages of part-scope simulators (which serve only as conceptual tools) or of generic simulators (which require, e.g., travel time, learning and unlearning the simulator's particular procedures and control board every time an operator comes to or leaves the simulator).

- It is not necessary to train auxiliary operators on any kind of simulator.

- Training and retraining are important uses of both generic and plant specific simulators. Given the disadvantages of generic simulators (due primarily to the differences between the generic simulator and the operator's own plant), time on the generic simulators should be minimized--but adequate time to assure sufficient simulator training and retraining is necessary. That is, if a plant specific simulator is available, generic simulator time is probably unnecessary; if no plant specific simulator is available, generic simulator time becomes important and valuable.

- The most effective use of part scope simulators is in classroom training.

4. Generic simulators in licensing examinations. Finally, discussion turned to Focus Question 4, which asked participants to consider what sort of guidelines they would develop for generic simulator licensing examinations. In Group I, this question was discussed immediately after lunch; in Group II, it concluded the morning session. In both groups, however, virtually identical recommendations for generic simulator exams were proposed. These are as follows:

- Examiners should have both simulator and plant specific knowlege.

- One examiner should be involved in the entire testing process (written, simulator, etc.).

- Only those casualties that are applicable to the plant should be used.

- The scope of the exam should be clearly specified. (This might include standardized tests for BWRs and for PWRs.)

- The operator's ability to correlate what goes on in operation with his/her knowledge should be tested.

- The input and judgments of simulator operators and home plant trainers should be used in testing.

- The test should not include multiple casualties or penalize for lack of familiarity with the simulator (when the simulator varies from the home plant).

Additionally, Group II indicated that it is better to test general, normal routine operations, understanding of general concepts, and general condition diagnosis, than to focus on transients during the generic simulator licensing examination.

5. Evaluation. In summary, while the two workshop groups at times raised different issues during discussions of simulator training, there was a great deal of consensus between groups. Likewise, the evaluation forms completed by participants in both groups reflected common concerns and perceptions.

Virtually all participants in both groups indicated that the topic of simulator training was important and that this workshop session was worthwhile. Thus, 50% of all participants (31% in Group I; 61% in Group II) strongly agreed that the topic was important, and 47% agreed that it was important (71% in Group I; 29% in Group II). Twenty percent of all participants (13% in Group I; 29% in Group II) strongly agreed that the workshop session was worthwhile, and 67% agreed that it was worthwhile (69% in Group I; 64% in Group II).

In Group I, 44% of participants agreed that the topic was discussed in an effective way. A higher percentage of the participants in Group II (71%) agreed or strongly agreed that simulator training was discussed in an effective way. The vast majority in both groups agreed or strongly agreed that all participants had ample opportunity to describe their views on simulator training (88% in Group I; 86% in Group II). Most participants agreed or strongly agreed that their comments on simulator training were understood by the workshop facilitator (75% in Group I; 93% in Group II). Many participants felt that the time allocated to the topic of simulator training was "just about right" (56% in Group I; 57% in Group II).

In addition to these specific questions, participants were asked to respond to open-ended questions concerning the things they liked best and least about the workshop, and were given an opportunity to make "additional comments or suggestions." As might be expected, a variety of issues or comments were made by participants, but several general ideas or themes clearly emerged from both workshop groups. First, participants liked having the opportunity to make their views known and to provide

input to the NRC, to engage in discussion, and to learn the views of other participants. Second, participants felt they needed further information on the discussion topic (and on the workshop generally). This information should be provided prior to the workshop. Finally, a number of participants indicated that the room arrangements were uncomfortable or inappropriate.

Observers at the first workshop session were also aware of the inadequate workshop facilities and noted the participants' need for advance information concerning the workshop generally and part scope simulators specifically. Like the participants, the majority of the observers of both groups agreed or strongly agreed that: (a) the topic of simulator training was important; (b) the workshop session was worthwhile; (c) simulator training was discussed in an effective way; (d) all participants had ample opportunity to describe their views; and (e) participants' comments were understood by the facilitators. Additionally, virtually all observers indicated that the time allocated to simulator training was "just about right."

B. Licensing

For Groups I and II, this session began with a brief discussion of the NRC's new five-part written examination. It was pointed out to the participants that the exam is still in the testing and evaluation phase and, as a result, is being administered on a voluntary basis. Most of the participants present had not heard that there was a new format.

1. Written Examination Categories (RO). The first focus question that the participants responded to was "What categories should the NRC require on the written exam for a reactor operator license?" They then spent a few minutes writing down their thoughts on the first focus question. In the discussion that followed, several categories were identified by both Groups I and II. These categories can be seen on the left side of Tables III and IV. Once the categories were identified, the facilitators for Groups I and II were able to condense them into three broad categories, as seen on the right in Tables III and IV. As these tables suggest, there was considerable consistency between Groups I and II in both the original and derived categories, even though these were arrived at independently.

Once the categories had been condensed, the second focus question was passed out. The purpose of this question was to take the first focus question one step further by having the participants identify subject areas within each category. The second focus question asked, "What subject areas within each category are necessary to insure operator competence?" The participants responded to this question in the small group discussions. Each small group addressed one of the three broad categories, derived from the original categories. In the following discussion, the responses of Group II, which discussed licensing on the afternoon of the first day of the workshop, are described before the

TABLE III

WRITTEN EXAMINATION CATEGORIES

GROUP I

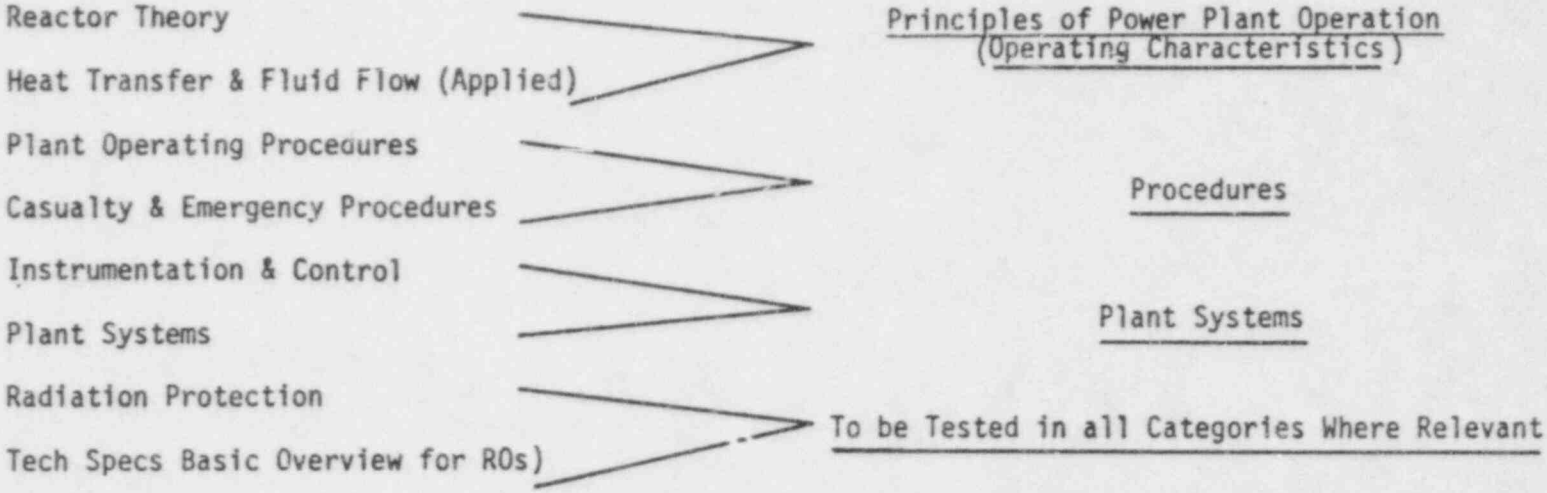
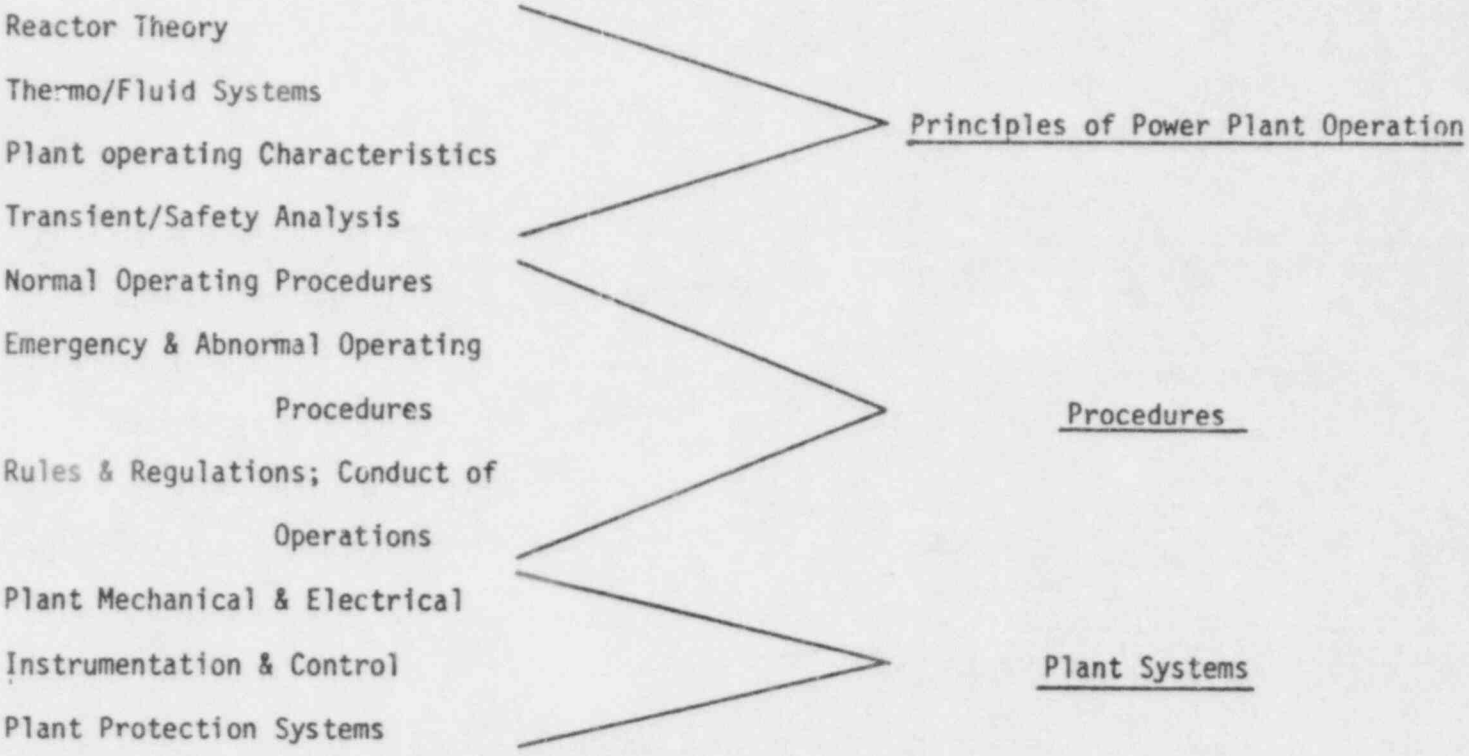


TABLE IV

WRITTEN EXAMINATION CATEGORIES
GROUP II



Group I responses, which were offered during the morning of the second day of the workshop.

With respect to the category Principles of Power Plant Operation, the following subcategories were identified by Group II:

1) Reactor Theory

   a) reactivity and coefficients

   b) neutron poisons

   c) neutron production (subcritical multiplication decay heat, neutron detection, etc.)

   d) power distribution (axial flux shape, xenon effects of axial flux, etc.)

2) Principles of Steam and Fluid Systems

   a) basic steam cycle

   b) cause and effect of pump

   c) water hammer, thermal shock

   d) solid plant operation (PWR)

3) Operating Characteristics

   a) primary/secondary plant interaction

   b) plant instrumentation response

4) Safety Analysis/Public Health & Safety

   a) integrated plant response

   b) design characteristics

During the discussion of this category, the participants in Group II expressed a real dislike for generic exams. They prefer exams which are relevant to the plant that they operate. Also, it was emphasized that questions such as those asking for a binding energy calculation should be removed from the exam or given very little weight. More to the point, "the questions should have some relation to the job." They also stressed the need for "integrated plant knowledge of theory and hardware."

The second category identified by Group II was Procedures. This category includes:

1) Plant Emergency Procedures

   a) immediate action

   b) given a set of conditions, identify the problem

   c) knowledge of "Big Picture Effects"

2) Good Working Knowledge of Plant Operating Procedures and Off-Normal Procedures

3) Tech Spec limits mutually agreed on by plant management and NRC. The RO candidate should not have to explain the bases of tech specs

4) Administrative

   a) conduct of operations

   b) shift turnover

5) 10 CFR

   a) Only 55--those portions directly applicable to RO

   b) No 10 CFR 20, 50, 100, etc.

During the discussion of this category, the participants again stressed the importance of the principle "need to know rather than nice to know" for testing requirements. They also indicated that operators should be tested for practical application.

The third general category identified was Plant Systems. Some of the subcategories identified by the participants were:

1) Plant Mechanical & Electrical

2) Instrumentation & Control

3) Design Characteristics

4) Radiation Monitoring Systems

In summary, the key point of this discussion in Group II was the principle of "need to know" for testing purposes. Most of the participants would like to see more specific guidelines on what is required knowledge for testing. Additionally, it was their opinion that the written tests should be prepared by someone with commercial operating experience. They also indicated that "the only way to get qualified operators is to have good selection, good training, and qualified examiners--you need to be able to trust them."

The participants in Group I identified the same general categories as did Group II. There were some minor differences, however. With respect to radiation protection, Group II indicated that since it is covered extensively in training it is not necessary to include it on an exam. Group I indicated that if it is relevant and meaningful to a particular system, then the operator should be tested on radiation protection. Group I also would like to see pertinent questions regarding electrical systems during normal operation on the written exam. A statement was made to the effect that NRC isn't interested in electrical questions except for emergencies.

With respect to Plant Systems, Group I suggested that perhaps more system diagrams could be used on the written exam to evaluate an applicant's overall knowledge of a particular system.

2. Requalification. The second issue covered in the licensing session was the requalification process. The goals of this session were to have the participants address the strengths of requalification and identify how the requalification process could be improved. To accomplish this, two focus questions were used to provide direction to the discussions. The first focus question asked, "What are the strengths of the requalification process?" In response to this question, Group II identified the following strengths: (1) requalification permits operators to become familiar with the operating experiences of other plants; (2) plant changes and plans are reviewed; (3) all procedures are reviewed; (4) the requalification exam is written by someone familiar with the plant (these exams are audited by the NRC periodically); (5) requalification stimulates operators to think about abnormal situations and systems which are not used frequently (i.e., safety systems); (6) requalification provides practice with the simulator; (7) new concepts are learned; (8) management has an opportunity to know where people stand; and (9) it is a good time for operators to vent their frustrations and suggest changes.

There was some disagreement on the utility of item 3, review of procedures. Some suggested that the procedures be split up such that all procedures are reviewed every two years. Others felt that it did not make any difference because not everybody reviews all of the procedures, and therefore they are not really strengths. Group II was unanimous in its recommendation that a clear distinction must be made between requalification and retraining, the reason being that at times it "gets to the point were there's so much new stuff that you're updated but not retrained. By the time the requalification test comes, all you can remember is the new stuff."

The response of Group I to the first focus question was similar to Group II with one exception. Group I indicated that along with the aforementioned strengths, requalification does upgrade operator skills. Several of the participants in Group I indicated that due to current manpower problems, retraining is very difficult. Several participants objected to the name, retraining or requalification, and preferred to call it continuing education.

The second focus question asked, "How can a requalification program be structured to maintain a high level of operator competency and enhance operator skills and performance?" This question was addressed in the smaller groups followed by the whole group discussion of the same question. One of the small groups in Group II identified the following four programs to meet the requalification requirement: (1) train all year then take an annual test; (2) train for several weeks all at once, followed by a test; (3) train all year, but have several weeks of intensive training followed by a test; and (4) train and test in separate areas all year. The fourth program was the preferred option in this group. It avoids end-of-the-year cramming, maintains a higher skill level throughout the year, covers many more topics, and provides more thorough testing. This gets back to the point where there is so much "new stuff" to learn that it's hard to review the basics.

Another small group agreed that there is a need to go back to basic reactor theory; that is, it is important to have a periodic review of the basic systems in the plant. Also, adequate qualified instructors are needed, and use of plant specific simulators should be maximized. The third small group recommended continuous retraining would ideally intermix classroom training with simulator training. This group preferred a team evaluation on the simulator every two years provided a qualified examiner is available who can do this, with no written exam since the retraining would best be reflected by the operator's performance on the simulator.

Again, the response of Group I to this focus question was very similar to that of Group II. Some additional recommendations were: (1) existing video or "canned programs" should not be used generally because they are useful only for some specialized, technical training purposes; (2) the program should be structured so individuals can strengthen their weaknesses (however, it may be difficult to identify those weaknesses); (3) operators should be used as guest lecturers provided sufficient manpower exists; and (4) the operators and the training departments should have more constructive feedback between them. Group I also indicated that the "requal" test results should not affect job status. Both Groups I and II were in agreement that there should be no NRC participation in the requalification program. The "requal" program should be administered and managed by the utility with an occasional NRC audit of exam material. Both groups agreed that simulator time (plant specific and generic) is very important to a successful requalification program.

3. Evaluation. All of the participants in both groups strongly agreed or agreed that licensing was an important topic. Most participants found the workshop session worthwhile (80% in Group I; 62% in Group II), and most felt that the workshop leaders understood their comments (80% in Group I; 77% in Group II). In Group I, 67% of the participants strongly agreed or agreed that (1) licensing was discussed in an effective way, and (2) they had ample opportunity to describe their views. In Group II, 38% found the discussion effective, and only 15%

felt that they had ample opportunity to describe their views.* Both groups agreed that the time allocated to licensing was "too short" or "very much too short" (87% in Group I; 77% in Group II).

As might be expected given these ratings, the most frequent criticism of the workshop sessions on licensing was that there was inadequate time allocated to the session, no time to prepare for the session, and certainly not enough time to cover other important aspects of licensing (e.g., actual exam questions, the "walk through exam," etc.). The inadequacy of time allocated to the session was noted even more frequently in Group II than it was in Group I. At the same time, participants frequently mentioned liking interacting with the representatives from other utilities, expressing their viewpoints, learning the viewpoints of others, and the fact that the topic was important.

Observers, like participants, noted that the time allocated to this discussion session was inadequate. While all observers strongly agreed that licensing is an important topic, there was considerable variation of opinion concerning whether licensing was discussed in an effective way, whether participants had ample opportunity to express their views, and whether workshop leaders understood participants' comments.

Careful examination of both observers' and participants' comments suggests that the workshop activities undertaken during this session were too ambitious, given the time allocated and the fact that participants had no opportunity to prepare for the discussion of the focus questions prior to the workshop. The questions were difficult and asked participants to accomplish a great deal in a very short time. At the same time, both participants and observers would have liked to address even more issues (e.g., other types of exams) in the workshop session on licensing.

C. The Shift Technical Advisor

Participants completed a worksheet and discussed three focus questions during the workshop session on the STA. As noted above, this

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*A variety of factors could, either alone or in combination, explain the marked differences between the Group I and Group II ratings of the effectiveness of the discussion and the opportunity to describe one's views. Several factors seem to be particularly likely explanations of these differences. First, licensing was discussed on different days and at different times: in Group I it was addressed on the morning of the second day; in Group II, on the afternoon of the first day. Second, the two workshop leaders undoubtedly handled their groups somewhat differently. Finally, the personalities of the individual participants likely contributed to differences in the groups' discussions and in the resulting evaluations.

was the second workshop session for Group I (held on the afternoon of April 16) and the third session for Group II (on the morning of April 17).

The workshop session was introduced somewhat differently in the two groups. In Group I, the controversial nature of the topic was noted, and the purpose of the discussion was explained as obtaining ideas on where to go in the future given that it was an interim position. In Group II the interim nature of the STA requirement was stressed, and the focus questions were outlined to give an overview of the issues to be discussed.

1. STA worksheet. The first activity in both workshop groups was to fill out a structured worksheet designed to obtain operator opinions on and experiences with the STA and to stimulate thinking for the discussion. While the worksheets were being filled out there was considerable side discussion in Group I, primarily concerning the STA issue, but also questioning some of the definitions and wording included in the worksheet. The informal comments concerning the STA focused on (1) problems with the position, primarily the lack of experience of engineers; and (2) differences between plants, including different perceptions of what was required by the NRC and especially concerning the necessity of a degree. Group II engaged in much less informal discussion and raised fewer questions about the worksheet than Group I.

2. STA responsibilities, activities, and areas of authority. The first focus question asked participants, "What are the responsibilities, activities, and areas of authority of STAs at your plant during normal and off-normal operations?" After participants worked on this question individually, each participant described the STA position at his plant. The discussions in both groups pointed to the considerable variation in the STA at different plants. In Group I, surprise was registered by some participants that non-degreed SROs and SSs were serving as STAs in three plants. (The rest of the plants represented in Group I had separate STA positions, filled by degreed engineers with minimal experience in commercial nuclear power plants.) In Group II, as well, the majority of plants had a separate STA position, but several had a position in which an SRO, SS, or operations manager doubled as the STA, at least during off-normal conditions. Participants in both groups indicated that the most common STA activities or responsibilities during normal conditions included a review function (e.g., of procedures or LERs from other plants) and maintaining logs (e.g., of plant status, control activities, etc.). There was consensus in Group I that the STA had no authority in the control room. The majority of Group II indicated that the STA had no authority, but some exceptions were noted, including approval of tagging safety equipment, approval of engineering changes, and concurrence in a return to power following a plant trip.

In general, there was considerable agreement in both groups that there were not sufficient STA responsibilities to justify a separate on-shift position. While a number of activities were considered useful, there appeared to be a general sentiment that much of the STA's work could be done by others (e.g., auxiliary operators) and that there was at least some "busy work" assigned to STAs. The areas of STA activity or

responsibility which seemed to be judged most significant were reviewing procedures, writing new procedures, and updating information on plant changes.

3. The STA during transients. The second focus question asked participants to describe transients occurring at their plant during the past year, and to indicate "[h]ow useful was the STA role in these situations?" After participants wrote down individual responses, there was a group discussion in which participants presented an example. In Group I, nine specific transients were discussed; in one the STA provided advice which was sufficient to correct the problem (a problem with computer functioning); in another, the STA advice was in error (incorrect reading of indicators); in one the STA read procedures; and in five the STA was an observer. The observer role was seen as good training for the STA and as useful after the fact for an accurate reporting of the incident, but not as a contribution to resolving the transient.

Of the ten examples discussed in Group II, the STA contribution was described as helpful in two (one involved a correct diagnosis and appropriate notification; one involved reading procedures so that correct emergency procedures were used). In the rest of the incidents, the STAs were described as too inexperienced to contribute, except for reading indicators under the direction of the operators, which could be performed by AOs. The STA who participated in Group I described three instances of STA assistance in transients, which included diagnosis and valve manipulation to correct problems.

In short, the performance of the STA during transient conditions was considered marginal by the majority of participants, primarily due to lack of sufficient operations experience. While most participants considered the STA's presence during off-normal conditions as good training experience for the STA, participants reported only a few instances in which the STA offered significant assistance in resolving the situation. In fact, in a few cases participants indicated that STAs were "in the way" during off-normal conditions.

4. The ideal STA. The final focus question asked participants to describe an ideal role for the STA. Facilitators explained that this question was open ended; participants could describe a position that might not look like the current STA. The point of the question was to determine what type of assistance would be useful in the control room, and how this position could be structured. Both large groups broke into three small groups to discuss this focus question. The six small groups described somewhat different "ideal" positions. These are described below.

Group I:

- The first small group presented two alternatives: the first, an SRO licensed position, with an experience requirement and special additional training in engineering subjects; and the second, a degreed electrical engineer

position, not licensed. The role in the first option would be to assist the shift supervisor, maintain track of data, and be responsible for maintaining logs and for notification of others outside the control room when necessary. The role in the second option was similar; the individual would function like an SRO, assist the shift supervisor, rotate with the shift, and would have responsibility for special projects.

- The second group preferred to have an extra SRO on shift, with regular SRO duties in lieu of the current STA. The second SRO would receive some additional training for engineering expertise; there was variation within the group concerning the exact nature and length of training.

- The third group suggested a position that would use a past shift supervisor in a role similar to the current STA in terms of off-normal responsibilities, but with an expanded role for normal responsibilities. No degree would be required; use of past shift supervisors would assure a significant amount of experience; in addition, training in transient analysis would be provided. The position would rotate with the regular shift. Normal responsibilities would include training operators, writing procedure changes and LERs, acting as liaison between management and the shift crew, reviewing engineering changes, and tracking surveillance results. The off-normal responsibilities would include notification, advice to the shift supervisor, maintaining the log, keeping track of procedures, and debriefing after the event, including writing an event report.

Group II:

- The first small group presented several options. The first choice of two of the three participants in this group was to eliminate the STA with the addition of a second SRO. The STA was not considered necessary if a second SRO were on shift to assist the SS. The third member preferred to maintain the current system of an STA as a degreed engineer to provide a different perspective in the control room during off-normal situations. If the decision is made to continue the STA requirement, two of this group's participants would want a different career and experience path than currently in use: (a) providing an SRO with additional training, who would function as a regular SRO during normal conditions and advise during off-normal conditions; and (b) having a shift supervisor obtain an engineering degree; job progressing from SS to STA. This person would not be in the line organization in normal conditions, but during off-normal conditions would take

charge of the situation; thus the role would involve explicit authority as opposed to being advisory.

- The second small group recommended the use of the second SRO in lieu of the current STA, with this SRO receiving additional engineering training.

- The third group recommended eliminating the STA, with use of the second SRO to assist the Senior SS , who would take on the STA role of standing back and analyzing the situation during a transient. Prior experience for the second SRO position would be required.

There was considerable discussion and debate in both workshop groups over the need for engineering expertise on shift, covering the type of expertise, the situations under which it is necessary, and the time frame for obtaining such expertise. The majority of participants thought that operator experience (licensed) was necessary, that training in engineering subjects for the SRO or SS would serve the purpose of providing relevant expertise to the control room, and that a bachelor's degree was not necessary. These requirements ensure that operations knowledge and experience, as well as theoretical engineering background, are part of the position. In Group II, there was discussion of a potential problem of relying on the second SRO to perform the STA function, since there would be little difference in background, training, and experience. Specialized training for the second SRO was considered one way of maintaining (or introducing) a different perspective in the control room.

Engineering advice was considered useful and necessary in certain situations, but most operators appeared to take the position that engineering expertise was already available at the plant from the engineering unit and from the technical support center. A few operators mentioned that particularly when the new regulations for technical support centers are implemented, sufficient engineering expertise will be readily available. A number of operators stated that engineering assistance is needed more during the recovery period than in the first few minutes of a transient.

5. Evaluation. Virtually all participants indicated that the STA was an important topic (88% in Group I; 100% in Group II). Most agreed that this workshop session was worthwhile (63% in Group I; 79% in Group II). The majority (75%) of Group I agreed that the STA was discussed in an effective way. Half of Group II agreed (or strongly agreed) that the STA was discussed effectively. The bulk of the participants strongly agreed or agreed that there was ample opportunity to describe their views on the STA (100% in Group I; 93% in Group II) and that participants' comments were understood by workshop leaders (94% in Group I; 71% in Group II). Most participants felt the time allocated to the STA discussion was "just about right" (81% in Group I; 57% in Group II), but over a third of Group II (36%) felt that the time was too short or very much too short.

As in other sessions, the open-ended evaluative questions triggered a range of responses from participants, but several common views were expressed by participants in both groups. First, a number of participants in both groups liked the discussion of the ideal STA--clarifying the STA position and discovering shared sentiment regarding the STA. Again, many participants remarked on how they liked the exchange of ideas that took place, the interaction between utilities, the opportunity to give input, and learning of other practices and viewpoints. In fact, there was some mention of the need (or desirability of holding) more workshops and discussions like this one. Several participants indicated, however, that they disliked the fact the discussion and focus questions presupposed the need for an STA, and that participants were seemingly being used to justify this type of position. One person in Group II (where one of the participants was an STA) noted that it would be preferable if STAs were not sent to a workshop such as this one. Finally, some participants in both groups remarked that the time allocated to the STA discussion was inadequate.

Like the participants, observers of the STA session evaluated it very favorably. All observers agreed or strongly agreed that the topic was important and that the session was worthwhile. The majority of observers agreed that the STA was discussed in an effective way, that participants had ample opportunity to express their views, and that participants' comments were understood by workshop leaders. Several observers felt the time allocated to the STA was too short, while the majority found the time allocation to be "just about right." In general, observers indicated that both STA sessions went very well, and that the workshop activities were effective.

D. Control Room Engineering Support

1. The workshop session. During the final workshop session, both groups discussed the use of a degreed person on shift, or control room engineering support. This session relied on one focus question:

"If a degreed person is required on shift:

- How would you use him most effectively? (What are his duties: normal, off-normal?)
- Where organizationally would you put him?"

Neither workshop group fully addressed this focus question, and the discussion of control room engineering support was much briefer than was discussion of the three preceding topics.

In Group II, participants began discussion of the first part of the focus question by identifying a few uses of a degreed person during off-normal conditions (e.g., communications) and normal conditions (e.g., alleviate paperwork, conduct routine audits, prepare reports, etc.). Very shortly, however, the group protested the discussion and resolved to

discontinue work on the focus question. Participants indicated during the discussion (and later in their evaluation forms) that if they responded to the focus question, the NRC might conclude that workshop participants believed that a degreed person should be required on shift. The group did not support a degree requirement, and a degree was not perceived as a particularly useful indicator of a person's ability to contribute to the shift.

Group I did not react as strongly to this discussion topic as did Group II. However, Group I also noted that a degreed engineer should not be required; was not necessary; and that if required, a degreed engineer should be kept occupied with other projects, busy work, or activities. Like Group II, several other uses of the engineer were identified, including providing information upon request, handling reporting, and being responsible to the shift supervisor.

2. Evaluation. As might be expected given the nature of this discussion session, participants did not view the topic as important, nor the session as worthwhile, as any of the preceding topics and sessions. In fact, only one-third of the participants (29% in Group I; 38% in Group II) agreed that the topic was important, and only 19% (all of whom were in Group II) felt the workshop session was worthwhile. Furthermore, only 21% of Group I felt the topic was discussed in an effective way. However, the majority (77%) of Group II found the discussion effective. The bulk of participants in both groups indicated that they had ample opportunity to describe their views (86% in Group I; 77% in Group II) and that they felt their comments were understood by workshop leaders (79% in Group I; 69% in Group II). Finally, most participants (69%) in Group II felt the (brief) time allocated to control room engineering support was "just about right," but there was no clear consensus in Group I on the time allocation (14% felt it was too short; 29% just right; 36% too long; 14% very much too long).

A number of participants noted that the brevity of the workshop session was one of its major assets. Participants, particularly those in Group II, liked the fact that they agreed upon and successfully communicated their opinion on degree requirements. Participants in both groups indicated that they did not like the "leading" focus question (which implied that a degree was valuable). In fact, several participants indicated that they did not like the topic itself or (in Group I) the fact that the topic called for a "rehash" of some of the STA session.

Observers of this workshop session also noted the overlap of "control room engineering support" with the STA, and questioned the effectiveness and value of the engineering support session. Observers noted two factors that might have contributed to problems with this discussion session, neither of which was raised by participants. First, one observer suggested that the facilitator and participants were fatigued by the afternoon of the workshop's second day, when this session was held. Second, another observer indicated that participants just didn't seem interested in the questions raised by the focus question. Nevertheless,

as one observer said, "The fact that [Group II] wouldn't even do the requested task was important data," about the focus question, the workshop session, and participants' attitudes toward degree requirements.

III. OVERALL WORKSHOP EVALUATION

A. Comments from the Workshop Evaluation Forms

As noted in Chapter I, each workshop session was assessed by both participants and observers; the evaluation of each session was described in Chapter II, along with the description of the session's procedures and results. Additionally, at the close of the workshop observers and participants were asked to respond to questions concerning the workshop as a whole. In general, the response to the workshop was very favorable. The majority of participants (86% in both Groups I and II) agreed or strongly agreed that the workshop was well organized. Virtually all participants (93% in Group I; 100% in Group II) agreed or strongly agreed that workshop leaders encouraged operators to participate in discussions. Most (93% in Group I; 71% in Group II) agreed that workshop leaders kept the discussions focused on important topics. There was less enthusiasm expressed concerning the workshop facilities, however. Many agreed that the facilities (meeting room, etc.) were comfortable (36% in Group I; 46% in Group II), but a number of participants disagreed (21% in Group I; 31% in Group II), or neither agreed nor disagreed that the facilities were comfortable (43% in Group I; 23% in Group II). While many participants (36% in both Groups I and II) agreed that the time allocated to the workshop was "just about right," 64% in Group I and 57% in Group II indicated that they felt the time allocated was "too short" or "very much too short."

Finally, the vast majority of participants agreed or strongly agreed that "this sort of workshop is a good way to obtain input from operators" (100% in Group I; 93% in Group II). Participants had an opportunity to describe other ways in which they would be willing to provide input to the NRC--and which of these ways might be more effective than workshops. A number of participants specifically mentioned additional workshops and indicated that no other feedback mechanisms would be more effective than this workshop was. However, many participants indicated their preference for either written questionnaires or personal interviews which they felt might be better, more effective feedback mechanisms. It should be noted that several participants indicated that they would be willing to provide input in any way that would be useful to the NRC.

Most participants (79% in Group I; 50% in Group II) felt that four topics was a good number of discussion topics for a two-day workshop, but a number of participants (7% in Group I; 43% in Group II) felt that this was too many topics. Most participants felt that the small group discussions should be used at feedback workshops. And, a clear majority of participants (86% in both groups) felt that "responsible NRC representatives, familiar with each discussion topic area, [should] be present at operator feedback workshops."

As might be anticipated from the individual session evaluations, the feature of this workshop that emerged as "best" was the opportunity provided for exchange of ideas between utilities and the NRC. In other

words, the interaction that took place at the workshop and the chance to provide input and to learn other viewpoints were frequently cited as the best feature of the workshop. A number of different items were listed as the workshop's "worst feature," but most frequently cited was the fact that there was no advance preparation time for the workshop discussion.

Participants had many suggestions for future workshops, including, e.g., having higher attendance by operations staff and providing additional "front-end" information. Perhaps most comprehensive, however, were participants' suggestions for other topics that should be included in future operator feedback workshops: suggested topics ranged from operator professionalism, job satisfaction, and operator stress, to human engineering and design changes, to the NRC role, fines and enforcement, examiners' qualifications, and NRC regulations. In short, an enormous range of topics was suggested, encompassing a variety of issues pertinent to operators' work and responsibilities.

Like participants, observers generally found the workshop well organized; they agreed that the leaders encouraged operator participation in discussions and kept discussions focused on important topics; observers also felt that the facilities could be improved, that the time allocated was just about right, and that this sort of workshop is a good way to obtain operator input. Observers did offer a somewhat different perspective on the workshop, however. For example, a number of observers felt strongly that four topics was too many for the intense, two-day workshop. Also, observers did not anticipate participants' interest in having responsible NRC representatives present at workshops.

B. Conclusions

Participants and observers evaluated the second operator feedback workshop very favorably, as discussed above. They also provided a wealth of information that can be (and is being) used to plan future workshops and to consider other feedback mechanisms. In fact, the experience of holding two operator feedback workshops has yielded several conclusions, which are being considered in planning future workshops and in carrying out the Operator Feedback Project. These are summarized below.

1. The workshop as a feedback mechanism. Participants and observers alike rated the workshop as an effective means of obtaining operators' input. Some indicated that no feedback mechanism could be more effective than workshops of the sort held in Boston and Chicago. However, a number of participants indicated their willingness to provide feedback in a variety of ways, including personal interviews or written questionnaires. And, some participants and observers felt that the personal interview or written questionnaire might be more effective at obtaining feedback from a greater number of operators than would workshops. Accordingly, it appears that the workshop procedure developed and utilized in Chicago and Boston is effective. The use of large and small group discussions and of focus questions has been well received. Furthermore, these workshops have provided operators with what they have

described as a valuable opportunity to interact with one another. However, there are other feedback mechanisms which also may be effective; the potential of these mechanisms will be further explored in Task III of the Operator Feedback Project.

2. Time constraints at the workshop. Many participants and observers felt that four topics were an appropriate number of discussion topics for a two-day workshop. However, some observers indicated that four topics were too many, and that three would be preferable. Furthermore, many participants and observers noted that there was inadequate time allocated to some, if not all, discussion topics. In planning for future workshops, therefore, an effort will be made to explore different strategies to reduce these perceived time constraints. The third workshop will address only three specified discussion topics in the two-day workshop. An effort is also being made to provide participants with more complete information concerning the workshop, which could enable the workshop to run more smoothly and efficiently. Additionally, alternative workshop formats are being considered for future workshops, such as a completely open workshop in which participants identified all discussion topics.

3. Participants and observers. Unlike the Chicago workshop, the Boston workshop was attended by a large number of training and management personnel. Both participants and observers noted that this interfered with the workshop's basic goal of obtaining feedback from operations staff. Accordingly, future workshops will focus on operations staff to the fullest extent possible. Participants in the Chicago and Boston workshops also indicated that they would have prefered a greater NRC presence at the workshops. Accordingly, at least in the third workshop, every effort will be made to assure the presence of at least one NRC official (in addition to the project monitor).

4. Workshop facilities. Finally, one problem was common to both the Chicago and the Boston workshops. That is, difficulties were encountered with the conference arrangements at both hotels. The large number of complaints from participants and observers concerning inadequate meeting rooms or coffee service is indicative of the importance of the physical aspects of the workshop. Every effort will be made in future workshops to eliminate and minimize problems encountered in the course of setting up and utilizing the workshop facilities.

APPENDIX A

WORKSHOP ATTENDEES

APPENDIX A

WORKSHOP ATTENDEES

Workshop Participants

Name	Plant
Abbott, Richard B.	Nine Mile Point
Aldred, Charles J.	Pilgrim
Brooks, Richard J.	Beaver Valley
Brown, Roy	Conn Yankee/Haddam Neck
Brozenich, Paul W.	Fitzpatrick
Bulmer, R. W. (Bob)	Philadelphia Electric Company
Casey, Daniel G., Jr.	Conn Yankee/Haddam Neck
Chatfield, Ernest	Yankee Rowe
Crockett, James	Millstone #3
David, Michael	Seabrook Station
Diamond, Edward	Indian Point #3
Dunkerly, Charles L.	Calvert Cliffs
Grillo, Joseph	Seabrook Station
Horning, Dewey E.	Ginna Station
Hughes, Derwood W., Jr.	Pilgrim
Jansen, David D.	Salem
Johnson, Daniel	Fitzpatrick
Kriebel, William	Indian Point #2
Lloyd, James K.	Salem/Hope Creek
Lohr, John	Calvert Cliffs
Mannix, Stephen J.	Peach Bottom
Matsko, Joseph E.	Beaver Valley #1
McCarthy, Ken	Ginna Station
McMillan, Daniel	Oyster Creek
Murray, Ron	Nine Mile Point #2
Olsen, William F.	Pilgrim #1
Pfenser, Frank J., Jr.	Peach Bottom #2 & 3

Workshop Participants (cont'd)

Name	Plant
Rottkamp, Ken	Shoreham
Smith, Bill	Indian Point #2
Strong, William E., III	Millstone #2
Swartz, Mike	Maine Yankee
Walker, Richard	Millstone #1

Facilitators

Fleischman, Rod	Battelle/Pacific Northwest Laboratory
Nieves, Alvaro L.	Battelle/Pacific Northwest Laboratory

Observers

Boegel, A. John	Battelle/Pacific Northwest Laboratory
Fullerton, Audrey	Oak Ridge National Laboratory
Goodman, Clare	U.S. Nuclear Regulatory Commission
McGuire, Mary V.	Battelle/Human Affairs Research Centers
Melber, Barbara D.	Battelle/Human Affairs Research Centers
Munro, John F.	U.S. Nuclear Regulatory Commission
Persensky, J. J.	U.S. Nuclear Regulatory Commission

APPENDIX B

WORKSHOP FORMS AND MATERIALS

OPERATOR FEEDBACK WORKSHOP II

BOSTON, MASSACHUSETTS

MARCH 16-17, 1982

REGISTRATION FORM

NAME: _____

UTILITY: _____

POSITION TITLE: _____RO _____SRO _____OTHER (INDICATE)_____

PLANT: _____

PLANT TYPE: _____BWR _____PWR

YEARS CONTROL ROOM EXPERIENCE IN COMMERCIAL PLANT: _____

PRIOR NAVY EXPERIENCE: _____YES _____ NO NO. OF YEARS_____

AGE: _____ YEARS

EDUCATION:

H.S. (GED) _____

H.S. GRADUATE _____

SOME COLLEGE _____ NO. OF YEARS _____

COLLEGE GRADUATE _____ DEGREE: _____ FIELD: _____

OTHER: (INDICATE)_____

OPERATOR FEEDBACK WORKSHOP II

SIMULATOR TRAINING

Focus Questions

Focus Question 1*

Consider the following types of simulators, as training tools: Part Scope, Generic, Plant Specific. What are their strengths?

Focus Question 2a

Considering the following types of simulators, which have you:

	Part Scope	Generic	Plant Specific
Operated	_____	_____	_____
Seen	_____	_____	_____
Read About	_____	_____	_____

Focus Question 2b

How much time do you spend on each of these simulators as part of your training program?

	Part Scope	Generic	Plant Specific
Pre-license	_____	_____	_____
Post-license	_____	_____	_____

Focus Question 3

How can this particular type of simulator be used most effectively for operator development (i.e., auxiliary operator through SS)?

Focus Question 4

If it were left up to you as operators, what sort of guidelines would you develop for Generic simulator license examinations?

---

*Each focus question appeared at the top of a single page.

OPERATOR FEEDBACK WORKSHOP II

LICENSING

Focus Questions

Focus Question 1*

What categories should the NRC require on the written exam for a reactor operator license?

Focus Question 2

What subject areas within each category are necessary to insure operator competence?

Focus Question 3

What are the strengths of the requalification process?

Focus Question 4

How can a requalification program be structured to maintain a high level of operator competency and enhance operator skills and performance?

*Each focus question appeared at the top of a single page.

WORKSHEET - STA

Below are some general questions regarding the position of STA at your plant. We are interested in your own experiences and opinions.

1. Thinking about a routine work week (normal operations, no major planned evolutions) how often is the STA in the control room during your shift?

   _____ Most of the day, every day.
   _____ Some part of every day.
   _____ A few times during the week.
   _____ Only when called by control room crew.

2. a. How often do you discuss control room operations or status with an STA during the course of a routine shift?

   Never _____ (Please skip to question #3)
   Rarely (once a month or less) _____
   Several times a month _____
   A few times a week _____
   Almost every day _____

   b. What kinds of things have you discussed with an STA (e.g. work requests, procedures, tech. specs., potential safety problems, LERs, etc.)?_____

   _____

   _____

   _____

   _____

3. a. Approximately how many transients have you experienced on-shift in the past year? _____ (If none, please skip to question #4)

   b. Did the operators need assistance in any of these transient situations?
   Yes _____ No _____
   If yes, in how many cases? _____

   c. For each transient situation please list who was consulted and what assistance, if any, was provided (e.g. read procedures, valve operation, diagnostic assistance, phone communication, etc.).

Case 1 Person Contacted: _____

Assistance Provided: _____

_____

_____

_____

_____

How helpful was the assistance? _____

Case 2 Person Contacted: _____

Assistance Provided: _____

_____

_____

_____

_____

How helpful was the assistance? _____

Case 3 Person Contacted: _____

Assistance Provided: _____

_____

_____

_____

_____

How helpful was the assistance? _____

[Please continue on the back of this sheet if more space is needed.]

4. There are many different opinions about the STA position. Below are a number of statements about the use of the STA; please indicate the extent to which you personally agree or disagree with each statement.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. It's helpful to have the STA around during transients.	1	2	3	4	5
b. The problem with the STA is that the wrong people are being hired for the job.	1	2	3	4	5
c. The STA is an unnecessary position.	1	2	3	4	5
d. The STA has too little authority during transient conditions.	1	2	3	4	5
e. The STA should be required to have a degree.	1	2	3	4	5
f. The STA has nothing to do during normal operations.	1	2	3	4	5
g. The STA should have RO or SRO experience.	1	2	3	4	5
h. Under most transient conditions the STA makes an important contribution to plant safety.	1	2	3	4	5

5. Background Information

a. Type of reactor at your plant: BWR _____ PWR _____

b. Type of unit: Single _____ Multiple _____

c. Job Title: Reactor Operator _____
Senior Reactor Operator _____
Shift Supervisor _____
Other (please indicate) _____

d. How long have you been in this position at your current plant?
_____ years _____ months

OPERATOR FEEDBACK WORKSHOP II

STA

Focus Questions

Focus Question 1*

What are the responsibilities, activities, and areas of authority of STAs at your plant during normal and off-normal operations?

Focus Question 2

Consider transients that occurred at your plant during the past 12 months. In those instances when an STA was called, describe how he was utilized. How useful was the STA role in these situations?

Focus Question 3

Define the responsibilities and authority of an "ideal" STA position. How can this extra resource be used to best advantage during normal and off-normal operations?

---

*Each focus question appeared at the top of a single page.

OPERATOR FEEDBACK WORKSHOP II

CONTROL ROOM ENGINEERING SUPPORT

Focus Question 1

If a degreed person is required on shift:

- How would you use him most effectively? (What are his duties: normal, off-normal?)
- Where organizationally would you put him?

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

SIMULATOR TRAINING

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of simulator training was important for us to consider.					
The way we discussed simulator training was effective.					
I had ample opportunity to describe my views on simulator training.					
I think my comments on simulator training were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to simulator training was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your comments

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

LICENSING

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of licensing was important for us to consider.					
The way we discussed licensing was effective.					
I had ample opportunity to describe my views on licensing.					
I think my comments on licensing were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to licensing was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your comments

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

ROLE OF THE STA

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of the STA was important for us to consider.					
The way we discussed the STA was effective.					
I had ample opportunity to describe my views on the STA.					
I think my comments on the STA were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to the STA was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your coments

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

CONTROL ROOM ENGINEERING SUPPORT

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of control room engineering support was important for us to consider.					
The way we discussed control room engineering support was effective.					
I had ample opportunity to describe my views on control room engineering support.					
I think my comments on control room engineering support were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					
	VERY MUCH TOO SHORT	**TOO SHORT**	**JUST ABOUT RIGHT**	**TOO LONG**	**VERY MUCH TOO LONG**
I feel that the time allocated to control room engineering support was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your coments

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

Please evaluate the workshop as a whole on the following items:

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The workshop was well organized.					
Workshop leaders encouraged operators to participate in discussions.					
Workshop leaders kept the discussions focused on important topics.					
The workshop facilities (meeting room, etc.) were comfortable.					
This sort of workshop is a good way to obtain input from operators.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to this workshop was:					

Please list any other ways you would be willing to provide input to NRC (for example, telephone interviews, personal interviews, written questionnaires, some other type of workshop, etc.):

Which of these other ways of providing input might be better (more effective) than this workshop?

- continued on page 2 -

Four topics were discussed in this workshop. Do you feel that this is a good number of discussion topics for a two-day workshop?

- ☐ Yes
- ☐ No - it is too many
- ☐ No - it is too few topics

How many operators should attend feedback workshops of this type? _____

Do you feel that small discussion groups should be used at feedback workshops?

- ☐ Yes - more often than they were used here
- ☐ Yes - about as often as they were used here
- ☐ Yes - but less often than they were used here
- ☐ No - small discussion groups should not be used

Should responsible NRC representatives, familiar with each discussion topic area, be present at operator feedback workshops? Please explain the reason(s) for your answer:

☐ Yes ☐ No

Please list other topics that you think should be included in any future operator feedback workshops:

- continued on page 3 -

Considering the workshop as a whole, what was its best feature?

Considering the workshop as a whole, what was its worst feature?

Other comments or suggstions:

Please check all that apply to you:

- ☐ Reactor Operator
- ☐ Senior Reactor Operator
- ☐ Shift Supervisor
- ☐ Other job or title (please specify)

_____

Thank you very much for your comments and participation

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

Please evaluate the workshop as a whole on the following items:

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The workshop was well organized.					
Workshop leaders encouraged operators to participate in discussions.					
Workshop leaders kept the discussions focused on important topics.					
The workshop facilities (meeting room, etc.) were comfortable.					
This sort of workshop is a good way to obtain input from operators.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to this workshop was:					

Please list any other ways you would be willing to provide input to NRC (for example, telephone interviews, personal interviews, written questionnaires, some other type of workshop, etc.):

Which of these other ways of providing input might be better (more effective) than this workshop?

- continued on page 2 -

ROLE OF THE STA

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of the STA was important.					
The role of the STA was discussed in an effective way.					
All participants seemed to have ample opportunity to describe their views on the STA.					
I think participants' comments on the STA were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to the STA was:					

Additional comments or suggestions concerning the STA session:

Do you have any suggestions or ideas for how the session on the STA could be run more effectively?

- continued on page 3 -

LICENSING

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of licensing was important.					
Licensing was discussed in an effective way.					
All participants seemed to have ample opportunity to describe their views on licensing.					
I think participants' comments on licensing were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to licensing was:					

Additional comments or suggestions concerning the licensing session:

Do you have any suggestions or ideas for how the session on licensing could be run more effectively?

- continued on page 4 -

CONTROL ROOM ENGINEERING SUPPORT

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of control room engineering support was important.					
Control room engineering support was discussed in an effective way.					
All participants seemed to have ample opportunity to describe their views on control room engineering support.					
I think participants' comments on control room engineering support were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to control room engineering support was:					

Additional comments or suggestions concerning the control room engineering support session:

Do you have any suggestions or ideas for how the session on control room engineering support could be run more effectively?

- continued on page 5 -

III. Please evaluate the workshop as a whole on the following questions:

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The workshop was well organized.					
Workshop leaders encouraged operators to participate in discussions.					
Workshop leaders kept the discussions focused on important topics.					
The workshop facilities (meeting room, etc.) were comfortable.					
This sort of workshop is a good way to obtain input from operators.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to this workshop was:					

Please list any other ways in which you believe operators would be willing to provide input to NRC (for example, telephone interviews, personal interviews, written questionnaires, some other type of workshop, etc.):

Which of these other ways of providing input might be better (more effective) than this workshop?

- continued on page 6 -

Considering the workshop as a whole, what was its best feature?

Considering the workshop as a whole, what was its worst feature?

What other groups or individuals ought to be invited to any future feedback workshops? What role should they play in the workshops?

Group/Individual	Role

What is the optimal size for operator feedback workshops?

Number of operators (workshop participants) _____

Number of leaders _____

Number of observers _____

Total number present at the workshop _____

Do you feel that small discussion groups should be used at feedback workshops?

- ☐ Yes - more often than they were used here
- ☐ Yes - about as often as they were used here
- ☐ Yes - but less often than they were used here
- ☐ No - small discussion groups should not be used

If smaller discussion groups are used, how many operators should be in each group?

_____

- continued on page 7 -

Four topics were discussed in this workshop. Do you feel that this is a good number of discussion topics for a two-day workshop?

- ☐ Yes
- ☐ No - it is too many
- ☐ No - it is too few topics

Please describe any other experiences you have had with feedback workshops. Indicate from what group(s) feedback was obtained and the effectiveness of the workshops in obtaining feedback.

Group	Effectiveness

Please describe any experiences you have had with techniques for obtaining feedback other than workshops. Indicate from whom feedback was obtained, the feedback mechanism, and the effectiveness of the technique for obtaining feedback.

Group	Type of Feedback Mechanism	Effectiveness

In general, what technique(s) do you believe is (are) most effective in obtaining feedback from groups such as reactor operators?

- continued on page 8 -

Do you have any additional comments or suggestions concerning this workshop or any future workshops?

Please indicate your name and/or professional affiliation and job title so that we can interpret your responses to this evaluation form appropriately:

Name _____

Title _____

Affiliation/Organization/Agency _____

_____

Thank you very much for your comments and suggestions. Please return this form to:

Mary V. McGuire
Battelle-Human Affairs Research Centers
4000 N.E. 41st Street
Seattle, WA 98105

APPENDIX C

APPENDIX C

ATLANTA WORKSHOP REPORT

OPERATOR FEEDBACK WORKSHOP

MAY 25-26, 1982

ATLANTA, GEORGIA

A. John Boegel

Battelle Pacific Northwest Laboratories

Mary V. McGuire

Battelle Human Affairs Research Centers

TABLE OF CONTENTS

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I. INTRODUCTION

Pursuant to the NRC Task Action Plan I.A.2.6, the third in a planned series of four Operator Feedback Workshops was held in Atlanta, Georgia, May 25-26, 1982. The principal objectives of the workshop effort are: (1) to evaluate workshops as a mechanism for obtaining feedback from licensed reactor operators, and (2) to determine operators' viewpoints, feedback, and experiences concerning selected issues of concern to the NRC. The issues considered at this workshop were: overtime practices and implications; the need for an additional senior reactor operator (SRO) in the control room; and reactor operator licensing examinations.

Thirteen representatives of utilities in Region II participated in the workshop. Seven of these had prior navy experience, and participants had between 1/2 and 12 years (average of 5 years) of control room experience in commercial plants. Four participants had completed high school or the equivalent, seven had taken some college, and two held bachelor's degrees. The average age of participants was 34 years. Four participants were licensed reactor operators, six were SROs (five of whom were also shift supervisors), and three held managerial positions (plant supervisor, operating supervisor, manager of nuclear training).

In addition, eleven representatives of the NRC, INPO, and Battelle observed the workshop:

Donald R. Quick, Chief
Reactor Projects Section 1A, NRC Region II

J. J. Persensky, Engineering Psychologist
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The two-day workshop involved four workshop sessions. Following brief introductions by John Boegel, J. Persensky, and Al Nieves, the first workshop session addressed overtime practices and implications. After lunch, the second workshop session focused on the need for an additional SRO in the control room. The first part of the second day concentrated on problems associated with reactor operator licensing examinations and requalification. The final workshop session was less structured than the three preceding sessions and permitted some discussion of the strengths of the workshop as well as suggestions for future workshops.

In addition to participating in large group discussions, the workshop participants broke into three smaller groups or worked individually in addressing some of the questions related to the discussion topics. Following each workshop session, participants completed an evaluation form designed to gather their comments and appraisals of the preceding workshop session. At the close of the workshop, both participants and observers were asked to assess the workshop as a whole using overall evaluation forms. Participants and observers alike indicated that the workshop sessions were worthwhile, and that the workshop is a good means of obtaining feedback from operators.

Part II of this report, below, details the workshop sessions, procedures, and results of the workshop activities, including an assessment of each session. Part III contains an overall assessment of the workshop and the conclusions that can be drawn from this workshop. Appendix A lists all workshop attendees, and Appendix B contains copies of all materials used at the workshop as well as the information packet sent to participants prior to the workshop.

II. THE WORKSHOP SESSIONS: PROCEDURES, RESULTS AND EVALUATION

Workshop participants and observers were welcomed to the Atlanta Operator Feedback Workshop by John Boegel, Workshop Project Leader, at about 8:45 a.m., May 25, 1982. Al Nieves, the Workshop Leader, and J. Persensky, NRC Technical Monitor, also made introductory remarks. These introductions stressed the purposes of the workshop: to collect workshop participants' comments and suggestions, to communicate this feedback to the NRC, and to determine whether the workshop is a good vehicle for obtaining operator feedback. The first discussion topic, overtime, was then introduced.

A. Session I: Overtime Practices and Implications

The workshop session on overtime began with an examination of current overtime policies and practices at the participants' plants. Participants spent several minutes considering the first focus question: "Consider present overtime policy and practices at your plant. On the average, how often and how long are operators requested or required to work overtime? How do shift rotations and scheduling effect overtime practices?" Then, after participants introduced themselves, they described the typical amounts of overtime worked, the shift rotations, and scheduling at their plants.

Estimates of the overtime worked by operators ranged from 400 to 1,000 hours per year. The most frequently described shift rotation involved five shifts, though several participants described four- and six-shift rotations. Routine scheduling procedures varied, with some plants scheduling overtime well in advance and others calling for overtime on the same day that the overtime work is needed. Participants indicated that union policies often play a key role in determining who is called for overtime, and how much overtime an individual might work. For example, the person with the lowest number of overtime hours is called first for overtime at one plant. Many participants indicated that attempts were made to preserve operators' days off, even if very long workdays may be required during the rest of the week.

Two issues, related to manpower and staffing generally, were raised repeatedly during the course of this discussion. One was that shift work, and not just the demands of overtime, contribute to what the participants perceive as a serious, high turnover rate. Second, participants suggested that inadequate staffing poses a more serious problem for the industry than either overtime or shift work. In fact, an inadequate number of licensed operations staff was considered to be the cause of overtime and its related problems.

The second focus question asked participants about the safety and personal implications of overtime. Most participants felt that overtime had some effect on safety and on their personal lives. However, there was some disagreement concerning the severity of any safety implications

of overtime. For a number of participants, overtime does not pose a threat to plant safety. It was suggested, e.g., that everyone "wakes up" during a casualty, so even if some initial impact of overtime on safety occurs, it is minimized and controlled. However, participants also expressed the view that when the number of hours worked stretched beyond eight, to 12 or 16, fatigue can be a problem, with an associated increase in the risk of accidents or errors. Some participants indicated that these problems were aggravated when overtime was involuntary or when the time off between a 16-hour day and the next duty was only eight hours.

While there was some variety of opinion concerning the seriousness, if any, of safety implications of overtime, participants agreed that there were personal problems associated with overtime. Perhaps the most frequently mentioned problem was interference with family life. Also noted were the difficulty of planning personal activities, vacations, or holidays; and, for some, the interference with carpooling arrangements.

The final question used to focus the discussion of overtime asked workshop participants, "Consider the NRC letter on overtime controls and regulations which was sent to you in your pre-workshop packet. What are the personal and safety implications of the new regulations? Are there alternative regulations which would be better? Are there alternatives to overtime which you would prefer?" To address these questions, participants were divided into three small groups, with four participants in two of the groups and five participants in one group. Observers divided themselves among the small groups as well. All but one of the participants had received the pre-workshop information packet, and it appeared that the participants had reviewed the NRC statement on overtime before coming to the workshop. Accordingly, the small group discussions that followed tended to focus on very specific aspects of the statement.

After the small group discussions, representatives of each group reported the conclusions or recommendations reached by their group. These are summarized in Table 1, which illustrates that concern for the adequacy of staffing levels was voiced again by participants. Also, there appeared to be consensus concerning the inadequacy of an 8-hour break before returning to work, following a 16-hour day. Participants seemed to indicate that overtime regulations could be helpful, that there were some problems with the NRC statement on overtime that participants reviewed, and that perhaps a more fundamental problem than regulating overtime is a lack of sufficient numbers of licensed, qualified staff.

Evaluation. As noted in the Introduction, above, participants were asked to complete evaluation forms at the close of each workshop session. These forms gave participants an opportunity to indicate the extent to which they agreed or disagreed with several statements about the workshop session, to describe the things they liked best and least about the session, and to provide other comments or suggestions concerning the session.

All participants in the workshop session on overtime indicated that they either agreed or strongly agreed that "the topic of overtime was

TABLE 1

SUMMARY OF SMALL GROUP REPORTS ON OVERTIME REGULATIONS

GROUP 1

1. Eight-hour break is not enough after working 16 hours
2. Some guidelines are needed
3. The minimum number of licensed people needed in control room should be specified
4. Alternative shifts would not help
5. Establish a maximum number hours that can be worked
6. More people (staff) are needed
7. Relief operator would and does help

GROUP 2

1. Need an extra person (more staff)
2. Regulations should address both normal operations and high stress work
3. The individuals who are required to follow regulations should be clearly identified
4. Eight-hour break is not enough after working 16 hours

GROUP 3

1. Eight-hour break is not enough after working 16 hours
2. Six-shift rotation would help--to cover vacations, training, etc.
3. Totally opposed to working 16-hour days

important." The majority of participants agreed or strongly agreed that overtime was discussed in an effective way (69%); that participants had ample opportunity to describe their views (92%); that workshop leaders understood their comments (92%); and that the workshop session was worthwhile (92%). Most participants felt that the time allocated to the discussion of overtime was "just about right" (62%), though several found it too short (31%), and one felt the session was too long (8%).

The thing that most participants liked best about the workshop session was the exchange of information and ideas that took place. Thus, the opportunity to learn how others approach the problems discussed, the open discussion, and the chance to express one's own views were all noted as good features of the workshop session. Participants described a variety of things that they "liked least about this workshop session." There was one frequently cited problem, however: 46% of the participants felt that the discussion too often deviated or strayed from the subject. Additionally, some participants indicated that more preparation prior to the workshop might have been helpful, that the workshop should be longer, and that the focus questions could be more specific than they were.

Like the participants, all observers completing the evaluation form agreed or strongly agreed that the topic of overtime was important. Most felt that overtime was discussed in an effective way, and that the workshop session was worthwhile. All observers felt that participants' comments on overtime were understood by workshop leaders. However, a number of the observers (60%) did not agree that all participants had ample opportunity to describe their views on overtime; likewise, 60% of the observers felt that the time allocated to overtime was too short. Observers also commented that devoting additional time to preparation and to the workshop session might be helpful.

B. Session II: The Need for an Additional SRO in the Control Room

The afternoon discussion of the need for an additional SRO in the control room opened with a brief discussion of the first focus question, "Do you believe there should be a SRO in the control room at all times?" Eight (62%) of the participants responded affirmatively to this question, indicating that they believed a SRO should be in the control room at all times, particularly if the SRO's duties are clearly defined. Five (38%) participants did not believe that an SRO was needed in the control room at all times. These participants indicated that requiring an SRO at all times reduced flexibility, and that ROs can handle normal operations without an SRO present.

The workshop facilitator then asked participants what they think the licensed control room complement should be. The participants, who represented single-unit plants, two-unit plants with common control rooms, and a three-unit plant with two control rooms, had varying opinions on the best staffing configurations. The suggestions made during this discussion are summarized in Table 2, below.

TABLE 2

PARTICIPANTS' SUGGESTIONS FOR LICENSED CONTROL ROOM STAFFING

Type of Plant	Suggestions for Operations Staff
Single Unit Plant	2 SROs, 2 ROs
	1 SRO, 2 ROs
Two Unit Plant with a common Control Room	2 SROs, 3 ROs
	2 SROs, 3 ROs + 1 unlicensed or 4 ROs
Two Unit Plant with two Control Rooms	2 SSs, 3 SROs, 5 ROs
	4 SROs, 3 ROs total, 1 STA

The second focus question asked, "Since the details of how the second SRO will be used are not finalized, how would you suggest this requirement be implemented? Consider alternative options and their relative advantages and disadvantages." Participants broke into their small groups to address this question. The first group indicated that an additional SRO need not be in the control room unless there is an accident, and that the additional SRO should have operational experience. It was suggested that the extra SRO might have training duties. Additionally, this group suggested three possible approaches to staffing: (a) three SROs, one of whom was also the STA; (b) three SROs, plus one STA; and (c) two SROs per unit, one of whom could be the SS.

The second group addressed the focus question by detailing two staffing arrangements for a two-unit plant with a common control room. First the desired arrangement would include three SROs, four ROs, six shifts, and plenty of work. One of the SROs could be degreed, and then no STA would be required. Second, the technical specifications for such a plant would include two SROs, three ROs, and five shifts.

The third group concluded that the ways in which an additional SRO is to be used must be decided on a plant-by-plant basis. The duties of that SRO should be determined by the utility, since the utilities are organized very differently. However, the group did suggest that appropriate duties for the second SRO include training and administrative work.

The workshop session concluded with the facilitator asking participants to complete a worksheet on the STA and the evaluation form on the workshop session.

Evaluation. All participants agreed or strongly agreed that the topic of an additional SRO was important. The majority of participants felt that the need for an additional SRO was discussed in an effective way (58%), that they had ample opportunity to describe their views (75%), that the workshop leaders understood participants' comments (67%), and that the workshop session was worthwhile (83%). While a good number of participants felt that the time allocated to the session was about right (42%), 33% felt the session was too short and 25% felt the session was too long.

As with the first discussion session, many participants found that the feature they liked best about the workshop session was the open discussion in which participants exchanged information and ideas on the discussion topic. The things participants liked least about the session varied, ranging from an "extremely uncomfortable chair" to criticism because the session became more like a discussion of the STA than of the SRO. Several participants stressed their view that the session was too short.

All observers indicated that the topic was important. Most observers felt the additional SRO was discussed in an effective way, that participants had ample opportunity to describe their views, that participants' comments were understood by workshop leaders, that the session was worthwhile, and that the time allocated to the session was about right.

C. Session III: Reactor Operator Licensing Examinations

The second day of the workshop opened with a discussion of licensing examinations. Four points were addressed: simulator, oral, and written exams, and requalification. The first focus question, which was addressed in small groups stated: "The simulator exam is often difficult to grade and administer. This is especially true when a generic rather than a plant specific simulator must be used. What do you feel ought to be emphasized in the simulator exam? In evaluating an operator's performance on the simulator exam, what criteria should be applied for passing? For failing?"

The three small groups formed to discuss this question met for about an hour before reporting the results of each group discussion. The first group reported that the examination should emphasize, first, the performance of routine operations, and, second, the operator's ability to identify and control casualty situations. The exam should be structured such that in a three-hour period, one hour is devoted to routine operations (load change, adjustment of equipment); one hour to minor casualties (e.g., rod drops, equipment failures); and one hour to casualties (e.g., LOCA). This group agreed that exceeding the limiting

conditions for operations should constitute grounds for a failure, and that debriefing on the examination should be part of the evaluation. Both examiners should agree on the exam results, and examiners should be familiar with the simulator on which the exam is given and have experience on that simulator.

The second group indicated that five points should be emphasized on the exam and should be considered in setting pass-fail criteria:

1. Proper identification of plant problems (i.e., does the candidate have the big picture?);

2. Follow the appropriate procedures properly (i.e., does the candidate follow the appropriate procedures to the extent possible?);

3. When doubt exists, the examiner should question the operators to determine the extent of their knowledge;

4. Candidates should not through inappropriate action compromise the integrity of the plant; and

5. Candidates should have a minimum amount of time on the simulator prior to the exam.

This group also stressed the value of obtaining the simulator instructor's input into the examination process: knowledge of the plant and the simulator puts the instructor in an excellent position to judge whether the candidate can operate the plant. Accordingly, it is extremely important to have qualified instructors, and a brief discussion ensued in which both participants and observers acknowledged the need for qualified simulator instructors.

The third group reported that a candidate should demonstrate understanding of the following, or the candidate should fail the examination:

1. Big picture ability

2. Day-to-day operations

3. Physical manipulation of controls

4. Obtain and maintain safe condition

5. Abnormal operations (emergency procedures)

6. Make allowances for difference between simulator and real plant

7. Shift emphasis to simulator--all positions

8. Recognize and distinguish differences between conditions

A brief discussion of oral examinations followed these small group reports. Participants suggested that with a plant specific simulator, the oral walkthrough of the control room may be unnecessary, as that is really handled in the simulator exam. The walkthrough of the plant, however, does test for a candidate's ability to identify plant equipment. The oral sit-down examination can serve the purpose of clarifying a candidate's responses to the written exam, and may be a good way of tackling complicated, time-consuming questions. Nine (69%) of the participants felt that there should be an oral sit-down exam, for these or other reasons. Four (31%) would prefer to have no oral sit-down exam.

The workshop leader then directed the group's attention to a focus question concerning written examinations. Specifically, the group was asked to suggest changes, in addition to those effected in January, 1982, that should be made in the written examinations. A host of suggestions were offered during the resulting exchange between participants and NRC observers, including:

- Have the same person write, administer, and grade the examination;[1]
- Better define the areas to be tested prior to the examination;
- Keep examination questions oriented toward operators;
- Be aware of (and accommodate) the differences in language and terminology in common use at different plants (examiners and candidates should speak the same language);
- Be more flexible in enforcing time limits;
- Give more weight to the training department's review of the exam;
- Don't make the weight of any one question so great that a candidate can fail on one question;
- Deemphasize theory, and place more weight on practical issues;

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[1]Participants were unanimous in making this recommendation.

- Standardize the examinations; and
- Give multiple choice examinations.[2]

The final focus question on licensing was addressed after lunch: "What post-licensing procedures are in place at your plant to assure a high level of skill is maintained in your operators? How effective are these measures and what additions or alterations would you recommend?" Participants broke into the three small groups to discuss this question and then reported each group's conclusions.

The first group to report indicated their preferences for a requalification program at the SRO level, one week of training per shift rotation, and one day (eight hours) on the simulator per shift rotation. This group felt that the entire crew should train together, including non-licensed operators and STAs. Some on-shift training should be provided, at least for the STA or a possible second SRO. Training should begin immediately upon licensing, or beginning work. Finally, this group suggested that engineers (non-operations staff) should train separately on the simulator.

The second group suggested eliminating annual testing, or retesting. This group felt that a plant specific simulator and qualified instructors were extremely important. One shift of each rotation should be spent on the simulator. At most, four people should train on the simulator at any one time, but two training groups can be run simultaneously (one in the classroom and one on the simulator). Additionally, this group recommended that the STA receive hands-on training with the simulator.

The members of the third group began by describing the retraining programs currently in place at their plants. These programs range between a high of 12 days per year on the simulator and a low of one week every two years. Classroom training ranges between about two and one-half to ten weeks per year. Most of these programs involve an annual exam, but one program tests one section at a time so that the entire exam is administered every two years. The four individuals in this group felt that their programs were close to optimal. Additionally, the group suggested that a plant specific simulator was extremely important. Training should be undertaken throughout the year (not collapsed into one time period at the end of the year). The group mentioned that adequate staff is needed for effective training. The requalification test should be operationally oriented, and both the retraining and the testing should be administered by the utility.

Evaluation. The discussion of licensing extended from the morning into the afternoon of the second day of the workshop. This day three additional NRC representatives attended the workshop, two of whom

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[2]It should be noted, however, that eight (62%) of the participants were opposed to multiple choice exams.

represented the Operator Licensing Branch. Both the large and small group discussions involved a great deal of interchange between these very interested NRC observers and the workshop participants. The discussions appeared thoughtful and informative, but despite the length of the workshop session, the majority of participants (62%) and observers (67%) indicated that the time allocated to licensing was inadequate.

All of the participants agreed or strongly agreed that the topic of licensing was important, that it was discussed in an effective way, that participants' comments were understood by workshop leaders, and that the workshop session was worthwhile. Most participants (77%) also agreed or strongly agreed that they had ample opportunity to describe their views on licensing. As with the other workshop sessions, the workshop features most frequently cited as best included the opportunity to express individual views, and the open discussion. Additionally, a number of participants specifically mentioned the exchange with the NRC, or the opportunity to hear the views of the NRC, as the workshop session's best feature. The only thing mentioned as the thing participants liked least about the workshop session on licensing was that the session was too short.

Several observers also noted the apparent time constraints of the workshop session as one of its shortcomings. Most observers indicated that the topic was important and discussed in an effective way, that participants' comments were understood by workshop leaders, and that the session on licensing was worthwhile. Only half of the observers agreed that participants had ample opportunity to describe their views on licensing. The general comments of some observers noted the extent of NRC-participant interaction. Observers' suggestions for improving the workshop session included limiting the scope of the discussion, providing more specific focus questions, reducing the number of observers present, or limiting participants to operators (excluding, e.g., all managers and training staff).

D. Session IV: Concluding the Workshop

The final workshop session was less structured than the preceding three. Designed to permit a more open discussion, this session included discussions of the workshop itself and suggestions for future workshops.

Participants suggested the following topics for discussion at future operator feedback workshops:[3]

- Manpower problems and requirements
- Procedures

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[3]In the Workshop Evaluation Form completed at the end of the workshop, participants also suggested training, licensing, and examinations as topics for inclusion at future workshops.

- New standard format for emergency operating procedures
- Pre-NRC license training requirements for ROs
- The impact of costly design changes that may not be needed
- Licensed operator (or other staff) attrition
- NRC enforcement actions
- Human factors problems
- Reactor plant changes following TMI
- Securities (insider and outsider threats)
- Examiner qualifications
- Radioactive waste management (including spent fuel storage and reprocessing)

In the course of raising and discussing these possible topics, participants emphasized the importance and value of obtaining input from operations staff before implementing changes in rules, regulations, guidelines, or hardware. Also, two additional comments on operator licensing exams emerged. First, the delay in providing exam results was criticized, and it was suggested that NRC should be more prompt in evaluating examinations. Second, one participant suggested that the exams should have two standardized sections, on thermodynamics and on plant theory, and that the rest of the exam should be plant specific.

Finally, participants made several observations about this workshop. The workshop was praised as being the "best effort" put forward to provide operations staff an opportunity to exchange information and viewpoints with the NRC. Participants and observers indicated that the workshop benefitted them. Participants indicated, however, that the workshop was too short, and that they would have preferred having more advance notice of the workshop. In connection with the time constraints, it was suggested that workshop leaders should have prepared for the workshop by obtaining background information on participants' utility and plant practices relative to the topics of discussion. Had this information been summarized at the beginning of workshop sessions, the group discussions could have concentrated more on the problems and issues suggested by the focus questions and less on current industry practices as they relate to these problems.

Evaluation. In short, this final workshop session accomplished its objectives of permitting additional comment on previous workshop discussion topics, an assessment of the workshop itself, and suggestions for future workshops. While this session was brief, participants and observers did evaluate the session. All participants agreed or strongly agreed that "the topics discussed during the final workshop were

important." Also, all participants agreed or strongly agreed with the statement, "I had an opportunity to bring up topics I wanted to discuss during this session." The majority of participants agreed or strongly agreed that they had an opportunity to express their views concerning the workshop's strengths (92%), that their comments were understood by workshop leaders (83%), and that the workshop session was worthwhile (92%). The majority (92%) of participants found the final workshop session too short or very much too short, however. As with the other workshop sessions, participants liked best the interaction and exchange that occurred during the final workshop session. The fact that the session was too short was most frequently cited as the thing participants liked least about the session.

Observers also evaluated the session favorably. All or almost all of the observers felt that the topics discussed were important, that participants were able to express their views on the workshop's strengths, that leaders understood the participants' comments, and that the workshop session was worthwhile. Although only half of the observers agreed that "all participants seemed to have an opportunity to raise topics they wanted to discuss," 83% of the observers indicated that the time allocated to this session was "just about right."

III. OVERALL WORKSHOP EVALUATION

A. Comments from the Workshop Evaluation Forms

The overall evaluation forms completed by participants and observers at the close of the workshop provide information concerning the workshop as a whole.

Participants' comments. Participants described the workshop as well organized, and indicated that workshop leaders encouraged operators to participate in discussions. In general, participants agreed that the workshop leaders kept the discussions focused on important topics, and that the workshop facilities were comfortable. All participants strongly agreed (69%) or agreed (31%) that "this sort of workshop is a good way to obtain input from operators." The vast majority of participants agreed or strongly agreed (92%) that the workshop gave them a chance to provide input to the NRC.

The overall evaluation form also asked respondents to comment on ways other than workshops in which they would be willing to provide feedback to the NRC. The majority of participants (62%) indicated that they would be willing to provide feedback in any way requested, while several participants specified a particular type of feedback mechanism: workshops or group discussions; confidential, written questionnaires; and/or personal interviews. When asked if any alternative feedback procedures might be more effective at obtaining operators' feedback than workshops, participants expressed no clear preferences for any one feedback mechanism.

The majority (77%) of participants indicated that the workshop was too short and that three formal discussion topics were too many subjects to cover in a two-day workshop. Consistent with these responses are the features listed by participants as the workshop's worst feature: 77% of the participants cited the fact that the workshop was too short. As foreshadowed in the session-by-session evaluation forms, participants indicated that the best feature of the workshop as a whole was the discussion and interchange that occurred among workshop attendees.

All of the participants indicated that they liked the fact that NRC representatives attended the workshop, though one participant expressed a "mixed reaction" to the NRC presence. Similarly, all participants indicated that NRC representatives should be present at future operator feedback workshops. Typically, participants indicated that the interaction occurring between themselves and the NRC and the feeling of having direct contact with the NRC were beneficial.

All but one of the participants had received the information packages sent to utilities prior to the workshop, and participants were unanimous in recommending that informational materials be sent out prior to workshops. All participants who received the materials read them before the workshop and found them helpful, though 75% of these participants

indicated that the materials should have been sent out sooner in order, e.g., to permit workshop attendees to obtain better input from their colleagues who did not attend the workshop.

Observers' comments. Observers who completed the evaluation form described the workshop as well organized and a good way of obtaining operator feedback. Observers indicated that workshop leaders encouraged operators to participate in discussions. Most observers found the workshop facilities comfortable. There was some disagreement about whether workshop leaders kept the discussion focused on important topics (only 40% of the observers felt leaders had). Sixty percent of the observers completing evaluation forms felt that the time allocated to this workshop was too short, while 40% indicated that the time was "just about right." Likewise, 60% of the observers indicated that three discussion topics were too many for the two-day workshop.

Observers found that the workshop's best feature was the opportunity it provided for interaction among participants and between participants and the NRC. There was no consensus as to the workshop's "worst feature"; observers listed several problems, however, including uncomfortable chairs and the need for more time and structure.

B. Conclusions

The participants and observers attending this workshop generally agreed in their assessments, praise, and criticism of the workshop. The workshop was consistently viewed as valuable, benefitting attendees particularly by providing an excellent opportunity for interaction and exchange of information. The one negative comment that was clearly voiced concerned the length of the workshop: it was too short.

It is of particular note that the participants viewed the heavy NRC representation at the workshop (a total of five NRC representatives) very favorably. Similarly, the fact that participants utilized and appreciated the pre-workshop information materials is noted. These two features represent changes from previous workshop procedures in response to assessments of those workshops.[4] The fact that they were well received suggests that these refinements in workshop format were appropriate.

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[4]See the Boston, Massachusetts, Operator Feedback Workshop Report, pp. 39-40, for future discussion of these changes.

APPENDIX A

WORKSHOP ATTENDEES

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Workshop Participants

Name	Plant
Allen, Bobby	Surry
Bockhold, George, Jr.	Hatch and Vogtle
Crisman, George	North Anna 1 and 2
Glover, J.D., Jr.	Browns Ferry
Greene, Dan	Oconee
Henry, William G.	Surry
Lowery, Fred	H.B. Robinson
Mayes, Randy	McGuire
Patrick, Jerry	Sequoyah
Pearce, Lamar W.	St. Lucie
Phillips, Ray	McGuire
Price, Joe	Oconee
Whitehead, James L.	Turkey Point 3 and 4

Workshop Attendees (cont'd)

Facilitator

Nieves, Alvaro L.	Battelle/Pacific Northwest Laboratory

Observers

Beckham, Don	U.S. Nuclear Regulatory Commission
Boegel, A. John	Battelle/Pacific Northwest Laboratory
Clausen, M.	Battelle/Pacific Northwest Laboratory
Guinn, Walter M.	The Institute of Nuclear Power Operations
McGuire, Mary	Battelle/Human Affairs Research Centers
Persensky, J. J.	U.S. Nuclear Regulatory Commission
Pruett, W. A. "Sonny"	The Institute of Nuclear Power Operations
Quick, Donald R.	U.S. Nuclear Regulatory Commission
Thompson, Hugh L.	U.S. Nuclear Regulatory Commission
Weiss, Shelley	U.S. Nuclear Regulatory Commission

APPENDIX B

WORKSHOP FORMS AND MATERIALS

THIRD OPERATOR FEEDBACK WORKSHOP
ATLANTA, GEORGIA
MAY 25-26, 1982

INTRODUCTION

One of the recommendations of the TMI Action Plan was to obtain feedback from nuclear reactor operators on a variety of issues. The NRC strongly supports this recommendation and is holding workshops to obtain input on issues of concern to the NRC. Battelle, Pacific Northwest Laboratory, has been assigned the task of designing, convening, conducting, and reporting the results of these workshops being held throughout the country. This activity is part of a larger safety technology program designed to improve the overall safety of light water reactors.

Operators at workshops held in Regions I and III have indicated that it would have been helpful to receive information on the topics to be discussed sometime prior to the workshop. As a result of their recommendation, we are providing a brief synopsis of the issue areas to be discussed in each workshop session. We would like you to read through this prior to the workshop. No preparation on your part is necessary, but it would be helpful if you gave some thought to the topic areas before coming to the meeting. You may also want to discuss some of these topics with your fellow operators prior to the meeting.

The workshop will consist of four sessions. The first three sessions will involve discussion of the following issue areas:

- Overtime Practices and Implications
- The Need for an Additional SRO in the Control Room
- Reactor Operator Licensing Examinations

The fourth session will provide an opportunity for those operators attending the workshop to raise any additional items of concern to them and will provide an opportunity for an evaluation of the workshop as a whole. The following is a brief synopsis of the issue areas:

OVERTIME PRACTICES AND IMPLICATIONS

A new policy regarding overtime has been promulgated by the NRC. This session is designed to obtain information on current overtime practices at your plant, the personal and safety implications of overtime as you see it, and your view on the new NRC policy. (A copy of the policy statement is attached.)

THE NEED FOR AN ADDITIONAL SRO IN THE CONTROL ROOM

Effective July 1, 1982, the NRC will require an additional SRO on shift at all operating nuclear power plants. A session on the general subject of

the second SRO in the control room will be held to obtain operator feedback on the possible effects of this new staffing arrangement. Of special interest is actual operator experience at those plants already in compliance, as well as views on the implications of having an additional SRO in the control room.

The details of how the second SRO will be used have not been finalized. Suggestions and recommendations developed during this workshop may influence the methods of implementing the requirement. The relationship of the new SRO role to other existing positions may also be guided by such recommendations.

REACTOR OPERATOR LICENSING EXAMINATIONS

Licensing issues are of concern to operators, utilities, the NRC, and the public. The session on licensing exams is designed to obtain operator inputs on effective methods of designing, administering, and grading the various exams. Discussion areas involve evaluation of licensee candidates on simulator exams, content of simulator exams when using generic simulators, criteria for failure, etc. Of additional interest and concern are recommendations from operators on effective methods for maintaining, monitoring, and evaluating a high level of operator performance and skill.

OPERATOR CONCERNS AND WORKSHOP EVALUATION

The fourth and final session will allow the operators the opportunity to discuss topics and concerns of interest to them. This will provide direct input to the NRC and may also suggest additional topic areas for future workshops.

At the conclusion of the workshop, your opinion and evaluation of the workshop will be sought. It will serve to evaluate this workshop and to aid in planning any future workshops.

POLICY ON FACTORS CAUSING FATIGUE OF OPERATING PERSONNEL AT NUCLEAR REACTORS

Licensees of operating plants and applicants for operating licenses shall establish controls to prevent situations where fatigue could reduce the ability of operating personnel to keep the reactor in a safe condition. The controls should focus on shift staffing and the use of overtime--key job-related factors that influence fatigue.

The objective of the controls would be to assure that, to the extent practicable, personnel are not assigned to shift duties while in a fatigued condition that could significantly reduce their mental alertness or their decision making capability. The controls shall apply to the plant staff who perform safety-related functions (e.g., senior reactor operators, reactor operators, health physicists, auxiliary operators, and key maintenance personnel).

Enough plant operating personnel should be employed to maintain adequate shift coverage without routine heavy use of overtime. However, in the event that unforeseen problems require substantial amounts of overtime to be used, on a temporary basis, the following guidelines shall be followed:

a. An individual should not be permitted to work more than 16 hours straight (excluding shift turnover time).

b. An individual should not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 hours in any 48-hour period, nor more than 72 hours in any seven day period (all excluding shift turnover time).

c. A break of at least eight hours should be allowed between work periods (including shift turnover time).

d. The use of overtime should be considered on an individual basis and not for the entire staff on a shift.

Recognizing that very unusual circumstances may arise requiring deviation from the above guidelines, such deviation shall be authorized by the plant manager or his deputy, or higher levels of management. The paramount consideration in such authorization shall be that significant reductions in the effectiveness of operating personnel would be highly unlikely.

In addition, procedures are encouraged that would allow licensed operators at the controls to be periodically relieved and assigned to other duties away from the control board during their tour of duty.

OPERATOR FEEDBACK WORKSHOP #3
ATLANTA, GEORGIA
MAY 25-26, 1982

REGISTRATION FORM

NAME:_____

UTILITY:_____

POSITION TITLE: ____RO ____SRO OTHER (INDICATE)_____

PLANT:_____

PLANT TYPE: ____BWR ____PWR

YEARS CONTROL ROOM EXPERIENCE IN COMMERCIAL PLANT:_____

PRIOR NAVY EXPERIENCE: ____YES ____NO NO. OF YEARS:_____

AGE:_____ YEARS

EDUCATION:

H.S. (GED)_____

H.S. GRADUATE_____

SOME COLLEGE_____ NO. OF YEARS:_____

COLLEGE GRADUATE_____ DEGREE:_____ FIELD:_____

OTHER (INDICATE):_____

OPERATOR FEEDBACK WORKSHOP III

OVERTIME

Focus Questions

Focus Question 1*

Consider present overtime policy and practices at your plant. On the average, how often and how long are operators requested or required to work overtime? How do shift rotations and scheduling effect overtime practices?

Focus Question 2

What are the safety and personal implications of overtime in general and at your plant specifically? NOTE: personal implications may involve your feelings about or how you are affected by overtime requirements, both on and off the job.

Focus Question 3

Consider the NRC letter on overtime controls and regulations which was sent to you in your pre-workshop information packet. What are the personal and safety implications of the new regulations? Are there alternative regulations which would be better? Are there alternatives to overtime which you would prefer?

---

*Each focus question appeared at the top of a single page.

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

OVERTIME PRACTICES AND IMPLICATIONS

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of overtime was important for us to consider.					
The way we discussed overtime was effective.					
I had ample opportunity to describe my views on overtime.					
I think my comments on overtime were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to overtime was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your comments

OPERATOR FEEDBACK WORKSHOP III

THE SECOND SRO

Focus Questions

Focus Question 1*

Do you believe there should be a SRO in the Control Room at all times?

Focus Question 2

Since the details of how the second SRO will be used are not finalized, how would you suggest this requirement be implemented? Consider alternative options and their relative advantages and disadvantages.

---

*Each focus question appeared at the top of a single page.

WORKSHEET - STA

Below are some general questions regarding the position of STA at your plant. We are interested in your own experiences and opinions.

1. Thinking about a routine work week (normal operations, no major planned evolutions) how often is the STA in the control room during your shift?

   _____ Most of the day, every day.
   _____ Some part of every day.
   _____ A few times during the week.
   _____ Only when called by control room crew.

2. a. How often do you discuss control room operations or status with an STA during the course of a routine shift?

   Never _____ (Please skip to question #3)
   Rarely (once a month or less) _____
   Several times a month _____
   A few times a week _____
   Almost every day _____

   b. What kinds of things have you discussed with an STA (e.g. work requests, procedures, tech. specs., potential safety problems, LERs, etc.)?_____

   _____

   _____

   _____

   _____

3. a. Approximately how many unplanned transients have you experienced on-shift in the past year? _____ (If none, please skip to question #4)

   b. Did the operators need assistance in any of these transient situations?
   Yes _____ No _____
   If yes, in how many cases? _____

   c. For each transient situation please list who was consulted and what assistance, if any, was provided (e.g. read procedures, valve operation, diagnostic assistance, phone communication, etc.).

Case 1 Person Contacted: _____

Assistance Provided: _____

_____

_____

_____

_____

How helpful was the assistance? _____

Case 2 Person Contacted: _____

Assistance Provided: _____

_____

_____

_____

_____

How helpful was the assistance? _____

Case 3 Person Contacted: _____

Assistance Provided: _____

_____

_____

_____

_____

How helpful was the assistance? _____

[Please continue on the back of this sheet if more space is needed.]

4. There are many different opinions about the STA position. Below are a number of statements about the use of the STA; please indicate the extent to which you personally agree or disagree with each statement.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. It's helpful to have the STA around during transients.	1	2	3	4	5
b. The problem with the STA is that the wrong people are being hired for the job.	1	2	3	4	5
c. The STA is an unnecessary position.	1	2	3	4	5
d. The STA has too little authority during transient conditions.	1	2	3	4	5
e. The STA should be required to have a degree.	1	2	3	4	5
f. The STA has nothing to do during normal operations.	1	2	3	4	5
g. The STA should have RO or SRO experience.	1	2	3	4	5
h. Under most transient conditions the STA makes an important contribution to plant safety.	1	2	3	4	5

5. Background Information

a. Type of reactor at your plant: BWR _____ PWR _____

b. Type of unit: Single _____ Multiple _____

c. Job Title: Reactor Operator _____ Current License RO Yes ___ No ___
Senior Reactor Operator _____ SRO Yes ___ No ___
Shift Supervisor _____
Other (please indicate) _____

d. How long have you been in this position at your current plant?
_____ years _____ months

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

THE NEED FOR AN ADDITIONAL SRO IN THE CONTROL ROOM

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of an additional SRO was important for us to consider.					
The way we discussed an additional SRO was effective.					
I had ample opportunity to describe my views on an additional SRO.					
I think my comments on an additional SRO were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to an additional SRO was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your comments

OPERATOR FEEDBACK WORKSHOP III

LICENSING

Focus Questions

Focus Question 1*

The simulator exam is often difficult to grade and administer. This is especially true when a generic rather than a plant specific simulator must be used. What do you feel ought to be emphasized in the simulator exam? In evaluating an operator's performance on the simulator exam, what criteria should be applied for passing? For failing?

Focus Question 2

There was no written Focus Question 2; oral examinations were discussed without a written focus question (see page 13, above).

Focus Question 3

Effective January 1, 1982 the NRC is testing a new written examination format. The length and number of sections have been reduced in an attempt to improve the exam. What additional changes would you recommend (RO,SRO)?

Focus Question 4

What post licensing procedures are in place at your plant to assure a high level of skill is maintained in your operators? How effective are these measures and what additions or alterations would you recommend?

---

*Each focus question appeared at the top of a single page.

DISTRIBUTED WITH FOCUS QUESTION 3

APPENDIX A

REACTOR OPERATOR EXAMINATION

RELATIONSHIP OF POINT VALUES BETWEEN CATEGORIES

New Categories			Old Categories		
1.	(15)	Principles of Nuclear Power Plant Operation	A.	(13)	Principles of Reactor Operation
			C.	(13)	General Operating Characteristics
2.	(10)	Fundamentals of Thermodynamics Heat Transfer & Fluid Flow	H.	(12)	Principles of Heat Transfer and Fluid Mechanics
3.	(25)	Plant Design, Including Safety and Emergency Systems	B.	(12)	Features of Facilit Design
			E.	(13)	Safety and Emergency Systems
4.	(25)	Instruments and Controls	D.	(13)	Instruments and Controls
			G.	(5)	Radiation Control and Safety
5.	(25)	Procedures - Normal, Abnormal, Emergency and Radiological Control	F.	(14)	Standard and Emergency Operating Procedures
			G.	(5)	Radiation Control and Safety

DISTRIBUTED WITH FOCUS QUESTION 3

APPENDIX C

SENIOR OPERATOR EXAMINATION

RELATIONSHIP OF POINT VALUES BETWEEN CATEGORIES

New Category			Old Category	
6.	(15)	Theory of Nuclear Power Plant Operation	I. (16)	Reactor Theory
			K. (16)	Specific Operating Characteristics
			L. (8)	Core Parameters
7.	(10)	Theory of Fluids and Thermodynamics	N. (16)	Theory of Fluids and Thermodynamics
8.	(25)	Plant Systems: Design, Control and Instrumentation	N/A for SRO; contains questions from RO old categories B, D, and E.	
9.	(25)	Procedures - Normal, Abnormal, Emergency, Radiological Control	J. (15)	Radioactive Materials Handling Disposal and Hazards
			L. (8)	Fuel Handling Also contains questions from RO old categories F and G

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

REACTOR OPERATOR LICENSING EXAMINATIONS

Your comments and input are valuable and necessary to assist us in evaluating this workshop session and in improving any future workshops. Please place a check in the box that is closest to your opinion for each of the following statements.

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of licensing was important for us to consider.					
The way we discussed licensing was effective.					
I had ample opportunity to describe my views on licensing.					
I think my comments on licensing were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to licensing was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your comments

OPERATOR FEEDBACK EVALUATION FORM

FINAL WORKSHOP SESSION

Please evaluate the final workshop session by placing a check in the box that is closest to your opinion on each of the following statements:

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topics discussed during the final workshop session were important.					
I had an opportunity to bring up topics I wanted to discuss during this session.					
I had an opportunity to express my views on the strengths of this workshop.					
I think the comments I made during this workshop session were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel the time allocated to the final session was:					

The thing I liked best about this workshop session was:

The thing I liked least about this workshop session was:

Additional comments or suggestions:

Thank you for your comments

OPERATOR FEEDBACK WORKSHOP EVALUATION FORM

Please evaluate the workshop as a whole on the following items:

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The workshop was well organized.					
Workshop leaders encouraged operators to participate in discussions.					
Workshop leaders kept the discussions focused on important topics.					
The workshop facilities (meeting room, etc.) were comfortable.					
This sort of workshop is a good way to obtain input from operators.					
This workshop gave me a chance to provide input to the NRC.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to this workshop was:					

Please list any other ways you would be willing to provide input to NRC (for example, telephone interviews, personal interviews, written questionnaires, some other type of workshop, etc.):

Which of these other ways of providing input might be better (more effective) at obtaining feedback than this workshop?

- continued on page 2 -

Descriptions of the workshop were sent to each utility before this workshop:

Did you see these materials?	☐ Yes	☐ No
Did you have an opportunity to read the materials?	☐ Yes	☐ No
Were the materials helpful?	☐ Yes	☐ No
Should materials of this type be sent out before any other feedback workshops that may be held?	☐ Yes	☐ No

Do you have any other comments on materials that were mailed out before the workshop?

Three formal topics were discussed in this workshop. Do you feel that this is a good number of discussion topics for a two-day workshop?

- ☐ Yes
- ☐ No - it is too many
- ☐ No - it is too few topics

How many operators should should participate in the large group of feedback workshops? _____

Do you feel that small discussion groups should be used at feedback workshops?

- ☐ Yes - more often than they were used here
- ☐ Yes - about as often as they were used here
- ☐ Yes - but less often than they were used here
- ☐ No - small discussion groups should not be used

If small discussion groups are used, how many operators should participate in each small group? _____

Did you like the fact that NRC representatives attended this workshop?

☐ Yes ☐ No

- continued on page 3 -

Should NRC representatives be present at future operator feedback workshops?

☐ Yes ☐ No

Please explain the reasons for your answer:

Please list other topics that you think should be included in any future operator feedback workshops:

Considering the workshop as a whole, what was its best feature?

Considering the workshop as a whole, what was its worst feature?

Other comments or suggstions:

Please check all that apply to you:

☐ Reactor Operator ☐ Shift Supervisor

☐ Senior Reactor Operator ☐ Other job or title (please specify)

_____

Thank you very much for your comments and participation.

OPERATOR FEEDBACK WORKSHOP: OBSERVER'S EVALUATION FORM

I. Please evaluate each of the workshop sessions on the following items:

OVERTIME PRACTICES AND IMPLICATIONS

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of overtime was important.					
Overtime was discussed in an effective way.					
All participants seemed to have ample opportunity to describe their views on overtime.					
I think participants' comments on overtime were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to overtime was:					

Additional comments or suggestions concerning the overtime session:

Do you have any suggestions or ideas for how the session on overtime could be run more effectively?

- continued on page 2 -

THE NEED FOR AN ADDITIONAL SRO IN THE CONTROL ROOM

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of the additional SRO was important.					
The role of the additional SRO was discussed in an effective way.					
All participants seemed to have ample opportunity to describe their views on the additional SRO.					
I think participants' comments on the additional SRO were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to the additional SRO was:					

Additional comments or suggestions concerning the session on the need for an additional SRO in the control room:

Do you have any suggestions or ideas for how the session on the additional SRO could be run more effectively?

- continued on page 3 -

REACTOR OPERATOR
LICENSING EXAMINATIONS

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topic of licensing was important.					
Licensing was discussed in an effective way.					
All participants seemed to have ample opportunity to describe their views on licensing.					
I think participants' comments on licensing were understood by workshop leaders.					
I feel that this was a worthwhile workshop session.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to licensing was:					

Additional comments or suggestions concerning the licensing session:

Do you have any suggestions or ideas for how the session on licensing could be run more effectively?

- continued on page 4 -

FINAL WORKSHOP SESSION

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The topics discussed during the final workshop session were important.					
All participants seemed to have an opportunity to raise topics they wanted to discuss.					
All participants seemed to have an opportunity to express their views on the strengths of this workshop.					
I think participants' comments were understood by workshop leaders.					
I feel that the time allocated to the final session was:					

VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG

Additional comments or suggestions concerning the final session session:

Do you have any suggestions or ideas for how the final, open-discussion session could be run more effectively?

- continued on page 5 -

III. Please evaluate the workshop as a whole on the following questions:

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
The workshop was well organized.					
Workshop leaders encouraged operators to participate in discussions.					
Workshop leaders kept the discussions focused on important topics.					
The workshop facilities (meeting room, etc.) were comfortable.					
This sort of workshop is a good way to obtain input from operators.					

	VERY MUCH TOO SHORT	TOO SHORT	JUST ABOUT RIGHT	TOO LONG	VERY MUCH TOO LONG
I feel that the time allocated to this workshop was:					

Please list any other ways in which you believe operators would be willing to provide input to NRC (for example, telephone interviews, personal interviews, written questionnaires, some other type of workshop, etc.):

Which of these other ways of providing input might be better (more effective) than this workshop?

- continued on page 6 -

Considering the workshop as a whole, what was its best feature?

Considering the workshop as a whole, what was its worst feature?

What other groups or individuals ought to be invited to any future feedback workshops? What role should they play in the workshops?

Group/Individual	Role

What is the optimal size for operator feedback workshops?

Number of operators (workshop participants) _____

Number of leaders _____

Number of observers _____

Total number present at the workshop _____

Do you feel that small discussion groups should be used at feedback workshops?

- ☐ Yes - more often than they were used here
- ☐ Yes - about as often as they were used here
- ☐ Yes - but less often than they were used here
- ☐ No - small discussion groups should not be used

If smaller discussion groups are used, how many operators should be in each group?

_____

- continued on page 7 -

Four topics were discussed in this workshop. Do you feel that this is a good number of discussion topics for a two-day workshop?

- ☐ Yes
- ☐ No - it is too many
- ☐ No - it is too few topics

Please describe any other experiences you have had with feedback workshops. Indicate from what group(s) feedback was obtained and the effectiveness of the workshops in obtaining feedback.

Group	Effectiveness

Please describe any experiences you have had with techniques for obtaining feedback other than workshops. Indicate from whom feedback was obtained, the feedback mechanism, and the effectiveness of the technique for obtaining feedback.

Group	Type of Feedback Mechanism	Effectiveness

In general, what technique(s) do you believe is (are) most effective in obtaining feedback from groups such as reactor operators?

- continued on page 8 -

Do you have any additional comments or suggestions concerning this workshop or any future workshops?

Please indicate your name and/or professional affiliation and job title so that we can interpret your responses to this evaluation form appropriately:

Name _____

Title _____

Affiliation/Organization/Agency _____

_____

Thank you very much for your comments and suggestions. Please return this form to:

Mary V. McGuire
Battelle-Human Affairs Research Centers
4000 N.E. 41st Street
Seattle, WA 98105

APPENDIX D

APPENDIX D

WORKSHOP PARTICIPANTS AND OBSERVERS:

SUMMARY TABLES OF BACKGROUND INFORMATION

Table D-1

Job/Position Title of Workshop Participants

	Workshop I Chicago	Workshop II Boston		Workshop III Atlanta	Total
		Group I	Group II		
Reactor Operator (RO)	6	3	0	4	13
Senior Reactor Operator (SRO)	4	1	1	6	12
Shift Supervisor (SS)	1	7	4	1	13
Shift Technical Advisor			1		1
Operations or Unit Supervisor	1	2	2	1	6
Training Staff or Supervisor	3	4	7	1	15
Total Number of Participants	15	17	15	13	60

Table D-2

Age of Workshop Participants

	Workshop I Chicago	Workshop II Boston		Workshop III Atlanta
		Group I	Group II	
21-25				1
26-30	3	2	3	4
31-35	9	5	5	4
36-40	2	4	6	2
41-45		2		
46-50	1	1	1	
51-55		3		2
Average Age	34	39	35	35
Median Age	34	37	35	34
Range:				
Low	27	27	25	25
High	47	55	50	55

Table D-3

Educational Background of Workshop Participants

	Workshop I Chicago	Workshop II Boston		Workshop III Atlanta
		Group I	Group II	
High School Graduate or GED	7	5	5	4
Some College	3	7	5	7
Associate Degree	3	2		
Bachelors Degree	2	2	3	2
Some Post-graduate		1	1	
Graduate Degree			1	
Total	15	17	15	13

Table D-4

Number of Years of Control Room Experience
in Commercial Plant

	Workshop I Chicago	Workshop II Boston[a]		Workshop III Atlanta
		Group I	Group II	
0-4	7	5	4	6
5-9	6	3	7	3
10-14	2	6	3	4
15 or over		1		
Total	15	15	14	13

[a]Two people in Group I and one in Group II did not provide this information.

Table D-5

Nuclear Navy Experience of Workshop Participants

	Workshop I Chicago	Workshop II Boston		Workshop III Atlanta
		Group I	Group II	
Nuclear Navy Experience	7	9	6	6
No Nuclear Navy Experience	8	8	8	7
Total	15	17	14[a]	13

[a]One person in this group did not provide this information.

Table D-6

Numbers and Institutional Affiliations of Observers at Each Workshop[a]

	Workshop I Chicago	Workshop II Boston	Workshop III Atlanta
NRC			
Headquarters	1	3	4
Region II			1
NRC--Contractors			
Battelle	3	3	3
Oak Ridge		1	
Institute of Nuclear Power Operations			2
Total Number of Observers Present at Each Workshop	4	7	10

[a]A total of 16 individuals observed at least one workshop. This table shows the numbers and institutional affiliations of observers at each workshop. The table sums to more than 16 because several individuals attended more than one workshop.

APPENDIX E

APPENDIX E

REPRESENTATION OF UTILITIES AND SITES AT FEEDBACK WORKSHOPS*

*Information included in this appendix concerning the number of utilities and sites and the operating status of plants was taken from the "World List of Nuclear Power Plants," appearing in Nuclear News, February, 1982, pp. 96-101.

Table E-1

Representation at Workshop I (Chicago): Number of Utilities and Sites with Operating Plants in Region III

	Number of Utilities	Number of Sites with at Least One Operating Plant
Total	19	13
Number invited to workshop	14	13
Number represented at workshop	9	10

Table E-2

Representation at Workshop I (Chicago): Number of Utilities With/Without Operating Plants in Region III

	Number of Utilities Represented at Workshop	Number of Utilities Not Represented at Workshop	
		Declined	Not Invited
Number of utilities with at least one operating plant	9	1	0
Number of utilities with no operating plants	0	4	5
Total	9	5	5

Table E-3

Representation at Workshop II (Boston): Number of Utilities and Sites with Operating Plants in Region I

	Number of Utilities	Number of Sites with at Least One Operating Plant
Total	19	16
Number invited to workshop	19	16
Number represented at workshop	16	14

Table E-4

Representation at Workshop II (Boston): Number of Utilities With/Without Operating Plants in Region I

	Number of Utilities Represented at Workshop	Number of Utilities Not Represented at Workshop	
		Declined	Not Invited
Number of utilities with at least one operating plant	14	2	0
Number of utilities with no operating plants	2	1	0
Total	16	3	0

Table E-5

Representation at Workshop III (Atlanta): Number of Utilities and Sites with Operating Plants in Region II

	Number of Utilities	Number of Sites with at Least One Operating Plant
Total	10	13
Number invited to workshop	10	13
Number represented at workshop	6	10

Table E-6

Representation at Workshop III (Atlanta): Number of Utilities With/Without Operating Plants in Region II

	Number of Utilities Represented at Workshop	Number of Utilities Not Represented at Workshop	
		Declined	Not Invited
Number of utilities with at least one operating plant	6	2	0
Number of utilities with no operating plants	0	2	0
Total	6	4	0

APPENDIX F

APPENDIX F

INTERVIEW PROTOCOL FOR SURVEY ON USEFULNESS OF FEEDBACK OBTAINED AT WORKSHOPS

OPERATOR FEEDBACK PROJECT TASK 2: USEFULNESS SURVEY INTERVIEW PROTOCOL

Date: _____

Interviewee: _____

Interviewed: ____ via telephone

____ in person; location _____

1. What has been the nature of your contact with, or exposure to, the workshops?

	Workshop		
	Chicago	Boston	Atlanta
Attended Workshops			
Discussed with:			
Colleagues			
Battelle staff			
Other			
Read Battelle-prepared workshop reports			
Read NRC internal reports or trip reports			
Other			

2. In what aspect of the workshop were you interested?

____ The feedback being generated (content)

____ The nature of the workshop (process)

____ Both

WORKSHOP CONTENT:

3.	Concerning what subject areas did you seek information?	In what areas did you obtain information?	How useful was the information you obtained? (on a 10-point scale, 10 high)
(MANPOWER & STAFFING) Power Plant Staffing (Chicago)			
The Role of the STA (Chicago; Boston)			
Control Room Engineering Support (Boston)			
Need for Additional SRO in Control Room (Atlanta)			
Overtime Practices and Implications (Atlanta)			
(LICENSING & TRAINING) Simulator Training (Boston)			
Plant Drills (Chicago)			
The Licensing Process (Chicago)			
Licensing Exams and Requalifications (Boston)			
RO Licensing Exams (Atlanta)			
OTHER			

4. How did you use the information you obtained?

5. How did you want to use this information? I.e., why did you initially seek the information?

   ____ Wanted to use as described above--as it was used

   ____ Wanted information for another purpose (please specify):

WORKSHOP PROCESS:

6. You indicated that you were [also] interested in information about the workshop process itself. In what aspect of the workshop were you interested (e.g., planning process, invitation procedure, workshop participants, observers, etc.)?

7. Did you obtain the information you needed or wanted?

   ____ Yes

   ____ No--How did the information you obtained differ from (or fall short of) what you wanted?

8. How useful was the information you obtained? Please use a 10-point scale where 10 is high and 1 is low.

9. How did you use this information?

10. How did you want to use this information? I.e., why did you initially seek the information?

____ Wanted to use as described above--as it was used

____ Wanted information for another purpose (please specify):

11. Would you judge the workshop as an effective means of obtaining feedback information from reactor operators?

____ Yes ____ No

Why is that (e.g., workshop good, but reporting associated with it is weak; not enough people attend workshops, etc.)?

12. Relative to other feedback mechanisms, would you judge the workshop as an effective means of obtaining feedback?

____ Yes ____ No

More specifically, which is more effective:

____	mailed survey	or	____	workshop
____	telephone interview	or	____	workshop
____	personal interview	or	____	workshop
____	ombudsman system	or	____	workshop
____	suggestion box	or	____	worksnop

Comments:

13. If you had a question about another topic discussed at one of the workshops, would you check your notes, talk with someone who attended the workshop, or again refer to a workshop report?

	Workshop		
	Chicago	Boston	Atlanta
Check Notes			
Talk with: Colleagues Battelle staff Other			
Read Battelle-prepared workshop reports			
Read NRC internal reports or trip reports			
Other			
Comments			

14. Is it useful to obtain information from operators?

____ Yes

____ No

Why is that (e.g., information they provide isn't useful; they have no authority anyway, etc.)?

15. What would be a better source of feedback for the NRC?

THANK YOU

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16. ABSTRACT (200 words or less)

This report presents the results of three workshops that were designed, conducted, and assessed for the Nuclear Regulatory Commission. The purposes of the workshops were to (1) examine the effectiveness of workshops and other techniques as mechanisms for obtaining feedback from utility personnel, including comparison of several different workshop procedures; and (2) obtain feedback for the NRC on topics of interest and concern. The workshops were held in NRC Regions I, II, and III between December 1981 and May 1982. A total of 60 utility personnel attended the workshops and offered comments and suggestions concerning staffing, engineering support in the control room, training tools, training programs, and licensing examinations. Workshop participants and observers evaluated the workshops favorably. Further assessment of the workshop process and content suggested that the workshops were effective in obtaining useful feedback for the NRC.

17. KEY WORDS AND DOCUMENT ANALYSIS

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workshop procedures
engineering support
operator training
staffing

17b. IDENTIFIERS/OPEN-ENDED TERMS

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