

March 6, 2000

FOR: The Commissioners
 FROM: William D. Travers /RA/
 Executive Director for Operations
 SUBJECT: ANNUAL STATUS REPORT ON THE ADMINISTRATION OF NRC'S REQUALIFICATION PROGRAM AND THE INITIAL OPERATOR LICENSING EXAMINATIONS (WITS 8800098)

- PURPOSE:
- BACKGROUND:
- DISCUSSION:
 - NRC Requalification Program and Inspection Summary for Fiscal Year 1999
 - New Reactor Oversight Inspection Process
 - Summary of Initial Examination Results
 - Operator Licensing Program Initiatives
- CONCLUSION:

PURPOSE:

To inform the Commission of the status of the NRC's licensed operator requalification program and the results of NRC's initial licensing examinations for reactor operator (RO) and senior reactor operator (SRO) applicants.

BACKGROUND:

The staff has submitted periodic reports to the Commission since August 1989 on the status of NRC's licensed operator requalification program oversight activities. These reports also contained results of initial RO and SRO licensing examinations. The most recent of these reports was SECY-99-056 (dated February 22, 1999).

DISCUSSION:

NRC Requalification Program and Inspection Summary for Fiscal Year 1999

During fiscal year (FY) 1999, the staff continued to monitor the licensees' licensed operator requalification training and examination programs. The staff inspected the licensed operator requalification programs at 39 power reactor facilities during FY 1999. The inspections were to (1) confirm that the licensee's requalification program ensured safe power plant operation by adequately evaluating how well the individual operators and crews have mastered training objectives; (2) determine the licensee's effectiveness in evaluating and revising the requalification program for licensed operators based on their operational performance, including requalification examinations; (3) determine the effectiveness in ensuring that the individuals who are licensed to operate the facility satisfy the conditions of their licenses as specified in 10 CFR 55.53; and (4) provide regional management with the information it needs to assess the performance of the facility licensee's licensed operator requalification program and to determine the need for additional inspections or NRC-conducted examinations. Each of the programs was evaluated using the process described in NRC Inspection Procedure (IP) 71001, "Licensed Operator Requalification Program Evaluation," or draft inspection procedure (IP-71111.11, "Reactor Safety," Attachment 11, "Licensed Operator Requalification Program") that incorporated the new reactor oversight inspection process as discussed in SECY-99-007, "Recommendations for Reactor Oversight Process Improvements," dated January 8, 1999. The staff conducts the requalification program inspection at least every 24-months which is consistent with each licensee's requalification examination cycle. During FY 1999, the staff did not conduct any requalification examinations. The staff may, as needed, conduct requalification examinations when the NRC loses confidence in a licensee's ability to conduct its own examinations or when the NRC believes that the inspection process will not produce the necessary insights into the quality of the licensee's program.

The staff believes that the performance level of licensed operator training programs as a whole at power reactor facilities is being sustained. Additionally, the licensees have continued to demonstrate their ability to develop and administer licensed operator requalification examinations with very little oversight or with minimum intervention from the NRC. The attachment contains the individual results of the requalification program inspections at each facility inspected during FY 1999. A SAT (satisfactory) rating for a requalification program inspection indicates that the licensee's requalification program exhibited no major program failure adverse to safety. The following table summarizes the results of requalification program inspections.

Requalification Program (Examination and/or Inspection) Results for Fiscal Year 1999			
Element	Number Evaluated	SAT/UNSAT	Percent SAT
NRC Program Examinations (NUREG-1021)	None	N/A	N/A
NRC Program Inspections (IP-71001)	37	37/0	100
NRC Pilot Program Inspections (IP-71111.11)	2	2/0	100

Total	39	39/0	100
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The next table shows the requalification program inspection results since FY 1993.

NRC Requalification Program Evaluation Results for Fiscal Years 1993 through 1999							
Element	1993	1994	1995	1996	1997	1998	1999
Number of Requalification Programs Evaluated	43	43	58	41	41	32	39
Number of Satisfactory/Number of Unsatisfactory	43/0	43/0	58/0	41/0	41/0	32/0	39/0
Percent Satisfactory	100	100	100	100	100	100	100

Inspections of the licensed operator requalification program continue to identify site-specific strengths and weaknesses. The licensees continue to demonstrate the ability to develop and administer the simulator portion of the operating test, the ability of the licensees' evaluators to identify licensed operator deficiencies, the constructive use of training feedback in providing input to improve licensed operator requalification training, and the continual involvement of operations department and plant management representatives in examination observation and evaluation. The licensees continue to be challenged by the following issues: requalification written examination quality, use of repetitive test items, and validation of job performance measures.

New Reactor Oversight Inspection Process

The Licensed Operator Requalification Program Evaluation inspection procedure (IP-71001) has been revised to reflect the NRC's new reactor oversight baseline inspection process. The inspection procedure has been designated as IP-71111.11, "Reactor Safety," Attachment 11, "Licensed Operator Requalification Program." In addition to maintaining the objectives of the previous procedure, the procedure provides insights on the following key attributes: (1) human performance (pre- and post-event human error) in the Initiating Event cornerstone as well as the Mitigating Systems and Barrier Integrity cornerstones; (2) procedure quality issues (post-event operating procedures), in the event licensed operator performance issues are identified in the Initiating Events and Mitigating Systems cornerstone areas; and (3) limited emergency response organization performance (self-assessment, severe-accident management guidelines implementation and actual response) regarding initial and subsequent interactions by licensed operators (emergency action levels and protective action recommendations) in the Emergency Preparedness cornerstone area.

During FY 1999, the NRC piloted the revised requalification program inspection procedure at two sites (Cooper and Salem). These results indicate that the licensees' licensed operator requalification programs had acceptable performance levels, with cornerstone objectives being met with no significant deviation from expected performance. The staff is confident that the new reactor oversight inspection process will continue to determine whether licensed operators are trained and capable of safely operating their facilities.

Summary of Initial Examination Results

The staff is continuing to administer initial licensing examinations to applicants for RO and SRO licenses at power and non-power reactor facilities. The following table gives results of the power reactor initial operator licensing examination over a period of 5 years from FY 1995 through FY 1999. During FY 1999, the staff administered 58 site-specific initial licensing examinations to RO and SRO applicants at power reactor facilities. This number includes 53 site-specific licensing examinations that had been prepared by facility licensees in accordance with the NRC's revised examination guidance. The table separates NRC-prepared and facility-prepared examination results for FYs 1996, 1997, 1998, and 1999. In addition, the staff administered 263 generic fundamentals examinations during FY 1999 to prospective license applicants at power reactor facilities.

Power Reactor Initial Examination Results										
Examination		Percentage of Applicants Who Passed During the Fiscal Year								
		1995	1996		1997		1998		1999	
			NRC Prepared	Facility Prepared	NRC Prepared	Facility Prepared	NRC Prepared	Facility Prepared	*NRC Prepared	Facility Prepared
RO	Written	94	98	93	96	89	N/A	89	100	89
	Operating	98	94	94	93	94	N/A	99	100	93
SRO	Written	96	96	94	91	93	100	96	100	94
	Operating	95	92	95	84	92	94	96	100	98

*Only a limited number of examinations were NRC- prepared.

These results indicate that initial operator training programs at power reactors continue to produce a large number of applicants who pass the operator licensing examinations, regardless of whether the examinations were prepared by the NRC or by the licensees (with NRC review and approval). During FY 1999, 429 applicants received an NRC-approved initial examination. The NRC regional examiner staff routinely works closely with developers of facility-prepared examinations to ensure that initial licensing examinations are consistent with NRC expectations as provided in guidelines such as NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." The staff continues to seek ways to resolve issues associated with the initial licensing examination process without lowering the current examination standards that are universally applied to all power reactor facility licensees. The staff will continue to refine the initial examination process, as a whole, to ensure effectiveness, efficiency, and consistency with other NRC oversight programs.

Operator license applicants who are denied a license because they failed a written examination or operating test are notified of their denials in writing. The proposed denial letters describe the nature of the deficiencies noted and inform the applicants of their available response options.

The applicants may (1) reapply pursuant to the provisions of [10 CFR 55.35](#), (2) request an informal NRC staff review of the examination's grading, and/or (3) request a hearing pursuant to [10 CFR 2.103\(b\)\(2\)](#).

The following table indicates the total number of applicants who requested NRC review of their examination results including the review outcomes from FY 1995 through FY 1999. The data indicates that there has been an increase in the number of applicants who requested review of their examination failures since revising the operator licensing program on October 1, 1995, to allow for facility-prepared examinations. The staff believes that the recently implemented change to Revision 8 of NUREG-1021 that encourages facility licensees to solicit and consider comments from the license applicants during the written examination review and grading processes may have contributed to the relative decrease in the number of requested reviews between FY 1998-1999. The staff anticipates that the number of applicant-requested reviews should continue to decrease as the facility licensees become more familiar with NUREG-1021 and its quality review checks for proposed examination test items.

Power Reactor Initial Examination Denial Results					
Description	1995	1996	1997	1998	1999
Number of Proposed Applicant Denials	30	47	44	41	60
Number of Applicant Requested Reviews	4	12	13	20	16
Number of Final Denials	30	44	35	28	47
Number of Licenses Issued upon Review	0	3	9	13	13

Since FY 1995, the staff has noted an increase in the relative number of denials being overturned by the review process. The overturned denials were attributed to a number of issues, for example, new information provided by the applicant, test item deficiencies, and/or grading deficiencies. In an effort to address this issue, the staff has conducted training on examination development and the grading process and has stressed in regional and national workshops with examiners and the industry the importance of examination validation. In FY 2000 to date we have not received any applicant-requested reviews.

The following table gives the results of the non-power reactor initial operator licensing examinations over a period of 5 years from FY 1995 through FY 1999. During FY 1999, the staff administered 17 site-specific initial licensing examinations to RO and SRO applicants at non-power reactor facilities in accordance with the current examination guidance in NUREG-1478, "Non-Power Reactor Operator Licensing Examiner Standards."

Non-Power Reactor Initial Examination Results						
Examination		Percentage of Applicants Who Passed During the Fiscal Year				
		1995	1996	1997	1998	1999
RO	Written	73	74	70	87	63
	Operating	90	97	93	100	96
SRO	Written	76	75	100	94	100
	Operating	98	96	95	100	100

These results indicate that training programs for non-power reactor facility operators generally produce applicants who pass the NRC's licensing examinations at a lower percentage rate on the written examination and a higher percentage rate on the operating test. These results are consistent with those of previous years, except for the RO applicants' performance on written examinations administered in FY 1999. The decreased level of performance exhibited by the ROs in FY 1999 is more in line with lower performance levels of previous years in that ROs historically achieve lower scores than SROs. Because of the relatively low number of participants, it is the staff's view that no statistical significance should be attached to these results. The staff has noted that most RO applicants are students enrolled in full-time academic programs, while SRO applicants are generally employed to operate the reactor, have fewer distractions, and are more confident, which contribute to their higher

pass rates.

Operator Licensing Program Initiatives

During FYs 1999 and 2000 to date, the staff continued efforts to improve the NRC's oversight of the operator licensing program and responded to stakeholder concerns. Examples of the staff's initiatives include the following:

- (1) Revised in its entirety inspection procedure IP-71001, "Licensed Operator Requalification Program Evaluation," to include risk-informed, performance-based perspectives associated with the pilot reactor oversight inspection program currently in progress. Final revision is expected in FY 2000 after all pilot licensed operator requalification program results have been assessed by the staff.
- (2) Developed and implemented the "Operator Licensing Program" home page (www.nrc.gov/NRC/REACTOR/OL/OLhome.html) on the NRC's external (public) Web server. The home page provides immediate access to general information, regulations, program changes, guidance documents, and Commission papers associated with the operator licensing program.
- (3) Conducted a training conference at NRC headquarters for operator licensing examiners in the third quarter of FY 1999 to ensure that NRC examiners continue to receive appropriate training and policy direction from senior executives and managers, to discuss pertinent topics, and to provide feedback to the Office of Nuclear Reactor Regulation (NRR). The conference remains an effective tool for promoting consistency in the operator licensing program.
- (4) Issued and implemented an amendment to [10 CFR Part 55](#) to allow power reactor facility licensees to prepare the written examinations and operating tests for NRC review and to proctor, and grade the written examinations.
- (5) Issued and implemented Final Revision 8 of NUREG-1021 whereby facility licensees voluntarily participate in the development of initial operator licensing examinations.
- (6) Sponsored regional workshops with facility licensees, and attended several meetings with industry representatives, such as Middle Atlantic Nuclear Training Group and Nuclear Energy Institute (NEI) to promote a better understanding of the changes being brought about by Final Revision 8 of NUREG-1021. The staff participated in a 2-day industry-sponsored national workshop in February 2000 to focus on broad-based implementation issues associated with utility-prepared initial operator licensing examinations.
- (7) Met with industry representatives from NEI and the Institute of Nuclear Power Operations (INPO) to discuss options for possible future changes in the operator licensing program.
- (8) Proceeding with a rule-making plan endorsed by the Commission in Staff Requirements Memorandum dated October 5, 1999, that would revise the requirement for control manipulations on the plant pursuant to [10 CFR 55.31\(a\)\(5\)](#) and simulation certification and testing requirements in [10 CFR 55.45\(b\)](#). This rule-making, together with ongoing revision of [Regulatory Guide 1.149](#), "Nuclear Power Plant Simulation Facilities For Use In Operator License Examinations," will reduce unnecessary regulatory burden by allowing greater use of licensees' simulation facilities to establish eligibility for operators' licenses. The rule-making will also facilitate licensees' direct application of industry consensus standards to existing simulator support programs.
- (9) Developed and implemented the following measures to reduce facility licensee burden associated with the initial operator licensing process: (1) the addition of a third generic fundamentals examination for each fiscal year to enhance the flexibility of licensee scheduling and (2) the development of a pilot change to the examination development process to reduce burdensome guidelines associated with examination question reuse. In addition, the staff is providing assistance to INPO personnel in the development of a national examination question bank, which is also designed to reduce licensee burden associated with examination development.
- (10) Developed and is implementing a change to examination report documentation practices that will establish a threshold for negative examination report comments for licensee-authored examinations meeting a predefined target range for examination quality. Additionally, this examination report policy establishes a specific methodology for documenting the quality of licensee-authored examinations falling outside the target range.
- (11) Developing a continuing program to monitor the level of difficulty of licensing examinations in response to licensee concerns in this area.

CONCLUSION:

The NRC's licensed operator requalification inspection program effectively and efficiently ensures that ROs and SROs who are licensed by the NRC to operate or supervise the reactor controls are maintaining the required level of competence to safely perform their licensed duties. In addition, the NRC's initial operator licensing examination program is providing realistic assurance that only those applicants who have mastered the knowledge, skills, and abilities required to safely operate and/or supervise the nuclear reactor controls are being licensed to do so. Ongoing operator licensing program initiatives are directed at reducing unnecessary burden and improving consistency in the administration of the operator licensing programs.

/RA/

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STATUS REPORT ON THE NRC REQUALIFICATION PROGRAM FISCAL YEAR 1999

Facility Evaluated	Inspection Procedure Performed	Program SAT ⁽¹⁾ /UNSAT	Date
Brunswick	IP-71001 - Requal Program Inspection	SAT	10-98
Crystal River	IP-71001 - Requal Program Inspection	SAT	10-98
Perry	IP-71001 - Requal Program Inspection	SAT	10-98
Hope Creek	IP-71001 - Requal Program Inspection	SAT	11-98
Millstone 2	IP-71001 - Requal Program Inspection	SAT	11-98
Limerick	IP-71001 - Requal Program Inspection ⁽²⁾	SAT	11-98
Peach Bottom	IP-71001 - Requal Program Inspection ⁽³⁾	SAT	11-98
Watts Barr	IP-71001 - Requal Program Inspection	SAT	11-98
Davis-Besse	IP-71001 - Requal Program Inspection	SAT	11-98
Duane Arnold	IP-71001 - Requal Program Inspection	SAT	11-98
Byron	IP-71001 - Requal Program Inspection	SAT	11-98
Catawba	IP-71001 - Requal Program Inspection	SAT	12-98
Indian Point 2	IP-71001 - Requal Program Inspection	SAT	12-98
Indian Point 3	IP-71001 - Requal Program Inspection	SAT	12-98
WNP-2	IP-71001 - Requal Program Inspection	SAT	12-98
Clinton	IP-71001 - Requal Program Inspection	SAT	1-99
Robinson	IP-71001 - Requal Program Inspection	SAT	1-99
Palo Verde	IP-71001 - Requal Program Inspection	SAT	1-99
Harris	IP-71001 - Requal Program Inspection	SAT	2-99
Monticello	IP-71001 - Requal Program Inspection	SAT	3-99
Comanche Peak	IP-71001 - Requal Program Inspection	SAT	3-99
Summer	IP-71001 - Requal Program Inspection	SAT	5-99
Oconee	IP-71001 - Requal Program Inspection	SAT	5-99
Diablo Canyon	IP-71001 - Requal Program Inspection	SAT	5-99
Callaway	IP-71001 - Requal Program Inspection	SAT	5-99
Cooper	IP-71111.11 - Requal Program Inspection	SAT	6-99
Arkansas	IP-71001 - Requal Program Inspection	SAT	7-99
Callaway	IP-71001 - Requal Program Inspection	SAT	8-99
Oyster Creek	IP-71001 - Requal Program Inspection	SAT	8-99
Salem	IP-71111.11 - Requal Program Inspection	SAT	8-99
Vogtle	IP-71001 - Requal Program Inspection	SAT	8-99
Surry	IP-71001 - Requal Program Inspection	SAT	8-99
Point Beach	IP-71001 - Requal Program Inspection	SAT	8-99
DC Cook	IP-71001 - Requal Program Inspection	SAT	8-99
Grand Gulf	IP-71001 - Requal Program Inspection	SAT	8-99
River Bend	IP-71001 - Requal Program Inspection	SAT	8-99
South Texas	IP-71001 - Requal Program Inspection	SAT	8-99
Braidwood	IP-71001 - Requal Program Inspection	SAT	9-99
Waterford	IP-71001 - Requal Program Inspection	SAT	9-99

1. A program rating of SAT (satisfactory) indicates that the licensee's requalification program complied with the requirements of 10 CFR 55.53 and 55.59 for the areas inspected and that the NRC staff did not elect to conduct NRC-administered

requalification examinations for cause as a result of any weaknesses that may have been noted.

2. Limited SRO (LSRO) program evaluation.

3. Limited SRO (LSRO) program evaluation.