MEMORANDUM TO: Bruce A. Boger, Director
Division of Reactor Controls
and Human Factors, NRR

October 29, 1996

FROM: Stuart A. Richards, Chief
Operator Licensing Branch
Division of Reactor Controls
and Human Factors, NRR

Original signed by:

SUBJECT: NEI PUBLIC WORKSHOP FOR FACILITY LICENSEES PLANNING TO DEVELOP INITIAL OPERATOR LICENSING EXAMINATIONS USING THE PILOT PROCESS DESCRIBED IN NRC GENERIC LETTER 95-06

On Tuesday, October 22, 1996, the staff of the Operator Licensing Branch (HOLB) and representatives from each of the NRC Regional Offices participated in a public workshop to review with facility licensees the pilot examination process described in Generic Letter 95-06, "Changes in the Operator Licensing Program." The workshop, which was sponsored by the Nuclear Energy Institute (NEI), was intended to share lessons learned by previous pilot examination participants with those facility licensees that will be preparing examinations prior to July 1997. NEI developed the agenda for the workshop and prepared the list of registrants; a copy of each document is attached. The gathering was conducted at the University Club International Center in Washington, DC, and was open to the public.

The NRC staff presented an overview of the pilot examination process, including lessons learned, and assisted facility representatives who had previously conducted pilot examinations in leading discussions of various examination development issues. A copy of the handout that the staff distributed to the attendees is attached, as is a copy of the presentation made by Jim Davis, of NEI, who coordinated the workshop. The staff did not approve nor was it provided with copies of the briefing slides used by the facility discussion leaders.

Overall, I believe the meeting was beneficial because it helped the attendees better understand the NRC's expectations regarding the development of initial licensing examinations by facility licensees. No regulatory decisions or commitments were made during the meeting.

Attachments: As stated

Project No. 689

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***See previous concurrence**

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DATE	**10/25/96***		**10/25/96***		10/29/96			

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 29, 1996

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NEI/NRC WORKSHOP
on
LICENSEE PREPARED ILO EXAM

Meeting Agenda

October 22, 1996
University Club's International Center

7:30 a.m.	Workshop Registration Refreshments	
8:30 a.m.	Welcome	Jim Davis, NEI
8:35 a.m.	Overview of Exam process	Stu Richards, NRC
9:10 a.m.	Summary of Pilot experience	Jim Davis, NEI
9:30 a.m.	Panel Discussion of lessons learned in preparing pilot exams	Kurt Rauch, San Onofre Keith Link, North Anna Keith Bowden, Brunswick Ray Lueneburg, Millstone
10:30 a.m.	Break	
10:45 a.m.	Sample Plan Exam development schedule.	Rob Sandstrom, San Onofre Fred Guenther, NRC staff
11:15 a.m.	Written test development.	Ken Rach, Commonwealth Edison Max Bailey, NRC Region III
12:00 p.m.	Lunch	
1:00 p.m.	Written test sample questions	Ken Rach, Commonwealth Edison
1:20 p.m.	JPMs and Admin Questions	Bob Nunez, Palo Verde Don Florek, NRC Region I
2:00 p.m.	Simulator scenario development	Keith Link, North Anna Charles Payne, NRC Region II
2:45 p.m.	Break	
3:00 p.m.	Examination validity Review process.	Rob Sandstrom, San Onofre Stu Richards, NRC staff
3:30 p.m.	Question and Answer period	All participants
4:30 p.m.	Adjourn Workshop	

ATTACHMENT 1

NEI/NRC WORKSHOP on
LICENSEE PREPARED ILO EXAM

Roger Anderson
Operations Training Specialist
American Electric Power Service Corporation

Donnie Ashley
Operations Training Manager
Tennessee Valley Authority

Bobby Ayers
Nuclear Instructor, License Prep Team Leader
Duke Power Company

Max Bailey
Nuclear Regulatory Commission

Michael D. Baughman
License Requal Training Section Leader
Arizona Public Service Company

David L. Bauguess
Initial Training Lead
The Cleveland Electric Illuminating Company

Steve Beck
Nuclear Operations Plant Instructor
Georgia Power Company

James F. Belzer
Training Specialist
Baltimore Gas and Electric Company

Francis X. Biermann
Operating Supervisor, Training
Union Electric Company

Robert Birley
Instructor, LOT
PECO Nuclear

Thomas Blindauer
Senior Instructor, Operations Initial Training
Southern Nuclear Operating Company

Dennis F. Bonilla
Director, Utility Services
General Physics Corporation

Keith A. Bowden
Project Specialist, Operator Training
Carolina Power & Light Company

Gary T. Box
License Initial Training Section Leader
Arizona Public Service Company

Aaron Brown
Virginia Power

Terry Brown
Operations Supervisor
Entergy Operations, Inc.

Bruce D. Bryant
Operations Training Supervisor
Entergy Operations, Inc.

David Burns
Initial License Class Program Coordinator
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Training Specialist
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North Atlantic Energy Service Corp.

John D. Christensen
Supervisor, Operations Training
IES Utilities, Inc.

Joey Clark
Entergy

Gary P. Crone
Nuclear Operations Training Supervisor
Southern Nuclear Operating Company

Mitch Crosby
Georgia Power

James Davis
Assistant Manager, Operations Training Department
Institute of Nuclear Power Operations

Jim Davis
Director, Operations
Nuclear Energy Institute

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Control Room Supervisor/Instructor
New York Power Authority

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Vice President, Utility Services
General Physics Corporation

Mark Elliott
Director, Utility Services
General Physics Corporation

Charles Embry
New York Power Authority

James Evans
Baltimore Gas & Electric

Randy H. Evans
Licensed Operator Initial Training Program Lead Instructor
Tennessee Valley Authority

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Operations Training Section Head
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Frank Fagan
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Don Florek
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Tom Fueston
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Lead Licensed Instructor
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Fred Guenther
Nuclear Regulatory Commission

Heidi Heaton
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Roy Hickok
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Nuclear Operations Plant Instructor
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Dennis M. Jones
Qualification Instructor
The Toledo Edison Company

Derrick Kaopuiki
Coordinator, Initial License Class
Washington Public Power Supply System

Reggie Kimray
Nuclear Station Instructor
Duke Power Company

Ricky King
Tennessee Valley Authority

Jon Kirsch
Supervisor, Operations Training
Maine Yankee Atomic Power Company

Tom Kuhas
Duquesne Light Company

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Ryan Lantz
Nuclear Regulatory Commission

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Mark Parrish
Scientech, Inc.

Charles Payne
Nuclear Regulatory Commission

Steve Pettinger
ComEd

Ken Rach
BWR Operations Training Supervisor, Production Training Center
Commonwealth Edison Company

Kurt Rauch
Southern California Edison

Michael K. Rasch
Senior Operations Instructor
Entergy Operations, Inc.

Stu Richards
Nuclear Regulatory Commission

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Charles Tyner
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Michael T. Wagner
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Gregory P. Young
Instructor
GPU Nuclear, Inc.

Keith Young
Manager, Nuclear Training
IES Utilities, Inc.

Joseph Zerbo
Manager, Operations Training
Public Service Electric and Gas Company

Larry Zilli
President
Zilli Inc.

1. Overview of Pilot Examination Process

2. Background

- SECY 95-75, SECY 96-123,and SECY 96-206
- Generic Letter 95-06
- Atomic Energy Act of 1954
- 10 CFR 55, "Operators' Licenses"
- NUREG-1021, "Examiner Standards"
- NUREG/BR-0122, "Examiners' Handbook"

3. Objectives

- Improve Efficiency and Maintain Effectiveness
  - Eliminate Reliance on NRC Contractors
  - Increase Involvement by Facility Licensees
- Remain Consistent with the Act and Part 55
- Changes Should not Affect the Applicants

4. Pilot Examination Program

- Examinations Prepared Per NUREG-1021, NUREG/BR-0122 and the Generic Letter
- Generic Letter 95-06 Criteria
  - Ensure Integrity of the Examinations
  - Maintain Consistency
  - Limit Predictability
- 22 Examinations Conducted - All Regions and Vendors Represented
- 54 ROs and 92 SROs Tested from 10/95 through 4/96

ATTACHMENT 3

5. Industry Coordination

- Meetings and Workshop
- Formal Comment Period
- Industry Concerns
  - Restrictions on Examination Authors
  - Test Item Histories
  - Duplication from Audit Examinations
  - Examination Banks
  - Site-Specific Task Lists
  - NRC-Prepared Examinations

6. Planning Milestones

- Continue the Revised Process Through July 1997
- Developed Detailed Rulemaking Plan to Require Licensees to Prepare Exams Based on Guidance in NUREG-1021
- Rulemaking Plan also Discusses:
  - Impact on Licensees
  - Acceptance by Licensees
  - Pros and Cons - Vulnerabilities
  - Exam Results Comparison
  - Industry Comments to Draft NUREG-1021
  - Changes to Process from Pilot and Comments

7. Pilot Program Issues / Lessons Learned

- Examination Security and Potential for Compromise

  10 CFR 55.49, Integrity of Examinations, states "Applicants, licensees, and facility licensees shall not engage in any activity that compromises the integrity of any application, test, or examination required by this part."
- ES Guidelines (Revision 7) Remain in Effect and Should be Reviewed
- ES and Pilot Program Guidelines Misinterpreted, e.g., Definition of Component Failure
- Facility Learning Curve Steeper Than Expected
- Increase Emphasis on Technical Accuracy and Test-Item Quality

8. More Pilot Program Issues / Lessons Learned

- Substantive Changes Complete and Exams Finalized Prior to Scheduled Administration Date - No Substantive Changes During Exam Week
- ES Target Dates Not Met, e.g., Complete Draft Exam Submittal Due at -30 Days
- QA Checklists Not Completed
- Facility Employees with Substantial Training Role
- Low Level of Knowledge for Written and Operating Exam Test-Items
- Test-Item Source for Written Exams and Operating Tests
- Duplication of Test-Items from Audit Exams

1. Examination Schedule and Sample Plan Development

2. NRC Significant Events Time Line

Target	Task
- 120	Brief point of contact and issue notification letter
- 60	Integrated examination outline due
- 55	NRC feedback on examination outline
- 30	Complete examinations, supporting documentation, and references due
- 14	Examination review with facility licensee (preparation week)
- 7	Examinations approved by NRC

3. Sample Plan Guidelines

- Objectives
  - Promote Diversity and Consistency
  - 10 CFR 55 Sampling Requirements
  - Enable NRC to provide feedback early in the process
- Written Exam Per Handbook Model
  - Three Tiers: PWG / Systems / E&APEs
  - 1-3 Groups per Tier
  - Multiple K/A Categories
- Operating Test Per ES-301
  - W/T: Safety Groups and Task Lists in K/A Catalogs
  - Simulator: Select Diverse Events Covering all Competencies and Rating Factors

4. Integrated Examination Outline

- Written: K/A Record Forms from NUREG/BR-0122, Rev. 5
- W/T: Form ES-301-1, "Administrative Topics Outline"
  Form ES-301-2, "Indiv. Walk-through Test Outline"
- Simulator: Form ES-301-3, "Scenario Events"
- General: Form ES-201-3, "Interim Examination Outline Quality Assurance Checklist"
  Form ES-201-2, "Interim Examination Security Agreement"

1. Written Examination Development

3. Other Guidance

- ES-401, Rev. 7, NUREG/BR-0122, Rev. 5, and approved outline
- 100% multiple choice (no matching)
- Level of knowledge
- Level of difficulty (should discriminate between competent and less than competent operators)
- Review and approval process (Interim Form ES-401-2, Written QA Checklist)
- Reference materials sufficient to support why answers are right or wrong

2. GL 95-06 Rules

- 50 / 40 / 10
  - Significant modification means a change in the stem conditions and at least one distractor
  - New questions should be at the comprehension or application levels
  - Supersedes 10% bank limit in ES-401, C.1.c
- No more than 25% repetition from quizzes or exams (including last 2 NRC)
- NO repetition from the audit exam
- Identify the history (i.e., source and date last used) of every question

4. Interim Form ES-401-2

1. Questions and answers technically accurate and applicable to facility.
2. K/As and learning objectives referenced for all questions.
3. RO/SRO overlap no more than 75%.
4. Item duplication from practice exams, quizzes, and the last two licensing exams is no more than 25%.
5. No item duplication from the license screening/audit exam.
6. Bank use meets limits (50% bank / 40% modified / 10% new); with new items at the analysis/comprehension level.
7. References/handouts provided do not give away answers.
8. Question distribution meets Examiners' Handbook and proposed examination outline.
9. Question psychometric quality and format meet Examiners' Handbook guidelines (refer to Chapter 4, Appendix A, Sections 1 and 3).
10. The proposed exam contains 100, one-point, multiple choice items. Total correct and corresponds to value on cover sheet.

5. **Pilot Feedback**

- Written exams - some exams were administered with virtually no changes

- However, a number of exams had many questions that had -

  - Low level of knowledge or difficulty
  - Low operational validity
  - Low discriminatory value
  - Implausible distractors

6. **WRITTEN EXAMPLES**

This is an example of an unacceptable question:

If an error is made when taking a log reading, the error should be corrected in which of the following ways:

a. Erase the entry, then write the correct value.

b. A single line through the mistake, initial and date the correction.

c. Line through the mistake several times to cover the mistake, then write the correct value next to the crossed out value.

d. Use white out, and then when dry, write the correct value, initial and date the correction.

7. This example is acceptable and was actually used on an NRC pilot exam.

Unit 1 is operating at 100% power. While conducting a system lineup verification, the operators note that FW-27 was in the OPEN position. The valve checklist called for FW-27 to be in the CLOSED position. There are no outstanding R&Rs or Configuration Control Cards on FW-27.

What action should the operators take?

a. CLOSE FW-27 as required by the valve checklist and note the change on the valve checklist.

b. CLOSE FW-27, report the valve status change to the control room, and prepare a Problem Investigation Process (PIP) report.

c. Leave the valve OPEN and prepare a Configuration Control Card to document the deviation.

d. Leave the valve OPEN because the valve is currently in the correct position for the plant lineup.

1. **WALKTHROUGH TEST - JPMs**

AND ADMIN TEST ITEMS

2. **PILOT CRITERIA**

- At Least 2 (1 for Upgrade SROs) **New or Significantly** Altered JPMs
  - Significantly Altered - At Least One Substantive Change that **Alters Course of Action**
- Evaluate PRA/IPE (DAS) for Inclusion

NUREG-1021 CRITERIA

- **Differentiate** between Competent and Less Than Competent Operators
- Evaluate Broad Range of K/As, Systems and Components, Operations and Events
- SRO Applicants Evaluated at **Greater** Depth on Administrative Topics
- **No** Duplication of Material from Written Exam **or** between Categories of the Operating Test

3. **NUREG-1021 CRITERIA (CON'T)**

- Incorporate Facility-Specific and Industry-Generic Operating Experience

JPMs

- At least 1 Low Power or Shutdown Condition JPM
- 1 or 2 Alternate Path JPMs
- At Least 1 In-Plant JPM Evaluates Actions During Emergency or Abnormal Conditions
- At Least 1 JPM Requires Entry into a RCA

PRE-SCRIPTED QUESTIONS

- Open- Reference Items That **Demonstrate** Understanding By **Using** Knowledge

4. **PRE-SCRIPTED QUESTIONS (CON'T)**

- **No** Direct Look-Up Questions or Simple Memory Questions - Test Problem Solving or Decision Making (NOTE: Simply Eliminating Reference Information From Question Stem does **NOT** Ensure the Question is Satisfactory Open-Reference Question)
- Memory Questions (Closed Reference) Testing Auto Actions, Set Points, Interlocks, Immediate Actions are Allowable

5. **NON-EXAMPLE JPM**

- **LOW LEVEL OF KNOWLEDGE AND DISCRIMINATORY VALUE**

o TASK - MANUAL INITIATION OF ATWS ARI/RPT

o INITIATING CUE - SRO DIRECTS YOU TO INITIATE THE ATWS ARI/RPT SYSTEM

o REQUIRED ACTIONS - ARM AND DEPRESS ATWS ARI/RPT PBs

o TIME TO COMPLETE (WITH VERIFICATIONS) - LESS THAN 1 MINUTE

SUMMARY EVALUATION - ALTHOUGH TASK HAS A HIGH K/A, IT SHOULD BE SUCCESSFULLY COMPLETED BY 100% OF ALL APPLICANTS

6. **EXAMPLE JPM**

- **COMPREHENSION/UNDERSTANDING LEVEL OF KNOWLEDGE**

o TASK - INITIATE ALTERNATE COOLANT INJECTION W/NUC. SW

o INITIATING CUE - SRO DIRECTS YOU TO INITIATE ALTERNATE COOLANT INJECTION W/NUC SW

o REQUIRED ACTIONS - (1) LINE-UP NUC. SW TO RHR 'B'; (2) ID THAT RHR 'B' INJ VALVE WILL NOT OPEN (ALT. PATH); (3) OPEN RHR X-CONN ISO. VALVE

o TIME TO COMPLETE (WITH VERIFICATIONS) - ~10 MINUTES

SUMMARY EVALUATION - GOOD USE OF PROCEDURE W/11 ACTION STEPS (9 CRIT.) AND USE OF ALT. L.U. TO PERFORM TASK

7. **NON-EXAMPLE PRE-SCRIPTED QUESTION**

- **DIRECT LOOK-UP QUESTION/LOW LEVEL OF KNOWLEDGE (MEMORY)**

○ QUESTION - RCIC HAS BEEN OPERATING IN THE TEST MODE FOR AN EXTENDED PERIOD OF TIME WHEN IT IS NOTED THAT THE CONTAINMENT OXYGEN LEVEL IS INCREASING. WHY IS THIS HAPPENING?

○ REFERENCE ALLOWED - YES

○ ANSWER - AIR IN-LEAKAGE FROM THE RCIC TURBINE GLAND SEAL SYSTEM.

○ PRECAUTION IN RCIC OP STATES "EXTENDED OPERATION OF THE RCIC SYSTEM CAN CAUSE INCREASES IN THE PRIMARY CONTAINMENT OXYGEN CONCENTRATION DUE TO AIR IN-LEAKAGE FROM THE RCIC TURBINE GLAND SEAL SYSTEM."

○ SUMMARY EVALUATION - QUESTION DEMONSTRATES ONLY THAT APPLICANT CAN FIND INFORMATION, NOT PROBLEM SOLVING, ANALYSIS OR UNDERSTANDING

8. **EXAMPLE PRE-SCRIPTED QUESTION**

- **COMPREHENSION/UNDERSTANDING LEVEL OF KNOWLEDGE**

o QUESTION - EXPLAIN THE PURPOSE AND/OR EFFECT FOR EACH LOCAL ACTION JUST SIMULATED IN THE RESET OF THE FW FRV.

o REFERENCE ALLOWED - YES

o SUMMARY EVALUATION - QUESTION DEMONSTRATES APPLICANT'S UNDERSTANDING OF THE LOCAL ACTIONS THAT WERE SIMULATED AS PART OF TASK TO RESET FW FRV.

1. SIMULATOR SCENARIO DEVELOPMENT

2. PILOT CRITERIA

- At Least 1 **New or Significantly** Altered Scenario **per** Scenario Set - Verify that **Each** Applicant is Tested Using at Least 1 New or Significantly Altered Scenario
  - Significantly Altered - At Least One Substantive Change that **Alters Course of Action**
- Other Scenarios Altered to Prevent Recognition by Applicants
- Evaluate PRA/IPE (DAS) for Inclusion

NUREG-1021 CRITERIA

- **Differentiate** between Competent and Less Than Competent Operators - Provides a Comprehensive Evaluation of the **Integrated** Plant Knowledges and Skills required of License Applicants
- Evaluate Broad Range of K/As, Systems and Components, Operations and Events

3. NUREG-1021 CRITERIA (CON'T)

- **No** Repeat of Scenarios on Successive Days
- **No** Duplication of Material from Written Exam **or** between Categories of the Operating Test
- Incorporate Facility-Specific and Industry-Generic Operating Expericnce
- Ensure **Every** Significant Expected Operator Action is Documented (Form ES-301-4) - Operator Action Statements such as "Enters AOP XXX.X.X and Performs Appropriate Actions" are **Not** Sufficient

QUANTITATIVE REQUIREMENTS:

- **Minimum** Number of Normal Evolutions, Instrument and Component Failures, and Major Transients for **Each** Applicant (Form ES-301-5)
- Initial Conditions Varied and Include Startup, Low Power, and Full Power Situations

4. QUALITATIVE REQUIREMENTS:

- Variety of Systems Affected Within **Each** Type of Event
- Severity of Events Allow **Each** Applicant to Demonstrate Competence Across Range of Conditions
- Understanding of System and Component Interactions Evaluated by Having 1 Equipment Failure Exacerbate Another
- Successive Failures Lead to a Gradual Deterioration in Plant Status
- Scenarios Expose Applicants to Situations That Could Cause Plant Degradation or Threaten the Health and Safety of the Public
- Scenario Sets Enable **Each** Applicant to be Evaluated on All the Required Competencies and **Require Unsatisfactory** Rating Evaluations if an Applicant Performs Poorly (Form ES-301-6)
- NOTE: Forms ES-301-5 and 6 Shall be Forwarded to Chief Examiner With Proposed Scenarios

5. NON-EXAMPLE SCENARIO

• **LOSS OF CONDENSER VACUUM**

o IC: 85% POWER MOL W/CONDENSATE PUMP 1B OOS, HPCS OOS AND TRANSFORMER 111B OOS

o EVENTS:

1 - N/R - INCREASE POWER W/RECIRC FLOW

2 - I - APRM F FAIL HIGH

3 - C - RWCU INBOARD VALVE DRIFT SHUT

4 - I - FAILURE OF THE NON-SELECTED NR LI

5 - M - LOSS OF CONDENSER VACUUM (10 MINUTE RAMP)

6 - C - SLOW TRANS OF SWG 11A

6. NON-EXAMPLE SCENARIO (CON'T)

o SUMMARY OF RO EXPECTED ACTIONS:

1 - INCREASE RECIRC FLOW WHILE OBSERVING REACTOR POWER AND TURBINE LOAD

2 - OBSERVE AND REPORT APRM UPSCALE TRIP/INOP ALARM; CHECK OTHER INDICATIONS TO VERIFY FAILURE AND POWER STABLE; PLACE APRM F IN BYPASS AND RESET 1/2 SCRAM

3 - REPORT INBD RWCU FAILED SHUT AND ATTEMPT TO REOPEN; SECURE RWCU

4 - REPORTS NR LI FAILED HIGH (ANNUN. "FW CONTROL RX VESSEL LVL 8 TRIP"); VERIFIES LEVEL STABLE

5 - REPORTS INDICATION OF DECREASING VACUUM; REDUCE RX POWER W/RECIRC FLOW; MANUALLY SCRAM IF VACUUM CANNOT BE MAINTAINED > 25"HG

6 - OBSERVES LOSS OF FW; MONITOR LEVEL AND CONTROL LEVEL BETWEEN LEVELS 2 AND 8

7. EXAMPLE SCENARIO

• **MSL RUPTURE/LOSS OF LEVEL INST**

o IC: 90% POWER EOL W/FLOOD-UP LI AND TBCCW HXER A OOS. TORUS COOLING I/S.

o EVENTS: (* - PREINSERT)

1 - R - INCREASE POWER W/RECIRC FLOW

2 - N - PERFORM RCIC FULL FLOW SURVEILLANCE

3 - I - RX PT-404A FAILS TO 0%

4 - C - * HPCI TRIP ON INIT.

5 - M - MSL RUPTURE IN STM TUNNEL AT 100%

6 - C - * ROD 02-43 DOES NOT SCRAM

1. **Examination Validity and the Review Process**

2. **Maintaining Examination Validity (and Reliability)**

- Adhere to external criteria such as -
  - Sampling requirements
  - Limits on bank use
  - 100 question multiple-choice format
  - 10 JPMs with follow-up questions
  - at least 2 simulator scenarios
- Don't compromise on internal criteria such as -
  - Level of knowledge (focus on comprehension, application, and analysis questions)
  - Level of difficulty (the examination must discriminate)
- Verify accuracy and quality

3. **The Review Process**

- Self-check by author
- Management review
  - Authority to speak on behalf of facility licensee
  - Can be supervisor who did not teach applicants
  - NRC expectations
- Validate the examination
  - Operating test
  - Written exam
- NRC evaluation
  - Chief examiner review
  - Supervisory approval
  - Preparation week activities
  - Consequences of unacceptable quality

8. **EXAMPLE SCENARIO (CON'T)**

7 - I - RCIC FAILS TO XFER FROM FULL FLOW TO AUTO INJECT

8 - C - SRV D STICKS OPEN

9 - C - RPV "A" INST FAIL TO 100% AT 400# AND RPV "B" FAIL TO 100% AT 300#

o SUMMARY OF EXPECTED ACTIONS:

1 - INCREASE RECIRC FLOW WHILE OBSERVING REACTOR POWER AND TURBINE LOAD

2 - PERFORM RCIC FULL FLOW SURVEILLANCE

3 - IDENTIFY RX LP PERM. (<450#) ACTIVATED; ASSESS EFFECTS OF INST FAILURE - (1) "A" LTs SUPPLY LOWER THAN ACTUAL SIGNAL TO WR FZ INST AND (2) TAKES ACTIONS IAW TS 3.2

4 - IDENTIFY HPCI AUTO INIT FAILURE, ATTEMPT TO START

9. **EXAMPLE SCENARIO (CON'T)**

5 - IDENTIFY MSL RUPTURE AND MSIV ISOLATION; CONTROL PRESS W/SRVs; ENTER RPV AND CONTAINMENT CONTROL EOPs

6 - ID FAILED ROD AND MANUALLY INSERT (02-43)

7 - ID RCIC FAILURE AND TAKE MANUAL CONTROL (DID NOT AUTO SHIFT FROM TEST LINE-UP)

8 - ID STUCK OPEN SRV AND ATTEMPT TO CLOSE; PLACE RHR IN TORUS COOLING

9 - RECOGNIZE LEVEL DIFFERENCES BETWEEN "A" AND "B" LIs WHEN RX PRESSURE <400# AND <300# (LIs EXPERIENCE "DEGASSING" EFFECTS); IMPLEMENT RX FLOOD-UP EOP AND INJECT W/RHR AND MAINTAIN RX PRESS 60# > TORUS

10. **EXAMPLE SCENARIO (CON'T)**

o SUMMARY EVALUATION:

(1) SCENARIO WHEN COMBINED WITH OTHERS IN SET PROVIDES GOOD COVERAGE OF ALL QUANTITATIVE AND QUALITATIVE CRITERIA

(2) ALL OF THE MALFUNCTION EVENTS REQUIRE UNDERSTANDING OF PLANT/SYSTEM RESPONSE TO DIAGNOSE AND MANUAL CONTROL BY THE OPERATORS TO MITIGATE

(3) GOOD LEVEL OF SRO COMMAND AND CONTROL, AND PROCEDURAL USAGE REQUIRED FOR SCENARIO

INITIAL OPERATOR LICENSING PROGRAM PILOT EXAM PROCESS

NEI/NRC WORKSHOP

October 22, 1996

James W. Davis
Nuclear Energy Institute
202-739-8105

ATTACHMENT 4

PURPOSE

- To review "Pilot" process for licensee prepared initial operator licensing examinations.
  - NRC Generic letter 95-06.
  - Use extended by Commission to July 97.
- Share lessons learned from past pilot examinations.
  - NRC Headquarters staff.
  - Each NRC Region.
  - Pilot plant participants.
  - Audience.
- **NOT** a review of NUREG 1021 rev 8.
  - Still under NRC review.

WORKSHOP SCHEDULE

7:30 a.m.	Workshop Registration Refreshments	
8:30 a.m.	Welcome	Jim Davis, NEI
8:35 a.m.	Overview of Exam process	Stu Richards, NRC staff
9:10 a.m.	Summary of Pilot experience	Jim Davis, NEI
9:30 a.m.	Panel Discussion of lessons learned in preparing pilot exams	Kurt Rauch, San Onofre Keith Link, North Anna Keith Bowden, Brunswick Ray Lueneburg, Millstone
10:30 a.m.	Break	
10:45 a.m.	Sample Plan and Exam development schedule.	Rob Sandstrom, San Onofre Fred Guenther, NRC staff
11:15 a.m.	Written test development.	Ken Rach, Commonwealth Edison Max Bailey, NRC Region III
12:00 p.m.	Lunch	
1:00 p.m.	Written test sample questions	Ken Rach, Commonwealth Edison
1:20 p.m.	JPMs and Admin Questions	Bob Nunez, Palo Verde Don Florek, NRC Region I
2:00 p.m.	Simulator scenario development	Keith Link, North Anna Charles Payne, NRC Region II
2:45 p.m.	Break	
3:00 p.m.	Examination validity Review process.	Rob Sandstrom, San Onofre Stu Richards, NRC staff
3:30 p.m.	Question and Answer period	All participants
4:30 p.m.	Adjourn Workshop	

ADMINISTRATIVE

- Refreshments at breaks.
- Lunch on own.
  - Food court handy.
- Questions.
  - Ask during presentations.
  - Use cards for questions for the final Q&A period.
- Think Positive.

STU RICHARDS
NRC STAFF

PILOT SCHEDULE

Month	Plant	Region
• October	Brunswick	II
	La Salle County	III
	Palo Verde	IV
• November	Limerick	I
	Millstone-3	I
	Pilgrim	I
	San Onofre	IV
• December	Brunswick	II
	Fermi	III
	Fort Calhoun	IV
	Vogtle	II
• January	Cook	III
	North Anna	II
	McGuire	II
	Zion	III
• February	Ginna	I
	Milstone-2	I
	Oconee	III
	Robinson	II
• March	Crystal River	II
• April	Braidwood	III

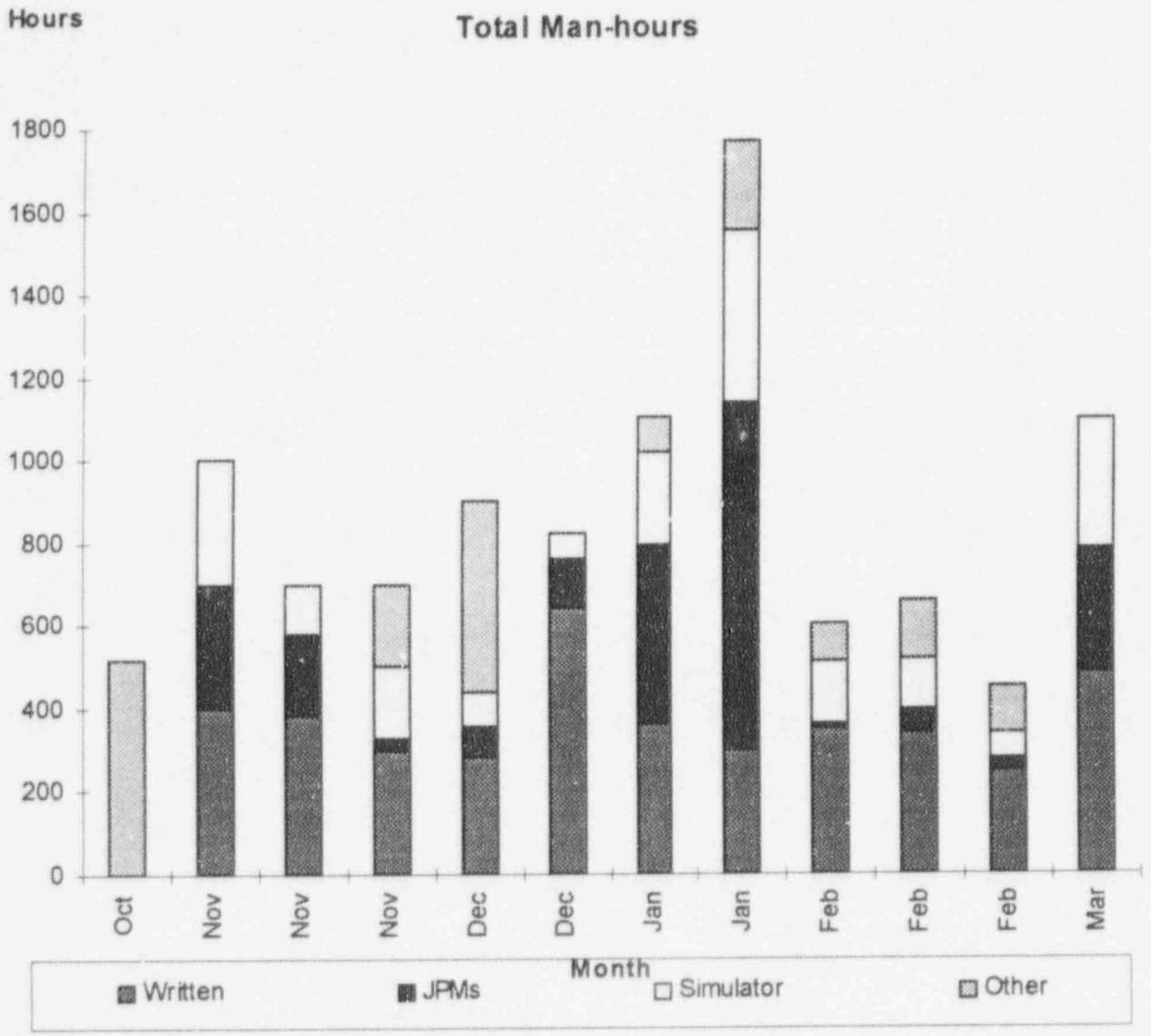
GENERAL OBSERVATIONS

- Process is more involved than some had programmed for.
  - Exam banks not very supportive.
  - Understanding of requirements.
- No clear pattern of pilot issues.
  - Some easily understood and met standards.
  - Some exams not judged difficult enough.
- More concerns in preparing the written test than other areas.
- Industry process can be more efficient.
  - Better understanding of requirements.
  - Effective use of resources.

LEVEL OF EFFORT

- Wide range of reported man-hours.
  - Should be able to improve efficiency of process.
- Overall 450 to 1764 hours.
  - Hard getting good basis for comparison.
  - High number resulted from extra people on team for experience.
- Written 250 to 640 hours.
  - Up to 5 hours a question?
  - Biggest area for most pilots.
- JPMs 26 to 834 hours.
  - Administrative questions were a problem.
- Operating 60 to 420 hours.
  - Least difficulty in this area.
  - Had expected to be an area of disagreement on scenario complexity.

PILOT MAN-HOURS



REVISIONS TO EXAM

No split between minor and major changes.

- Written 5 to 80% revised.
  - Expectations on level of difficulty.
  - Psychometrics.
  - Modified bank questions.
- JPMs 0 to 100% revised.
  - Significant effort on administrative questions.
  - Issue of open reference instead of direct look-up
- Operating 0 to 100% revised.
  - Scenario validation.
  - Level of documentation for scenario.

WRITTEN EXAMINATION

- Generated most comment and discussion.
  - Highest level of effort to prepare.
- Most questions were new.
  - Adequate exam banks were not available.
  - Concern with open and closed exam banks.
- Level of difficulty not well understood by some.
  - Need for training in this area.
- Psychometric issues.
- What must change to stem and at least one distractor accomplish?
  - Can intent of question be the same?

INDUSTRY CONCERNS

- Restrictions on use of instructors to prepare examination package.
  - Excluded if "played a substantial role in training".
  - Exam integrity issue.
- Examination security issues.
  - Highly prescriptive criteria contained in ***Pilot Examination Guidelines.***
- Memory level vs higher cognitive level questions.
- Need to reduce the amount of reference material.
- Level of effort needed to document exam question validity.

INDUSTRY "PERCEPTIONS"

- NRC has additional "unwritten" guidance that has not been shared with the industry.
- Headquarters involvement evident during pilot process.
  - Shifts in guidance or standards during the process.
  - Kept facility off balance.
  - Seen in October and November.
- Examiners sometimes make "optional" items mandatory.
  - Issue of what is provided to support a written question.
  - Additional requirements on format that create added burden.
- Test difficulty has been upgraded.
  - Previously used, or similar questions, rejected.

CONCLUSIONS

- Early and open communications with chief examiner critical.
  - Differing expectation levels.
  - Well defined review process.
- Need experienced examination preparation team.
  - Key factor in effort to prepare.
  - Improves quality of initial product.
- The preparation time line must be followed.
  - Little time to make changes.
  - Can become resource intensive.
- Site preparation visit very beneficial.

CONCLUSIONS (Cont.)

- Facility must ensure examinations are technically accurate.
- Simulator scenarios must be validated.
- Chief Examiner will make final determination on overall level of difficulty of examination package.

KEY ISSUES FOR WORKSHOP

- Who is restricted from preparing the examination?
- What reference material needs to be provided the the Chief Examiner?
- Can open reference material be used?
- How is the required level of difficulty achieved on written questions?
- What is needed to maintain examination security?
- Which K&A catalog should you use and how to fit with Examiners Handbook?

PILOT SCHEDULE

Month	Plant	Region	
• October	Brunswick	II	⇦
	La Salle County	III	⇦
	Palo Verde	IV	⇦
• November	Limerick	I	
	Millstone-3	I	⇦
	Pilgrim	I	
	San Onofre	IV	⇦
• December	Brunswick	II	⇦
	Fermi	III	
	Fort Calhoun	IV	
	Vogtle	II	
• January	Cook	III	
	North Anna	II	⇦
	McGuire	II	
	Zion	III	
• February	Ginna	I	
	Milstone-2	I	⇦
	Occnee	III	
	Robinson	II	
• March	Crystal River	II	
• April	Braidwood	III	⇦