"The future starts today, not tomorrow."

2015 Exam Writers' Workshop

AUGUST 18-19, 2015

U.S. NRC REGION II

ATLANTA, GA

"Always bear in mind that your own resolution to success is more important than any other one thing."
–Abraham Lincoln

Introduction and the NRC Website

2015 Exam Writers' Workshop
Amanda Toth

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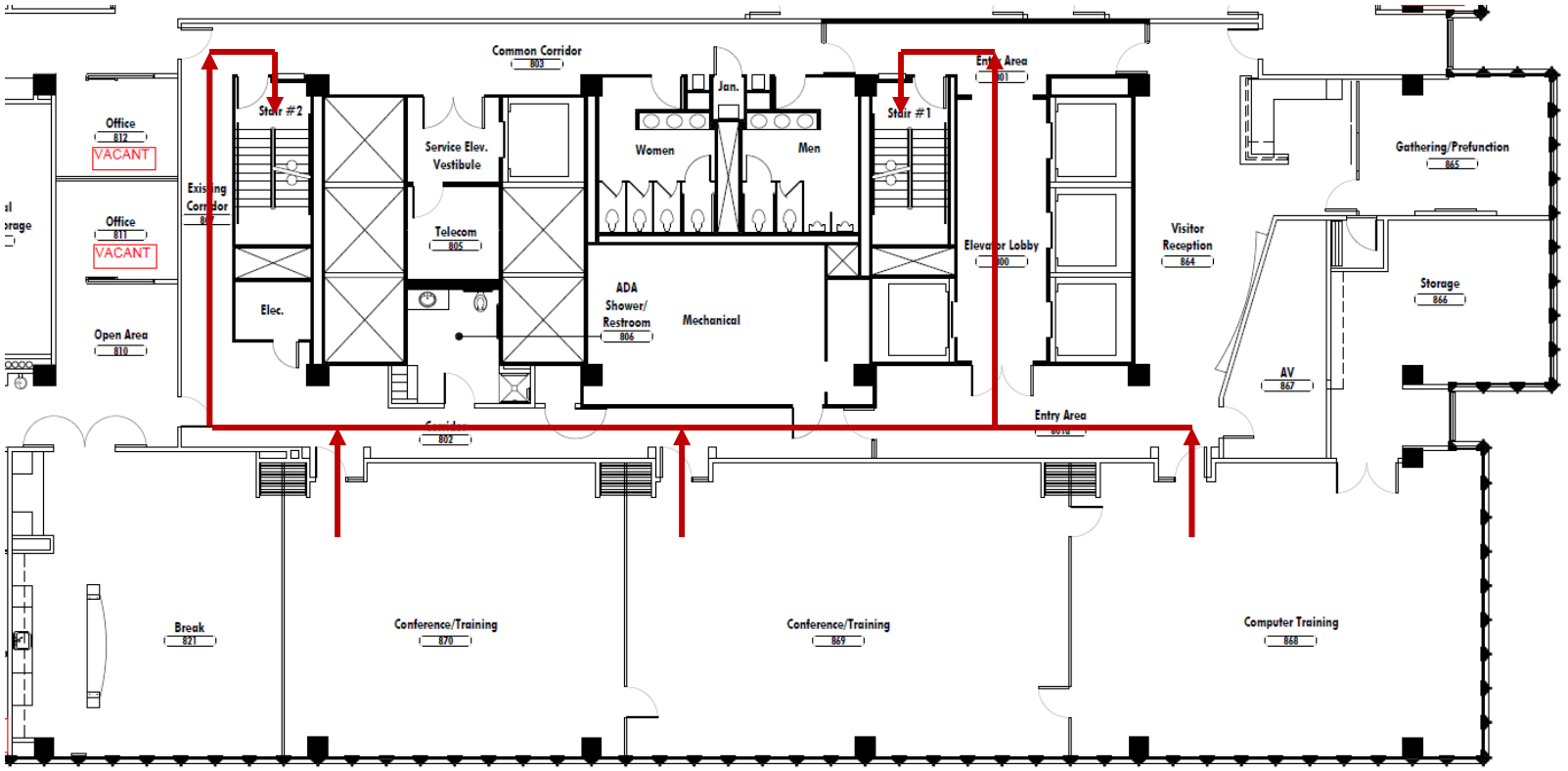
Protecting People and the Environment

Safety First!

In case of emergency…



- Proceed out of the conference area and to the stairwells.
- Take the stairs out to the street level.
- Walk to the Courtland Street Garage and assemble on the lower level for accountability.

Feedback and Questions

Coffee and Donuts

Objectives

This presentation will discuss:

- Reference materials available on the NRC Website
- Operator Licensing Program Feedback (aka FAQs)
- FAQs posted since the last workshop
- Where to find frequently used forms

NRC Website Operator Licensing References

What is available on the NRC Website?

- The next few slides will go over:
  - The available Operator Licensing reference material
  - Where it can be found

NRC Website

www.nrc.gov

NRC Website

www.nrc.gov

NRC Website

HOME | FAQ | GLOSSARY | FACILITY LOCATOR | WHAT'S NEW | SITE HELP | INDEX A-Z | CONTACT US | EMAIL UPDATES | LISTEN TO PAGE

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SEARCH

REPORT A SAFETY CONCERN

NUCLEAR REACTORS | NUCLEAR MATERIALS | RADIOACTIVE WASTE | NUCLEAR SECURITY | PUBLIC MEETINGS & INVOLVEMENT | NRC LIBRARY | ABOUT NRC

PRINT

scroll

OPERATOR LICENSING

- Regulations, Guidance, and Communications
- Licensing Process for Operators
- Oversight Program
- Public Involvement in Operator Licensing
- Related Documents and Other Resources
- Generic Fundamentals Examinations
- Program Feedback
- Contact Us

Spotlight

CHOOSE A SECTION

Home > Nuclear Reactors > Operator Licensing > Regulations, Guidance, and Communications

Regulations, Guidance, and Communications

On this page:

- Regulations
- Guidance
- Communications

This page includes links to files in non-HTML format. See Plugins, Viewers, and Other Tools for more information.

Regulations

NRC's regulations are found in Chapter I of Title 10, "Energy," of the *Code of Federal Regulations* (CFR). Chapter I is divided into Parts 1 through 199. The following are the principal parts governing the nuclear power plant operators.

- Part 55 - Operator Licensing
- Part 50 - Domestic Licensing of Product and Utilization Facilities

In addition, the NRC Regulatory Agenda (NUREG-0936) is a semiannual compilation of brief descriptions of all rulemaking actions.

The NRC welcomes Public Involvement in Rulemaking, and invites the public to comment on proposed rules and policies, licensing actions, and draft technical documents. Toward that end, the agency announces public comment opportunities in the *Federal Register* EXIT, on our Documents for Comment page, and sometimes through news releases. To comment on a proposed rule or petition for rulemaking, please e-mail Rulemaking.Comments@nrc.gov or see Regulations.gov EXIT.

See also History of Rulemaking Activities for Operator Licensing.

NRC Website

Guidance

Regulatory guides (RGs) are issued in ten divisions and are intended to aid licensees in implementing regulations. The guides most applicable to licensing operators are in:

Division 1, Power Reactors

The following guides in these divisions are the ones most relevant to licensed operators.

- RG 1.8 - Qualification and Training of Personnel for Nuclear Power Plants
- RG 1.114 - Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit
- RG 1.134 - Medical Evaluation of Licensed Personnel for Nuclear Power Plants
- RG 1.149 - Nuclear Power Plant Simulation Facilities for Use in Operator License Examinations.

Each regulatory guide is listed by division number; title; date issued, and revisions, if applicable. A guide available at this site has an underscored number. Draft regulatory guides are listed separately. Many regulatory guides are available in NRC's Agency Document Access and Management System (ADAMS).

NUREGs are NRC published reports in the NUREG-series, covering a variety of regulatory, technical, and administrative subjects. The following publications are the ones most relevant to the operator licensing process:

- Operator Licensing Examination Standards for Power Reactors (NUREG 1021) – Revision 9, Supplement 1, (which became effective on April 16, 2008) has been revised but remains in effect. NUREG 1021 Revision 10 has been issued and will become effective for all examinations administrated after July 2, 2015.
- Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Revision 2 (NUREG-1122). Supplement 1 to Revision 2 will become effective for all examinations that are administered after April 16, 2008, but may be used before then on a voluntary basis.
- Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Revision 2 (NUREG-1123). Supplement 1 to Revision 2 will become effective for all examinations that are administered after April 16, 2008, but may be used before then on a voluntary basis.
- Training Review Criteria and Procedures, Revision 1 (NUREG-1220).
- Answers to Questions at Public Meetings Regarding Implementation of Title 10, Code of Federal Regulations, Part 55 on Operators' Licenses (NUREG-1262). The question and answer portion of the document is searchable using the "Edit / Find" function of Adobe Acrobat.

Additional guidance pertaining to operator licensing is included in the following:

1. "Clarification Guidance for SRO Only Questions"
2. "Supplemental Guidance For Writing Effective Multiple Choice Questions"
3. "Checklist for Transmitting and Receiving NRC Exam Material over the Internet"

Rev 10

Operator Licensing Program Feedback (aka, FAQs)

What are FAQs?

- There are 21 categories of FAQs in total
  - 17 based on sections of the Operator Licensing Examination Standards for Power Reactors (NUREG-1021)
  - 1 for Requalification Inspections (IP-71111.11)
  - 1 for Simulation Facilities
  - 1 for 10 CFR 55
  - 1 for questions that do not fit another category (General)

FAQs

Where are FAQs?

FAQs

Where are FAQs?

Recent FAQs

Most recent revision: 3/18/2015

- New Question 301.19 was added to clarify Form ES-301-5 new instruction 4 which addresses position rotation requirements for SRO-I evaluations.

Recent FAQs

Most recent revision: 3/18/2015

301.19 - Revision 10 of NUREG-1021, Form ES-301-5, "Transient and Event Checklist," added new Instruction 4 to allow placement of SRO-I applicants in either RO position to provide the best evaluation of these applicants in the manipulation of controls.
However, Paragraph D.5.a of ES-301 and Instruction 1 on Form ES-301-5 were not changed. Both of these guidelines indicate that Instant SRO (SRO-I) applicants must serve in both the SRO and the "at-the-controls" (ATC) positions. Please clarify this seeming inconsistency. In other words, are SRO-I applicants required to serve in the SRO and ATC positions or is it now allowable to evaluate SRO-I applicants in the SRO and 'balance-of-plant" (BOP) positions?

The intent of new Instruction 4 was to address new reactor facility licensees *only* and allow the NRC chief examiner to place SRO-I applicants in *either* the ATC *or* BOP position taking into consideration which position - ATC or BOP - that provides the best evaluation of SRO-I applicants in manipulating plant controls. There was no intent to change the requirement per Instruction 1 for existing reactor facility licensees that SRO-I applicants "*must*" be evaluated in both the SRO and ATC positions.

Therefore, given that new Instruction 4 (Form ES-301-5) was intended for only new reactor facility licensees, the following clarifications/changes will be implemented immediately and incorporated into the next revision of NUREG-1021:

ES-301 D.5.a

Based on the anticipated crew compositions, determine the number of scenarios and scenario sets necessary to rotate each RO and SRO-I applicant into the lead reactor operator (i.e., the "at-the-controls") position. For example, …and every RO applicant rotates through the balance-of-plant (BOP) position for at least one scenario.

However, for new reactor facility licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place the SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant component controls per Competency 3.

Form 301-5 Instruction 4

For new reactor facility licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Recent FAQs

Most recent revision: 3/18/2015

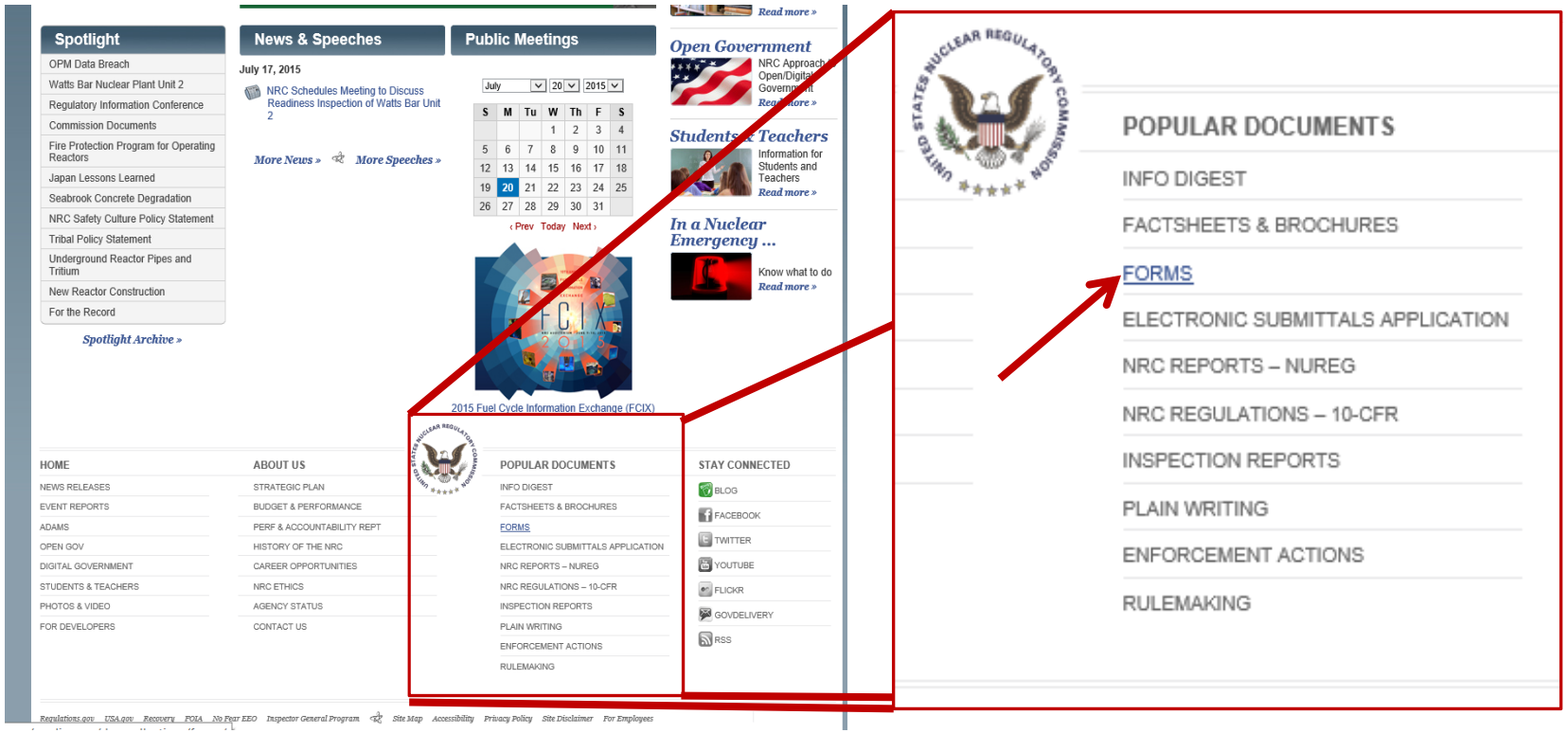
- In other words … the SRO-I can have board credit in the BOP position for new reactors only, and then only with Chief Examiner approval.
- This will be clarified in an upcoming NUREG 1021 revision.

Finding NRC Forms

Locating FORMS

There are two options

- Option 1: Bottom of NRC Homepage, under "POPULAR DOCUMENTS"



Locating FORMS

There are two options

- Option 2: (OL specific forms only)

"Nuclear Reactors" → "Operator Licensing" → "Licensing Process"

Questions?

Anatomy of an NRC Exam

with selected Rev 10 changes

2015 Exam Writers' Conference

Joe Viera

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"If everyone is moving forward together, then success takes care of itself." – Henry Ford

Before we get going…

- ES-102 updated in Rev 10

ES-102
REGULATIONS AND PUBLICATIONS
APPLICABLE TO OPERATOR LICENSING

A. Purpose

This standard lists the U.S. statutes and the regulations of the U.S. Nuclear Regulatory Commission (NRC) that establish the requirements for conducting operator licensing examinations. It also identifies the regulatory guides and NUREG-series reports that establish the procedures for implementing the regulations and administering the examinations, as well as industry standards issued by the American National Standards Institute/American Nuclear Society (ANSI/ANS), which may provide additional guidance.

Regulatory guides, NUREG-series reports, and industry standards do not constitute requirements, except as specified in Commission orders or as committed to by the facility licensee. NRC examiners and licensees should consult the appropriate revisions, as referenced in each facility's final safety analysis report (FSAR) or approved training program. The following paragraphs summarize the latest revisions of these documents.

B. Statutes

1. *Atomic Energy Act of 1954*

Section 107 of the Atomic Energy Act of 1954 (42 U.S.C. 2137), as amended, states:

The Commission shall--

(a) prescribe uniform conditions for licensing individuals as operators of any of the various classes of production and utilization facilities licensed in this chapter;

(b) determine the qualifications of such individuals;

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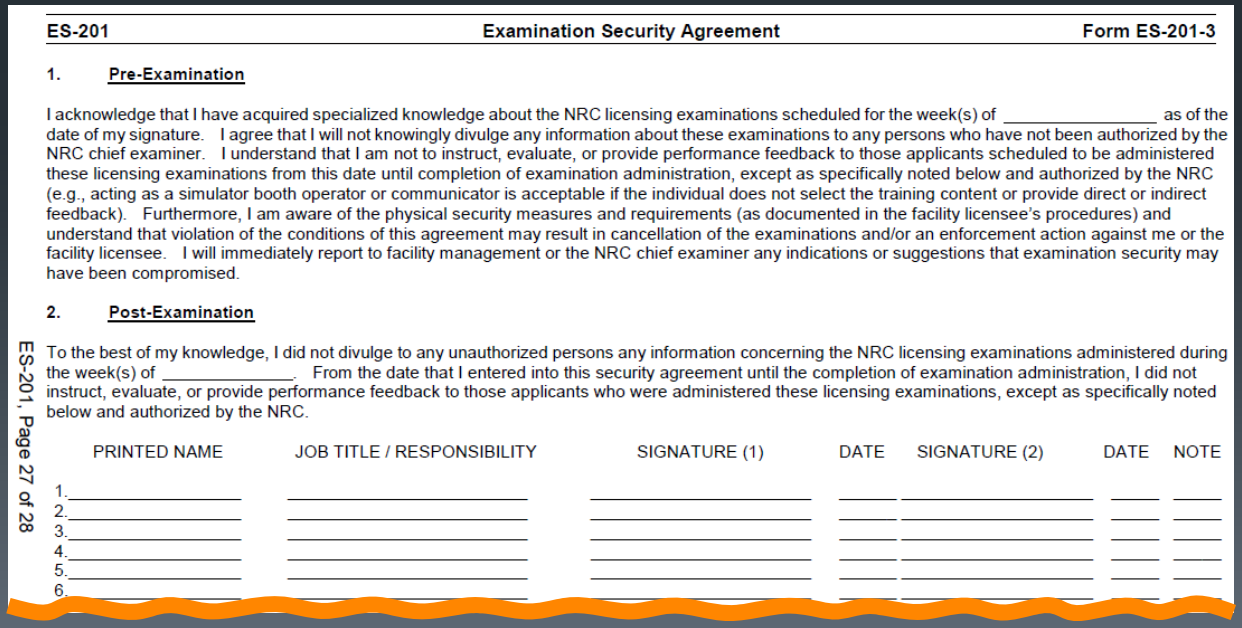
~1 year prior to NRC Exam

- Licensee will generally initiate contact with Region 2 when they are prepared to receive or begin working on an upcoming exam.

- Written Exam Sample Plan (ES-401(N) C.1.a, D.1.e)
  - Provided on request, but allow 2 weeks for delivery
  - Form ES-201-3: Examination Security Agreement
  - Note: Addition of (N) suffix to identify ES-401 forms applicable to ABWR and AP-1000 plants



ES-201 Examination Security Agreement Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of _____ as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of _____. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

ES-201, Page 27 of 28

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.							
2.							
3.							
4.							
5.							
6.							

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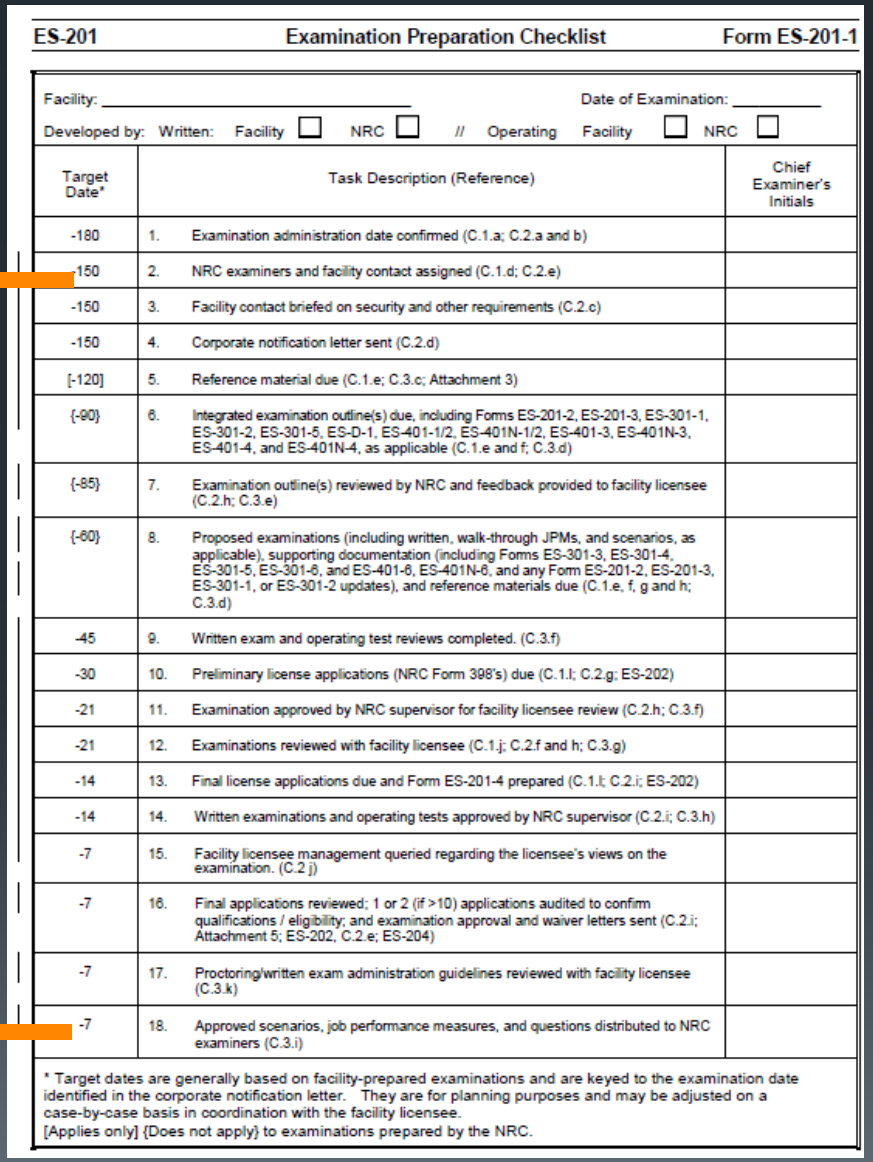
Checklist available?

- Form ES-201-1: Examination Preparation Checklist
- As noted on the form, although keyed to the examination date identified in the Corporate Notification Letter, the target due dates can be adjusted as necessary to accommodate a given situation.



ES-201 **Examination Preparation Checklist** **Form ES-201-1**

Facility: _____ Date of Examination: _____

Developed by: Written: Facility ☐ NRC ☐ // Operating Facility ☐ NRC ☐

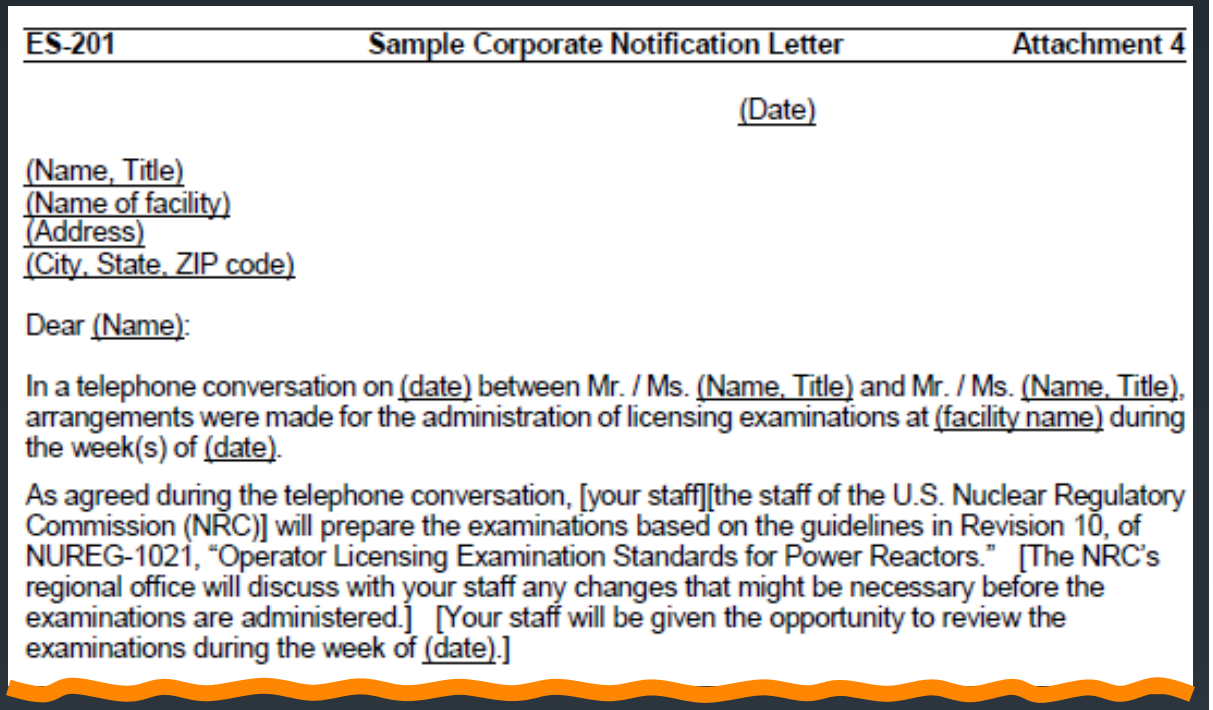
Target Date*		Task Description (Reference)	Chief Examiner's Initials
-180	1.	Examination administration date confirmed (C.1.a; C.2.a and b)	
-150	2.	NRC examiners and facility contact assigned (C.1.d; C.2.e)	
-150	3.	Facility contact briefed on security and other requirements (C.2.c)	
-150	4.	Corporate notification letter sent (C.2.d)	
[-120]	5.	Reference material due (C.1.e; C.3.c; Attachment 3)	
{-90}	6.	Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1, ES-401-1/2, ES-401N-1/2, ES-401-3, ES-401N-3, ES-401-4, and ES-401N-4, as applicable (C.1.e and f; C.3.d)	
{-85}	7.	Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	
{-60}	8.	Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, ES-401N-6, and any Form ES-201-2, ES-201-3, ES-301-1, or ES-301-2 updates), and reference materials due (C.1.e, f, g and h; C.3.d)	
-45	9.	Written exam and operating test reviews completed. (C.3.f)	
-30	10.	Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202)	
-21	11.	Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	
-21	12.	Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	
-14	13.	Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202)	
-14	14.	Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	
-7	15.	Facility licensee management queried regarding the licensee's views on the examination. (C.2 j)	
-7	16.	Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 5; ES-202, C.2.e; ES-204)	
-7	17.	Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	
-7	18.	Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	

* Target dates are generally based on facility-prepared examinations and are keyed to the examination date identified in the corporate notification letter. They are for planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.
[Applies only] {Does not apply} to examinations prepared by the NRC.

The 150-day phone call

- ES-201 C.2.c and C.2.d

- The NRC regional office shall normally issue a letter confirming the arrangements no later than 150 days before the examination begins.



ES-201 Sample Corporate Notification Letter Attachment 4

(Date)

(Name, Title)
(Name of facility)
(Address)
(City, State, ZIP code)

Dear (Name):

In a telephone conversation on (date) between Mr. / Ms. (Name, Title) and Mr. / Ms. (Name, Title), arrangements were made for the administration of licensing examinations at (facility name) during the week(s) of (date).

As agreed during the telephone conversation, [your staff][the staff of the U.S. Nuclear Regulatory Commission (NRC)] will prepare the examinations based on the guidelines in Revision 10, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." [The NRC's regional office will discuss with your staff any changes that might be necessary before the examinations are administered.] [Your staff will be given the opportunity to review the examinations during the week of (date).]

- The letter should be addressed to the person at the highest level of corporate management who is responsible for plant operations (e.g., Vice President of Nuclear Operations).

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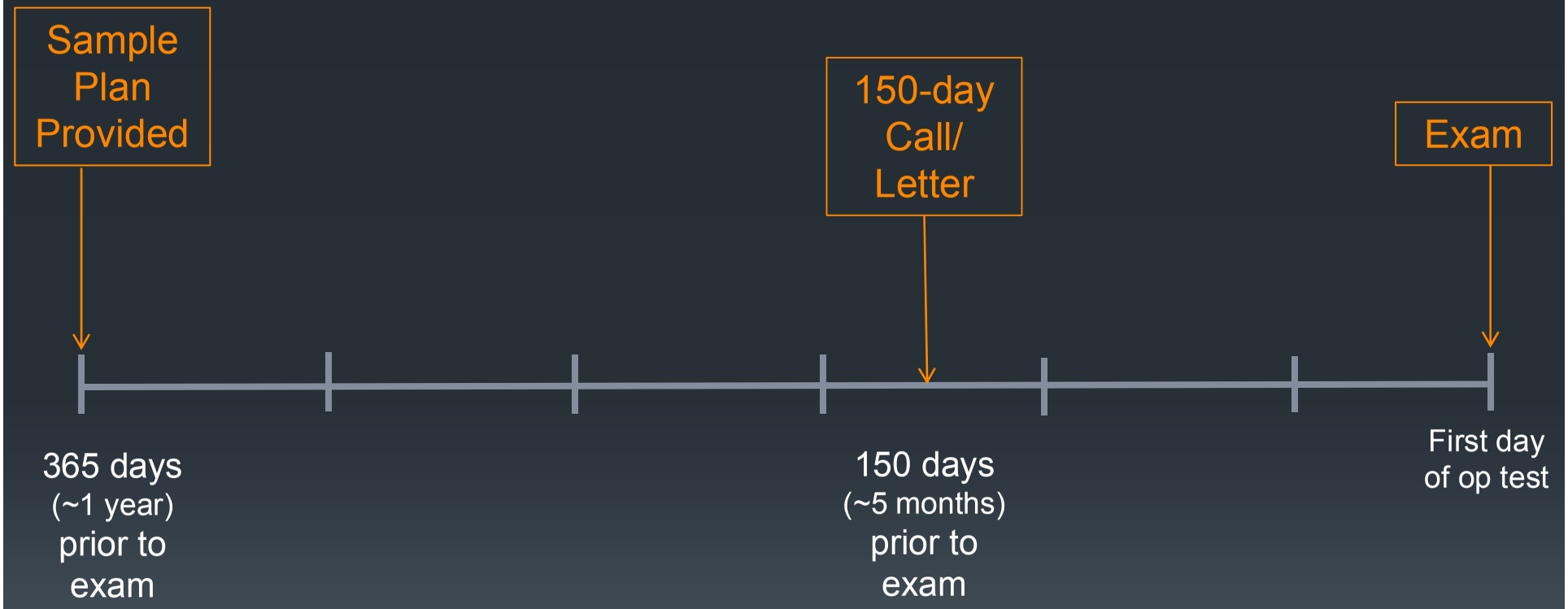
Optional Pre-Review Test Items

- ES-201 C.2.c
- "Each Licensee has the option to submit some test items (e.g., 5 to 10 written questions, 1 scenario, and one to two JPM's) for preliminary NRC review and comment."
- This allowance is permitted to allow increased efficiency of the examination review process by promoting early identification and correction of generic examination development concerns.
- The sample items should not count toward the 20% threshold when determining the acceptable quality range expected by the NRC per ES-501 E.3.a if this review prompted changes which were incorporated and resulted in acceptable test items.

Initial Exam Events



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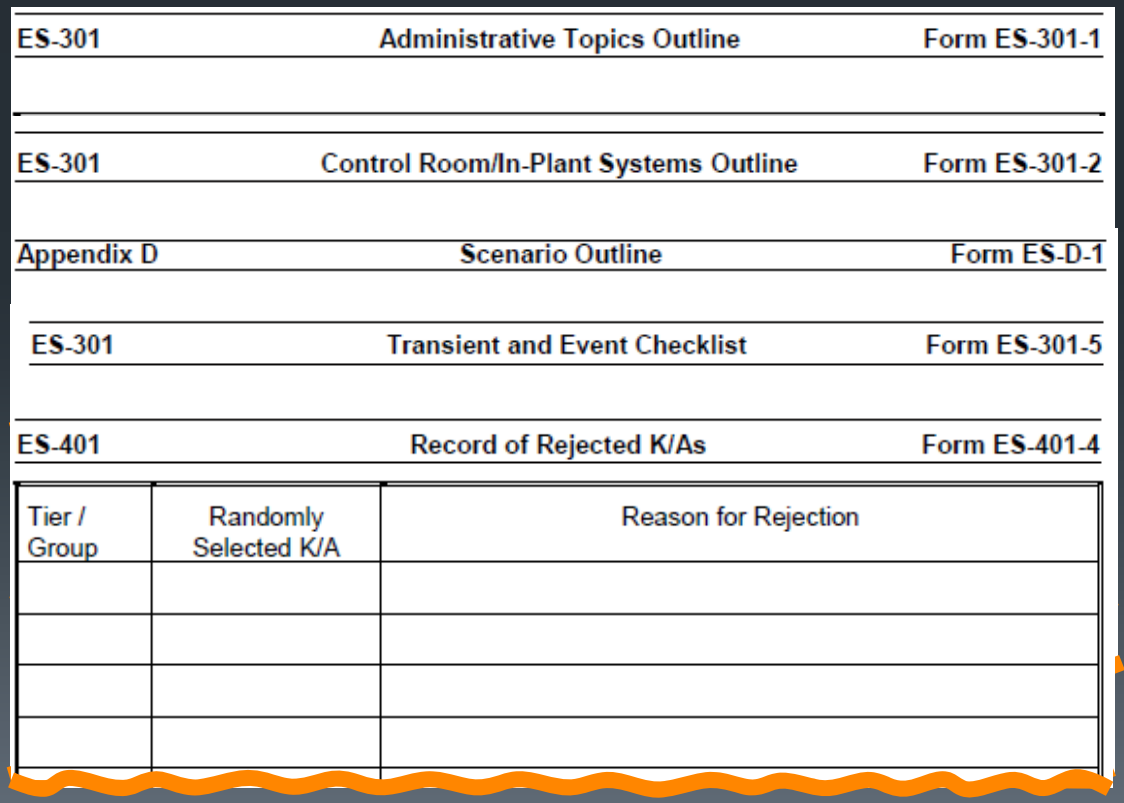
~90 days prior to NRC Exam

- **Operating Test Outlines** submitted for review, ensure that any reference material needed to accomplish that review are included.
- Must be *received* by the date agreed upon with the NRC regional office.
- Separate Outline Forms should be submitted for each license level.

- ES-301-1: Administrative Topics Outline
- ES-301-2: Control Room/In-Plant Systems Outline
- ES-D-1: Scenario Outline
- ES-301-5: Transient and Event Checklist
- ES-401(N)-4: Record of Rejected K/A's (if required)



ES-301	Administrative Topics Outline	Form ES-301-1
ES-301	Control Room/In-Plant Systems Outline	Form ES-301-2
Appendix D	Scenario Outline	Form ES-D-1
ES-301	Transient and Event Checklist	Form ES-301-5
ES-401	Record of Rejected K/As	Form ES-401-4

Tier / Group	Randomly Selected K/A	Reason for Rejection

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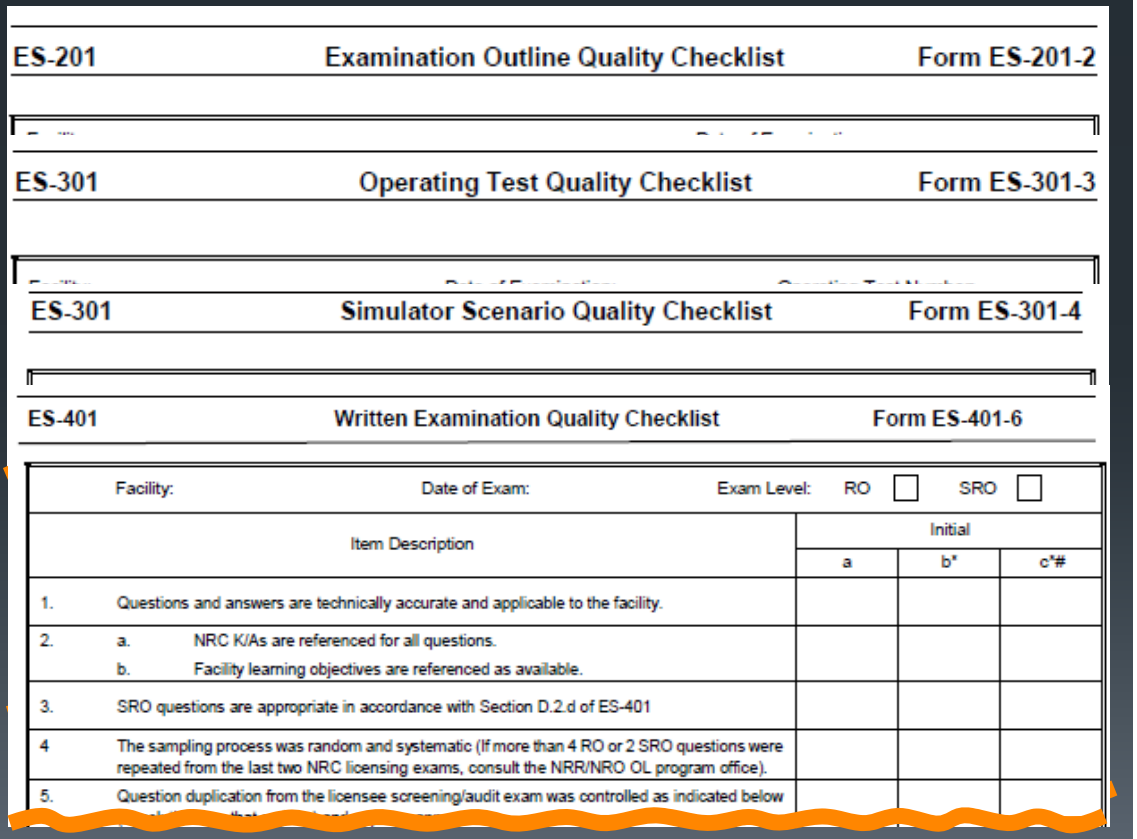
~90 days prior to NRC Exam

- Operating Test Outline reviews conducted per ES-201 C.1.f, using the following forms:

- ES-201-2: Examination Outline Quality Checklist
- ES-301-3: Operating Test Quality Checklist
- ES-301-4: Simulator Scenario Quality Checklist
- ES-401(N)-6: Written Examination Quality Checklist (if written materials provided)



ES-201 Examination Outline Quality Checklist Form ES-201-2

ES-301 Operating Test Quality Checklist Form ES-301-3

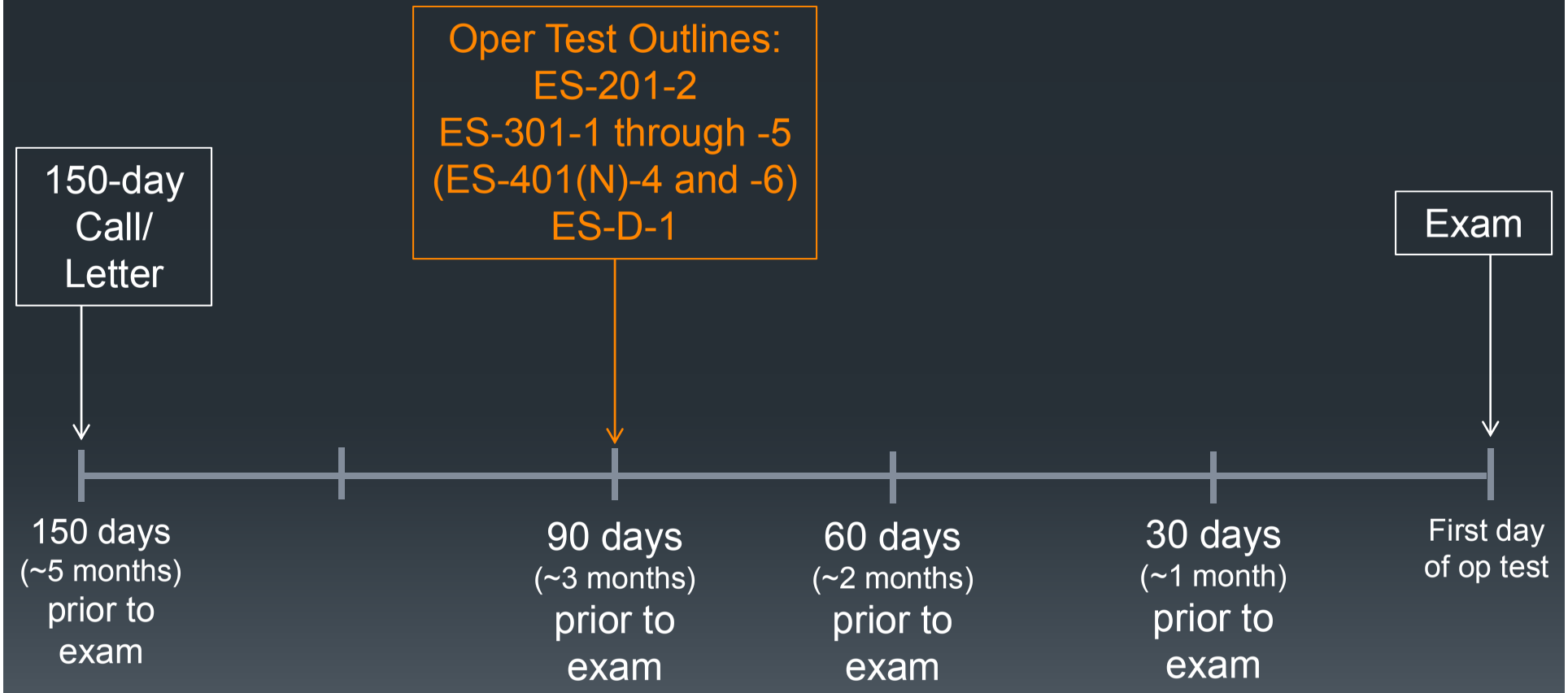
ES-301 Simulator Scenario Quality Checklist Form ES-301-4

ES-401 Written Examination Quality Checklist Form ES-401-6

Facility: Date of Exam: Exam Level: RO ☐ SRO ☐

Item Description	Initial a	b*	c*#
1. Questions and answers are technically accurate and applicable to the facility.			
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.			
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401			
4 The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last two NRC licensing exams, consult the NRR/NRO OL program office).			
5. Question duplication from the licensee screening/audit exam was controlled as indicated below			

~90 days prior to NRC Exam



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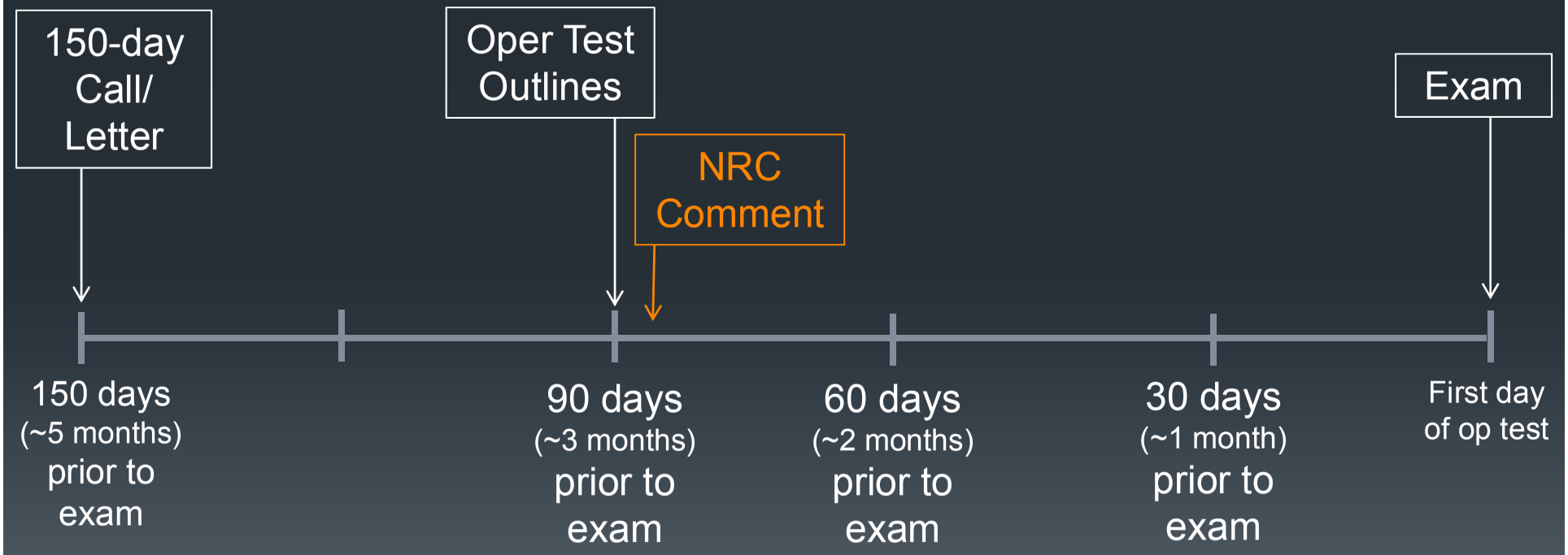
~85 days prior to NRC Exam



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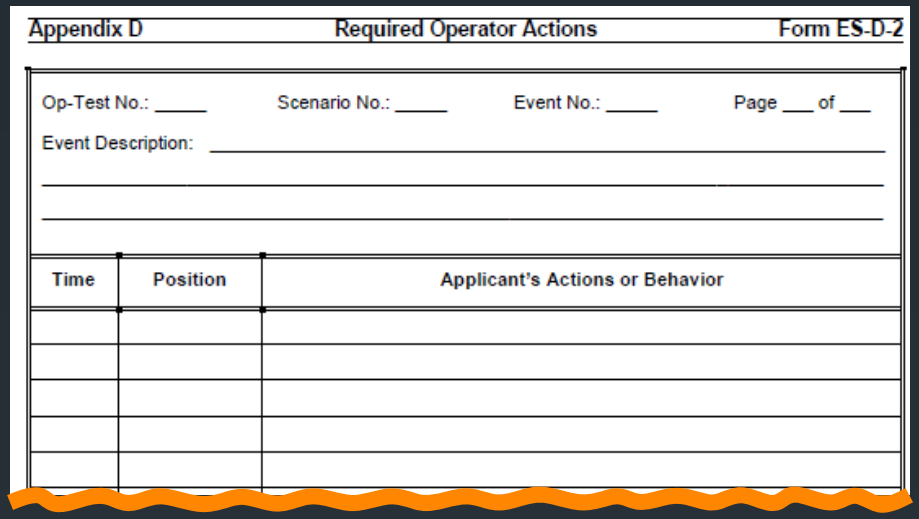
~60 days prior to NRC Exam

Draft Examinations submitted

- Operating Test (ES 301, Appendix C, Appendix D)
  - The facility will prepare the draft operating exam, taking NRC comments from the Outline submittal into account.
  - Re-submit the JPM outlines, including any changes, along with complete copies of all JPMs and JPM answer keys
    - JPM's: ES-301-1, 301-2
  - Re-submit the Scenario outlines, including any changes, along with a complete Required Operator Actions form (ES-D-2) for each event and ES-301-6: Competencies Checklist.
    - Scenario's: ES-D-1, 301-5

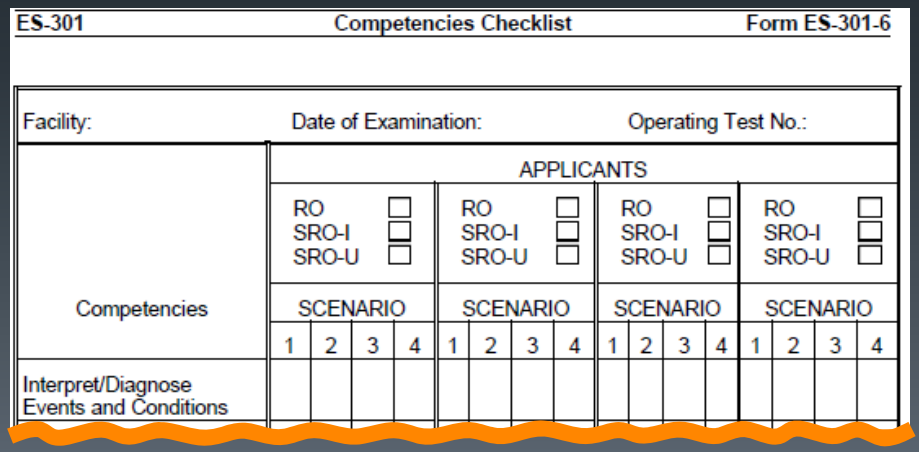


Appendix D | Required Operator Actions | Form ES-D-2

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page ___ of ___

Event Description: _____

Time	Position	Applicant's Actions or Behavior



ES-301 | Competencies Checklist | Form ES-301-6

Facility: Date of Examination: Operating Test No.:

Competencies	APPLICANTS															
	RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions																

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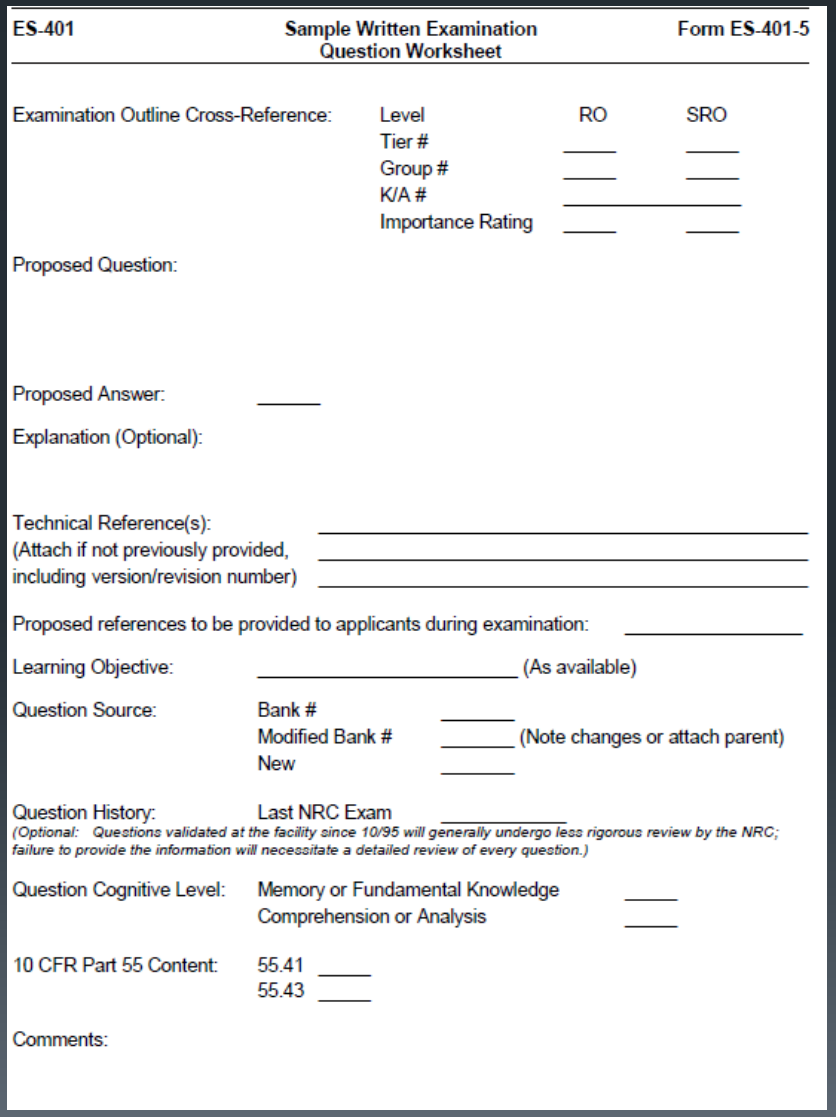
~60 days prior to NRC Exam

Draft Examinations submitted

- Written Exam (ES 401(N), Appendix A)
  - The facility will prepare the draft written exam (unless the exam is NRC-authored), taking any NRC pre-submittal comments into account.
  - Include information on Form ES-401(N)-5: Sample Written Exam Question Worksheet, for each proposed question.
    - Be sure to include the "parent" question if submitting either a Bank or Modified question. This ensures that the NRC can review any differences to verify NUREG compliance.



ES-401 Sample Written Examination Question Worksheet Form ES-401-5

Examination Outline Cross-Reference: Level RO SRO
Tier # ____ ____
Group # ____ ____
K/A # ____
Importance Rating ____ ____

Proposed Question:

Proposed Answer: ____

Explanation (Optional):

Technical Reference(s): ____
(Attach if not previously provided, ____
including version/revision number) ____

Proposed references to be provided to applicants during examination: ____

Learning Objective: ____ (As available)

Question Source: Bank # ____
Modified Bank # ____ (Note changes or attach parent)
New ____

Question History: Last NRC Exam ____
(Optional: Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehension or Analysis ____

10 CFR Part 55 Content: 55.41 ____
55.43 ____

Comments:

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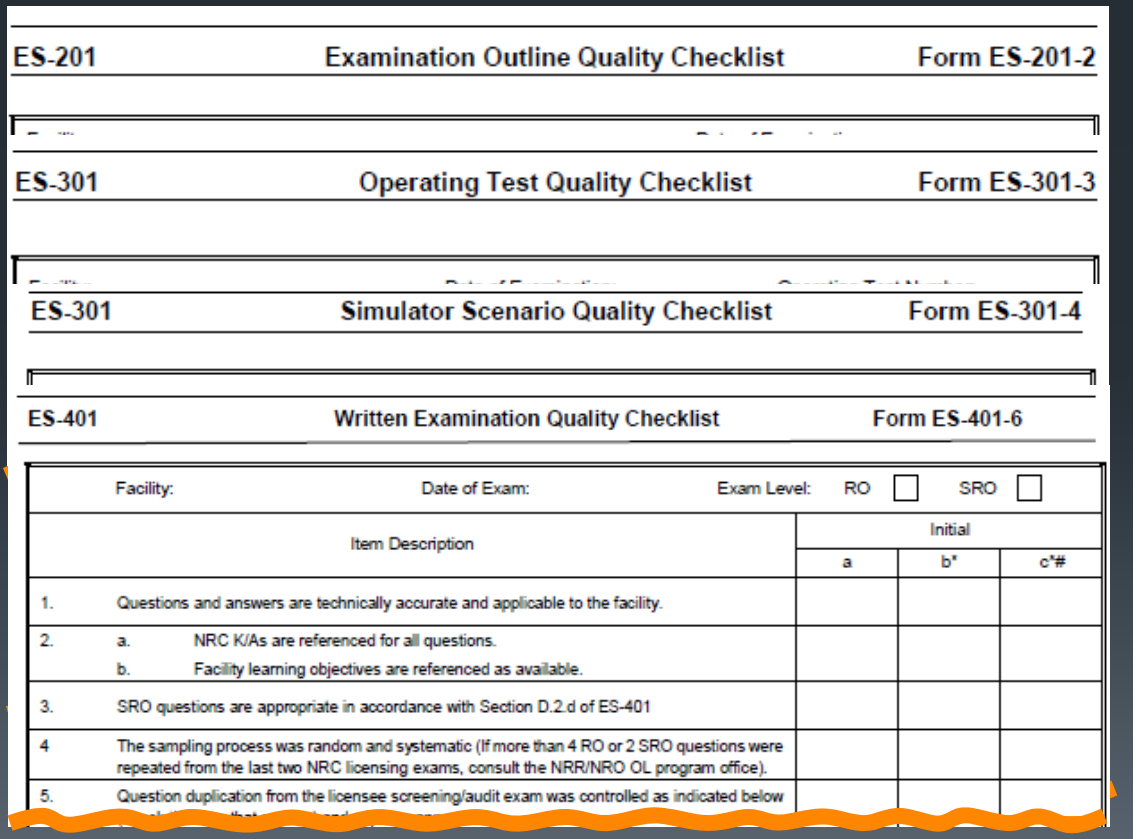
~60 days prior to NRC Exam

- As with the Outline submittal, the Draft Examination must have the quality reviews conducted and submitted per ES-201 C.1.f, using the following forms:

- ES-201-2: Examination Outline Quality Checklist
- ES-301-3: Operating Test Quality Checklist
- ES-301-4: Simulator Scenario Quality Checklist
- ES-401(N)-6: Written Examination Quality Checklist



ES-201 Examination Outline Quality Checklist Form ES-201-2

ES-301 Operating Test Quality Checklist Form ES-301-3

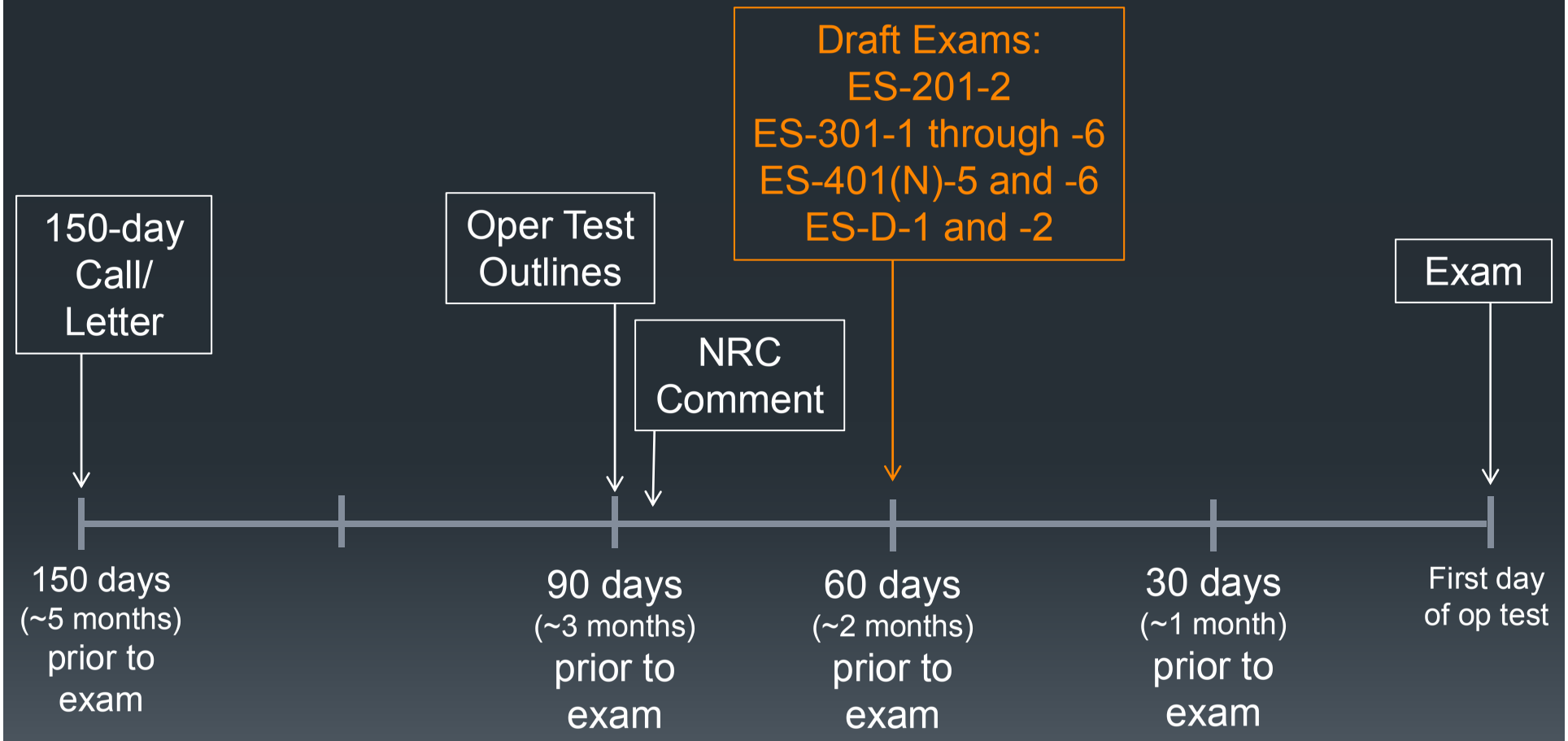
ES-301 Simulator Scenario Quality Checklist Form ES-301-4

ES-401 Written Examination Quality Checklist Form ES-401-6

Facility: Date of Exam: Exam Level: RO ☐ SRO ☐

	Item Description	Initial a	b*	c*#
1.	Questions and answers are technically accurate and applicable to the facility.			
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.			
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401			
4	The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last two NRC licensing exams, consult the NRR/NRO OL program office).			
5.	Question duplication from the licensee screening/audit exam was controlled as indicated below			

~60 days prior to NRC Exam



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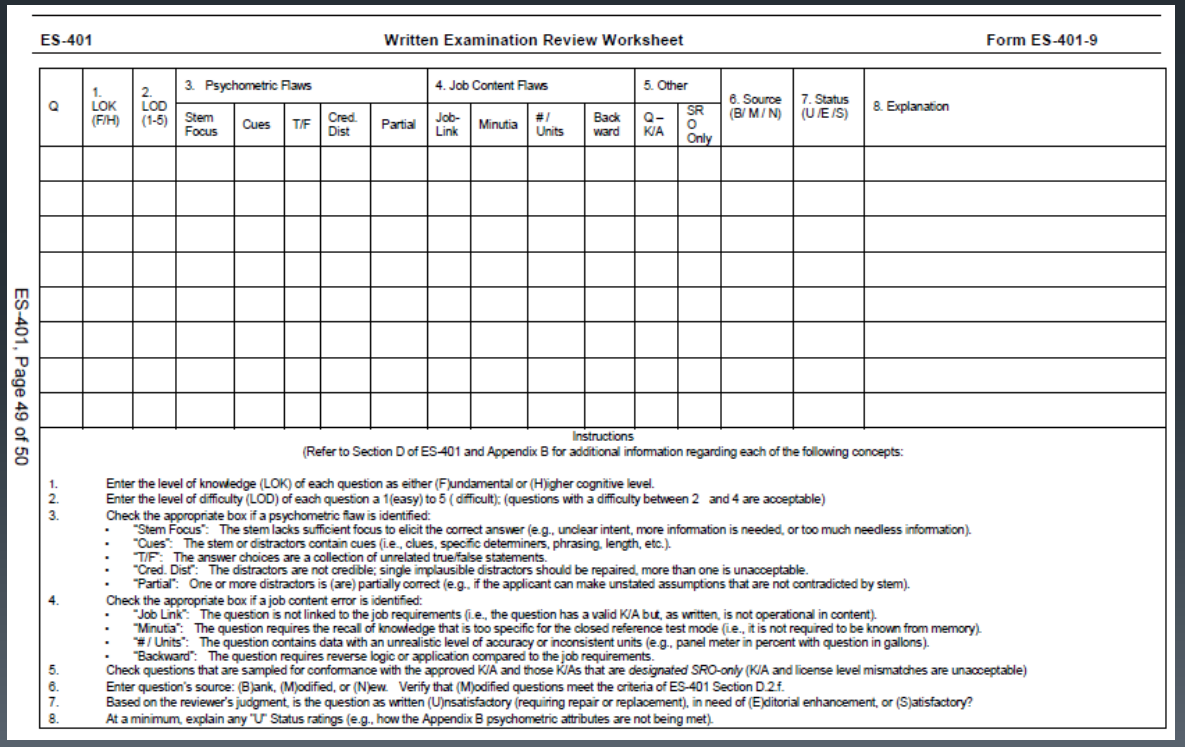
Draft Submittal Review

- NRC Regional Office Review (ES-201 C.3.f)
  - Operating Test review (ES-301 E.2.b) – comments provided in advance of Prep Week
  - Written Exam review (ES-401(N) E.2.a and b) – comments provided in advance of In-Office Review
    - Form ES-401(N)-9: Written Examination Review Worksheet



ES-401 Written Examination Review Worksheet Form ES-401-9

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			

ES-401, Page 49 of 50

Instructions

(Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts:

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question a 1(easy) to 5 (difficult); (questions with a difficulty between 2 and 4 are acceptable)
3. Check the appropriate box if a psychometric flaw is identified:
   - "Stem Focus": The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
   - "Cues": The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc.).
   - "T/F": The answer choices are a collection of unrelated true/false statements.
   - "Cred. Dist": The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
   - "Partial": One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
4. Check the appropriate box if a job content error is identified:
   - "Job Link": The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
   - "Minutia": The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
   - "# / Units": The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
   - "Backward": The question requires reverse logic or application compared to the job requirements.
5. Check questions that are sampled for conformance with the approved K/A and those K/As that are *designated SRO-only* (K/A and license level mismatches are unacceptable)
6. Enter question's source: (B)ank, (M)odified, or (N)ew. Verify that (M)odified questions meet the criteria of ES-401 Section D.2.f.
7. Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
8. At a minimum, explain any "U" Status ratings (e.g., how the Appendix B psychometric attributes are not being met).

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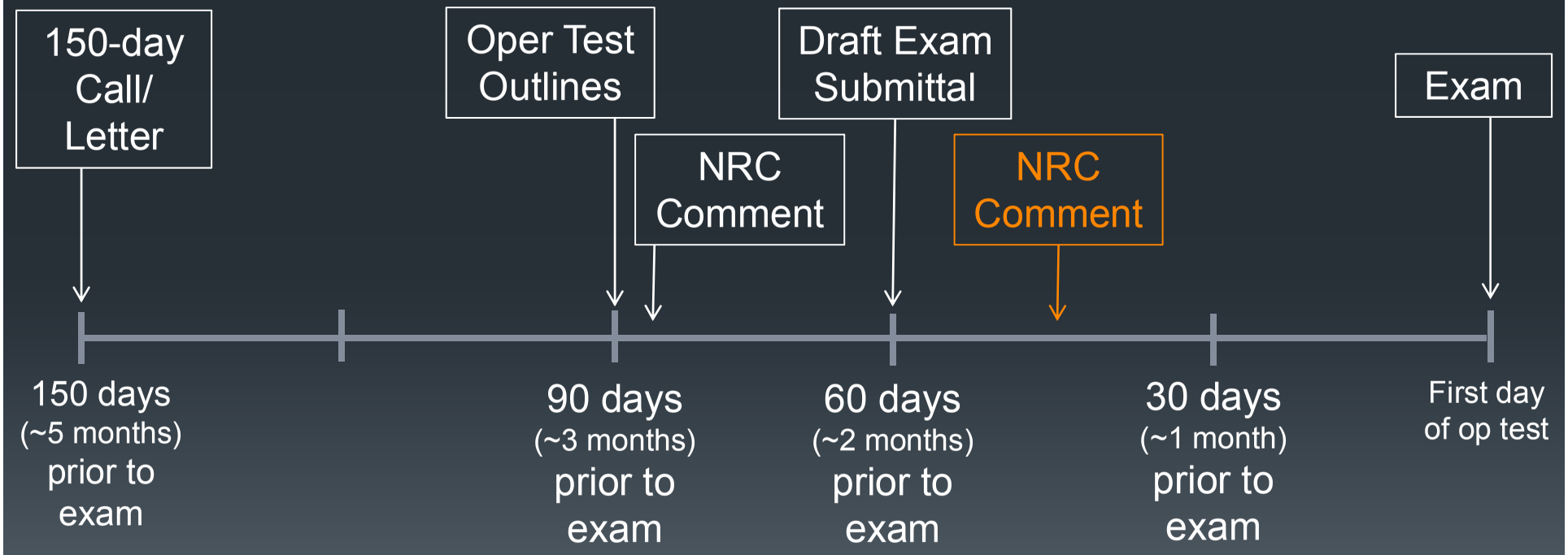
~45 days prior to NRC Exam



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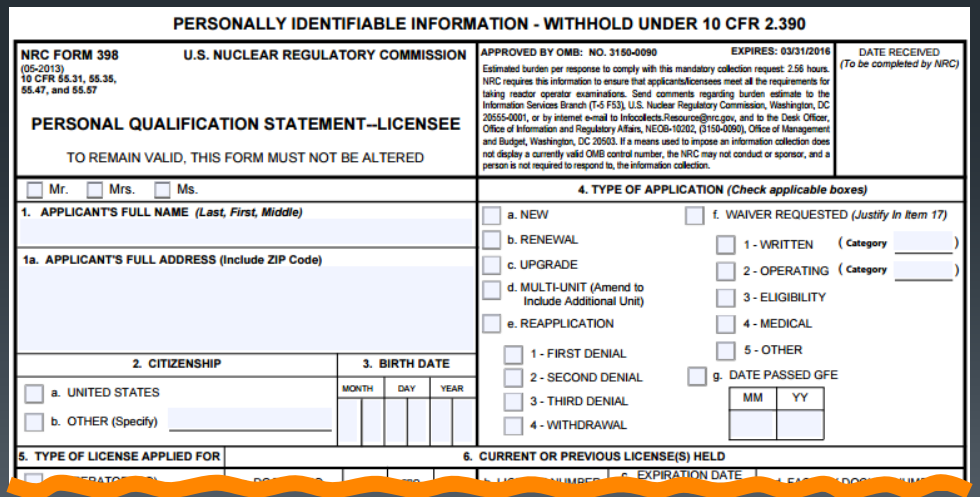
~30 days prior to NRC Exam

- **Preliminary License Applications** due (ES-201 C.2.g)
  - The NRC will review preliminary license applications in accordance with ES-202.
    - NRC Form 398: Personal Qualification Statement- Licensee
    - NRC Form 396: Certification of Medical Examination by Facility Licensee
  - At the same time, the NRC will internally evaluate any preliminary waiver requests in accordance with ES-204. Waiver decisions will not be made until an actual waiver request is received on the final application.



PERSONALLY IDENTIFIABLE INFORMATION - WITHHOLD UNDER 10 CFR 2.390

NRC FORM 398 (05-2013) 10 CFR 55.31, 55.35, 55.47, and 55.57

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0090 EXPIRES: 03/31/2016

Estimated burden per response to comply with this mandatory collection request: 2.56 hours. NRC requires this information to ensure that applicants/licensees meet all the requirements for taking reactor operator examinations. Send comments regarding burden estimate to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0090), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

DATE RECEIVED (To be completed by NRC)

PERSONAL QUALIFICATION STATEMENT--LICENSEE

TO REMAIN VALID, THIS FORM MUST NOT BE ALTERED

☐ Mr. ☐ Mrs. ☐ Ms.

1. APPLICANT'S FULL NAME (Last, First, Middle)

1a. APPLICANT'S FULL ADDRESS (Include ZIP Code)

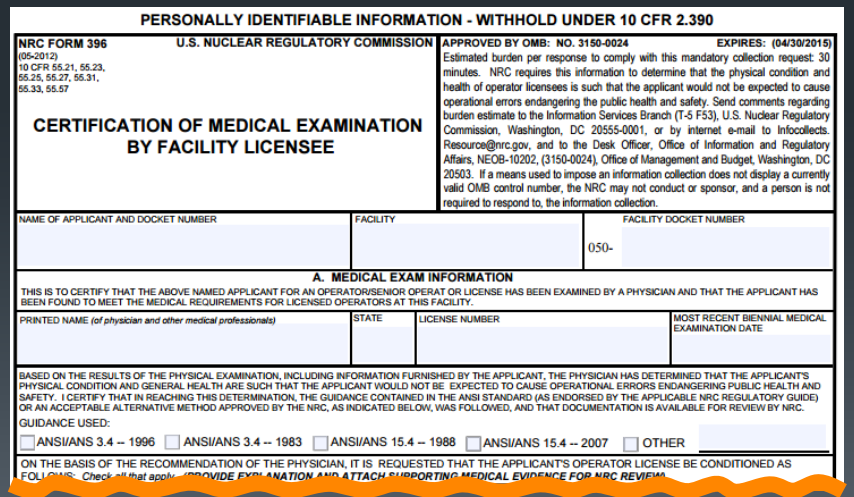
2. CITIZENSHIP
☐ a. UNITED STATES
☐ b. OTHER (Specify)

3. BIRTH DATE
MONTH DAY YEAR

4. TYPE OF APPLICATION (Check applicable boxes)
☐ a. NEW
☐ b. RENEWAL
☐ c. UPGRADE
☐ d. MULTI-UNIT (Amend to Include Additional Unit)
☐ e. REAPPLICATION
☐ f. WAIVER REQUESTED (Justify In Item 17)
☐ 1 - WRITTEN (Category)
☐ 2 - OPERATING (Category)
☐ 3 - ELIGIBILITY
☐ 4 - MEDICAL
☐ 5 - OTHER
☐ 1 - FIRST DENIAL
☐ 2 - SECOND DENIAL
☐ 3 - THIRD DENIAL
☐ 4 - WITHDRAWAL
☐ g. DATE PASSED GFE
MM YY

5. TYPE OF LICENSE APPLIED FOR

6. CURRENT OR PREVIOUS LICENSE(S) HELD
c. EXPIRATION DATE



PERSONALLY IDENTIFIABLE INFORMATION - WITHHOLD UNDER 10 CFR 2.390

NRC FORM 396 (05-2012) 10 CFR 55.21, 55.23, 55.25, 55.27, 55.31, 55.33, 55.57

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0024 EXPIRES: (04/30/2015)

Estimated burden per response to comply with this mandatory collection request: 30 minutes. NRC requires this information to determine that the physical condition and health of operator licensees is such that the applicant would not be expected to cause operational errors endangering the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0024), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

CERTIFICATION OF MEDICAL EXAMINATION BY FACILITY LICENSEE

NAME OF APPLICANT AND DOCKET NUMBER | FACILITY | FACILITY DOCKET NUMBER 050-

A. MEDICAL EXAM INFORMATION

THIS IS TO CERTIFY THAT THE ABOVE NAMED APPLICANT FOR AN OPERATOR/SENIOR OPERAT OR LICENSE HAS BEEN EXAMINED BY A PHYSICIAN AND THAT THE APPLICANT HAS BEEN FOUND TO MEET THE MEDICAL REQUIREMENTS FOR LICENSED OPERATORS AT THIS FACILITY.

PRINTED NAME (of physician and other medical professionals) | STATE | LICENSE NUMBER | MOST RECENT BIENNIAL MEDICAL EXAMINATION DATE

BASED ON THE RESULTS OF THE PHYSICAL EXAMINATION, INCLUDING INFORMATION FURNISHED BY THE APPLICANT, THE PHYSICIAN HAS DETERMINED THAT THE APPLICANT'S PHYSICAL CONDITION AND GENERAL HEALTH ARE SUCH THAT THE APPLICANT WOULD NOT BE EXPECTED TO CAUSE OPERATIONAL ERRORS ENDANGERING PUBLIC HEALTH AND SAFETY. I CERTIFY THAT IN REACHING THIS DETERMINATION, THE GUIDANCE CONTAINED IN THE ANSI STANDARD (AS ENDORSED BY THE APPLICABLE NRC REGULATORY GUIDE) OR AN ACCEPTABLE ALTERNATIVE METHOD APPROVED BY THE NRC, AS INDICATED BELOW, WAS FOLLOWED, AND THAT DOCUMENTATION IS AVAILABLE FOR REVIEW BY NRC.

GUIDANCE USED:

☐ ANSI/ANS 3.4 -- 1996 ☐ ANSI/ANS 3.4 -- 1983 ☐ ANSI/ANS 15.4 -- 1988 ☐ ANSI/ANS 15.4 -- 2007 ☐ OTHER

ON THE BASIS OF THE RECOMMENDATION OF THE PHYSICIAN, IT IS REQUESTED THAT THE APPLICANT'S OPERATOR LICENSE BE CONDITIONED AS FOLLOWS: Check all that apply. (PROVIDE EXPLANATION AND ATTACH SUPPORTING MEDICAL EVIDENCE FOR NRC REVIEW)

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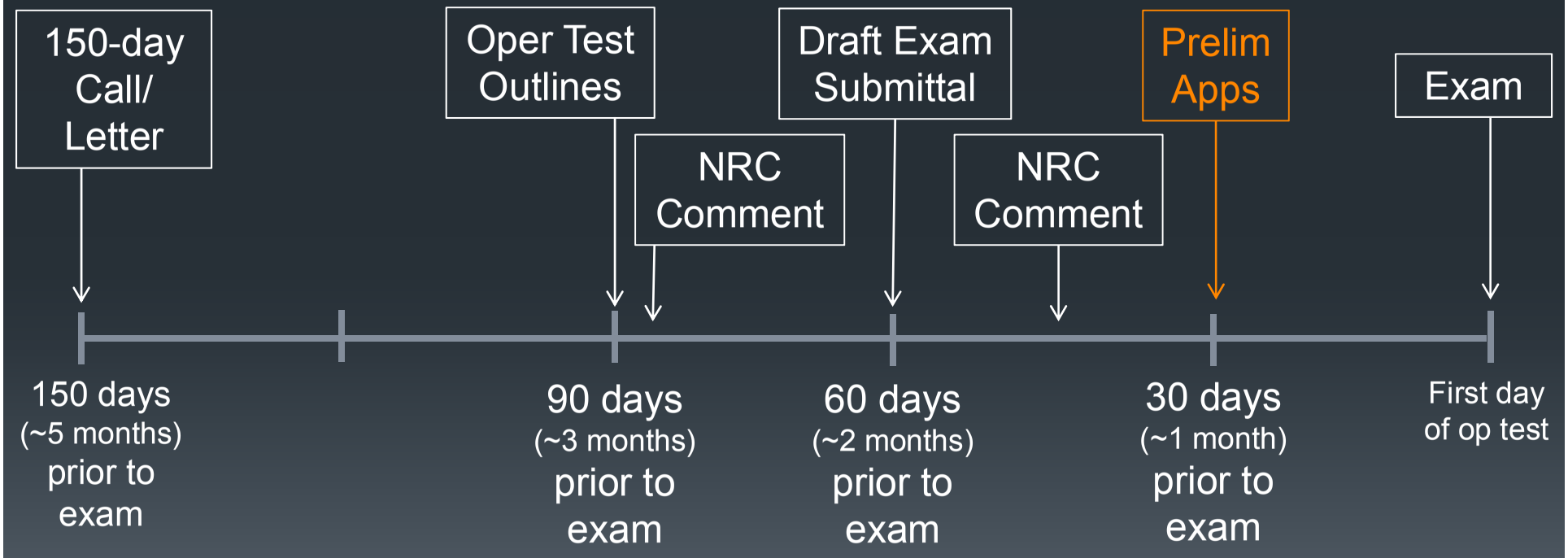
~30 days prior to NRC Exam



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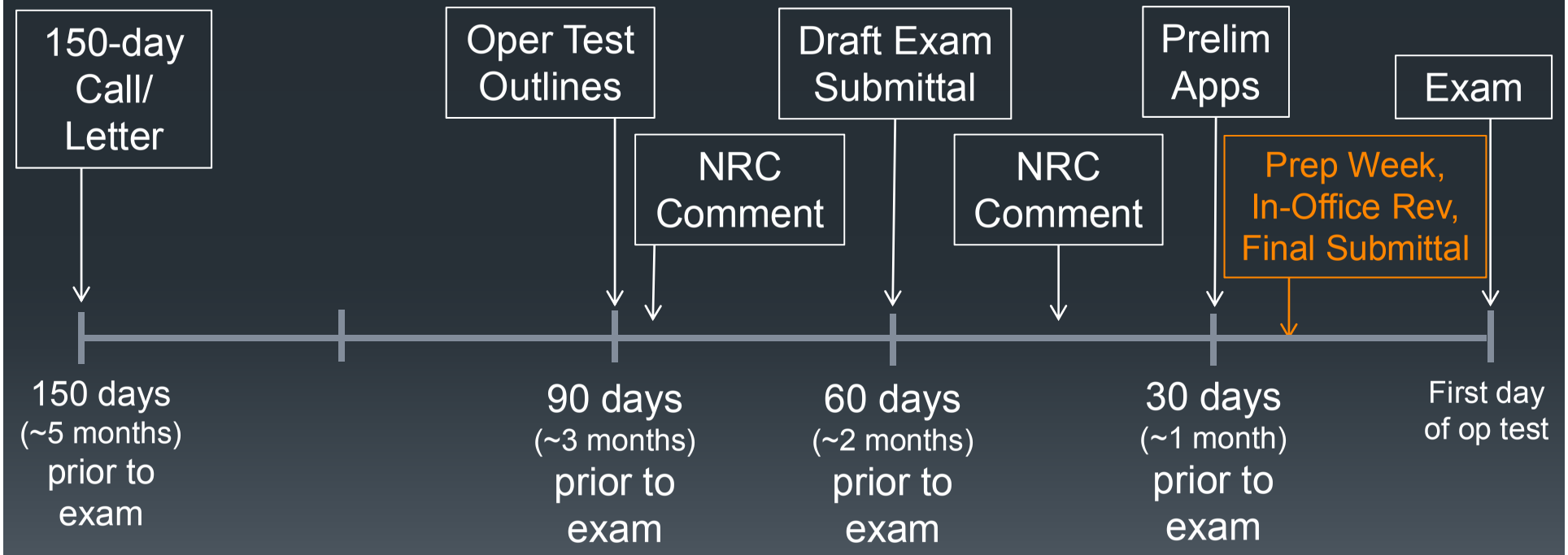
Final Reviews

- Operating Exam Prep Week (ES-201 C.1.j, C.2.f)
  - Typically occurs 3 weeks prior to administration of the Operating Test
- Written Exam In-office Review (ES-201 C.1.j; ES-401(N) C.1.d)
  - Can occur over the phone, in the region, or at the facility
  - Typically occurs the week before or the week after prep week

~21 days prior to NRC Exam

- Final Submittal
  - Serves to provide the most up-to-date documentation of an exam's preparation for the final review and eventual inclusion into the ADAMs package (all exam documents, outline documents, and QA forms)
  - Ensure QA forms are re-validated when re-submitted to reflect changes incorporated since initial outline/draft exam submittal
  - Not required to be submitted under company letterhead

~21 days prior to NRC Exam



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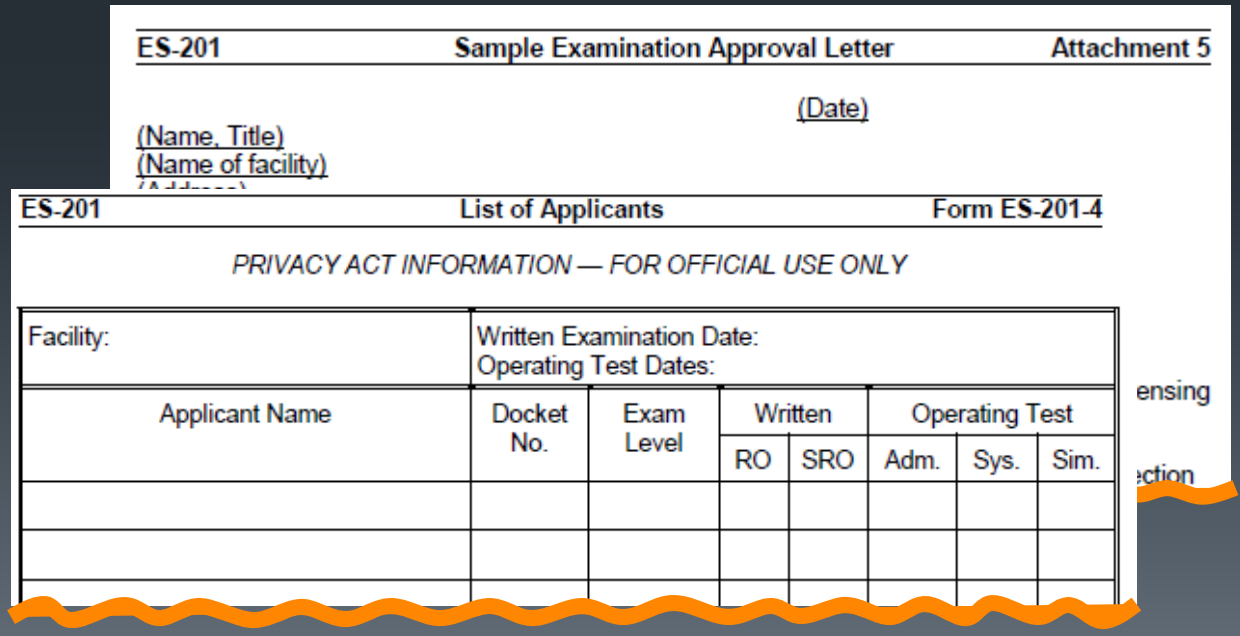
~14 days prior to NRC Exam

- **Final License Applications** due (ES-201 C.1.l and C.2.i)
  - In accordance with ES-202 (Preparing Applications), signed final license applications shall be submitted with a letter requesting that licensing examinations be administered. (NRC Form 398 and NRC Form 396)
- Once any applicable waivers are processed, final license applications are approved, and final versions of the examination are approved, the region will prepare:
  - Examination Approval Letter
  - ES-201-4: List of Applicants
  - If applicable, "Waiver Approval/Denial Letters" are sent to individual applicants.



ES-201 Sample Examination Approval Letter Attachment 5

(Date)

(Name, Title)
(Name of facility)

ES-201 List of Applicants Form ES-201-4

PRIVACY ACT INFORMATION — FOR OFFICIAL USE ONLY

Facility:			Written Examination Date: Operating Test Dates:				
Applicant Name	Docket No.	Exam Level	Written		Operating Test		
			RO	SRO	Adm.	Sys.	Sim.

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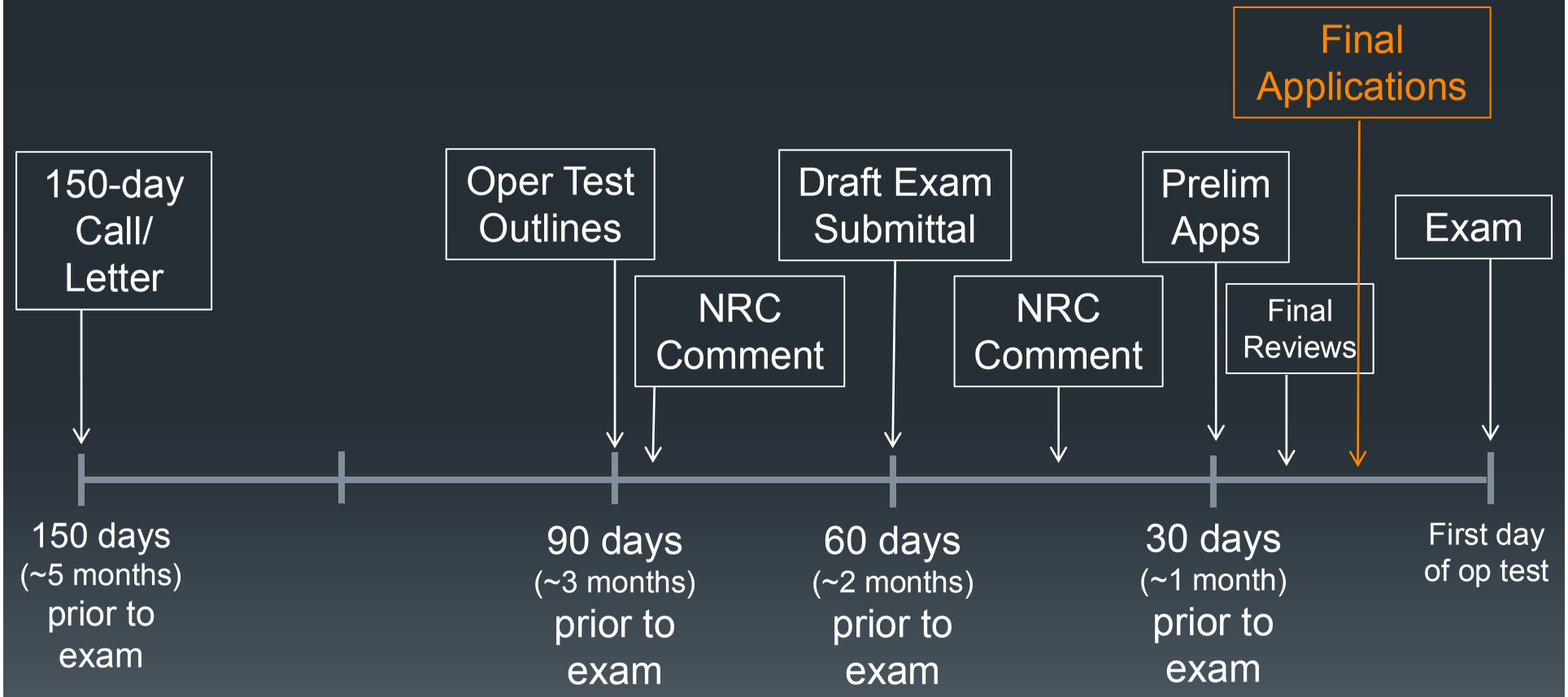
~14 days prior to NRC Exam



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Examination Administration

- NRC Examiners perform administration of the operating test.
- Typically, following the operating exam, the Facility performs administration of the written examination.
  - ES-402 C.2.b: the Chief Examiner will ensure that an NRC point of contact is available in the regional office to respond to facility questions while the examinations are being given.
  - Applicant question and proctor answer process is formalized in Region 2 using a set of standard forms.
  - Following examination completion, applicant answer sheets are forwarded to the Chief Examiner.
  - The written examination and operating test dates may not diverge by more than 30 days without obtaining concurrence from the NRR/NRO operator licensing program office.

Examination Administration

- Applicant Question and Proctor Answer Forms

Written Exam Applicant Question Form QUESTION / RESPONSE DOCUMENTATION

FOR USE BY APPLICAN Name:_____ Exam:_____ Date:_____

Applicant Asking Questic

Time Question Asked:

Question Number:

Question Being Asked:

FOR USE BY PROCTOF

Response To Applicant:

Time	Question number	Question	Proctor response	NRC called Yes/No	NRC response	Provide to ONE / ALL Applicant(s)?

Time Response Provided To Applicant:

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Post Exam Activities

- ES-501 Section B
  - The goal of the NRR/NRO operator licensing program office is to complete licensing or denial actions within 30 days after the facility licensee submits the graded examinations or its formal written examination comments to the NRC. The NRC and facility licensee staffs should establish their priorities and schedules to achieve this goal.

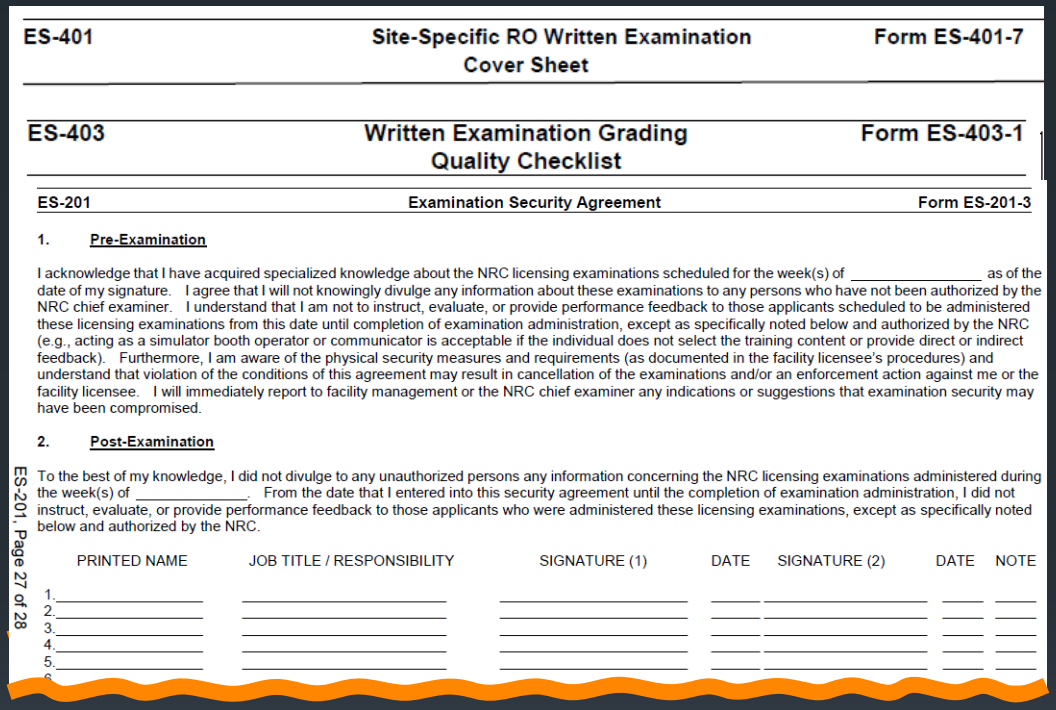
+5 days following Written Exam

- Submit the following to the NRC in accordance with ES-501 C.1.a:
  - Each applicants original answer sheet
  - A clean copy of each applicants original answer sheet
  - Each applicants Examination Cover Sheet (ES-401(N)-7: RO or ES-401(N)-8: SRO)
  - Graded applicant answer sheets can also be provided (if desired)
  - Master examinations and answer keys (with any required annotations reflecting changes made during examination administration)
  - Questions asked by and answers given to applicants during the written examination
  - Post exam comments – including applicant comments, as well as any recommended substantive changes based on any grading analysis
  - Seating chart
  - A completed ES-403-1: Written Examination Grading Quality Checklist
  - The original ES-201-3: Examination Security Agreement, with pre- and post-examination signatures (may be more than +5 days)

+5 days following Written Exam

- ES-401(N)-7 (8): RO (SRO) Written Examination Cover Sheet
- ES-403-1: Written Examination Grading Quality Checklist
- ES-201-3: Examination Security Agreement

+5 days: Post-Exam Submittal



ES-401 | Site-Specific RO Written Examination Cover Sheet | Form ES-401-7

ES-403 | Written Examination Grading Quality Checklist | Form ES-403-1

ES-201 | Examination Security Agreement | Form ES-201-3

1. **Pre-Examination**

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of _____ as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. **Post-Examination**

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of _____. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.							
2.							
3.							
4.							
5.							

ES-201, Page 27 of 28

Written Exam Date | +15 days | +30 days | +45 days | +60 days

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What the NRC Does, Post-Exam

- Region 2 will grade the exams in accordance with ES-303 and ES-403.
  - Operating Test Grading (ES-303)
    - ES-303-1: Individual Examination Report
      - Exam Summary
      - Examiner Recommendations
      - JPM Topic List (Page 2)
      - Simulator Competencies (Page 3)
    - ES-303-2: Operating Test Comments
  - Written Examination Grading (ES-403)
    - ES-403-1: Written Examination Grading Quality Checklist

ES-303 **Individual Examination Report** **Form ES-303-1**

PRIVACY ACT INFORMATION — FOR OFFICIAL USE ONLY

U.S. Nuclear Regulatory Commission Individual Examination Report					
Applicant's Name			Docket Number 55-		
I	R	Examination Type (Initial or Retake)	Facility Name		
		Reactor Operator	Facility Description		Hot
		Senior Reactor Operator (SRO) Instant			Cold
		SRO Upgrade			BWR
		SRO Limited to Fuel Handling			PWR

Written Examination Summary	
NRC Author/Reviewer	RO/SRO/Total Exam Points ___ / ___ / ___
NRC Grader/Reviewer	Applicant Points ___ / ___ / ___

- Chief Examiner will resolve any post-exam comments, recommendations, and/or answer key changes (as required). Coordination with the Headquarters Program Office may be required.

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What the NRC Does, Post-Exam

- Following completion of the Licensing Decision, the following documents are completed:
  - Exam Results Summary Report (Letter)
    - Training Manager also receives copies of applicant 303's in order to evaluate required remediation
  - ES-501-2: Power Plant Examination Results Summary
- Facility notification is typically performed by phone call and followed up by transmittal of the reports above
- The OLA will prepare a license, denial, or notification letter for each applicant.
  - Notification letters are sent in the event waiver requirements need to be met or when the exam is borderline (e.g., license held pending exam appeal).

ES-501 **Power Plant Examination Results Summary** **Form ES-501-2**

PRIVACY ACT INFORMATION — FOR OFFICIAL USE ONLY

Power Plant Examination Results Summary

Facility:	Plant Status: Hot ☐ Cold ☐
Written Examination Date: Prepared by: Facility ☐ NRC ☐	Operating Test Date(s): Prepared by: Facility ☐ NRC ☐
NRC Examiners:	

Overall Results

Applicants:	Total #	# Passed	% Passed	# Failed	% Failed
RO					
SRO					

Individual Results

Name	Docket # 55 - (____)	Type (1)	Written Grade RO / SRO / TOT	Operating Test(2) W - T	ADM	SIM
			/ /			

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What the NRC Does, Post-Exam

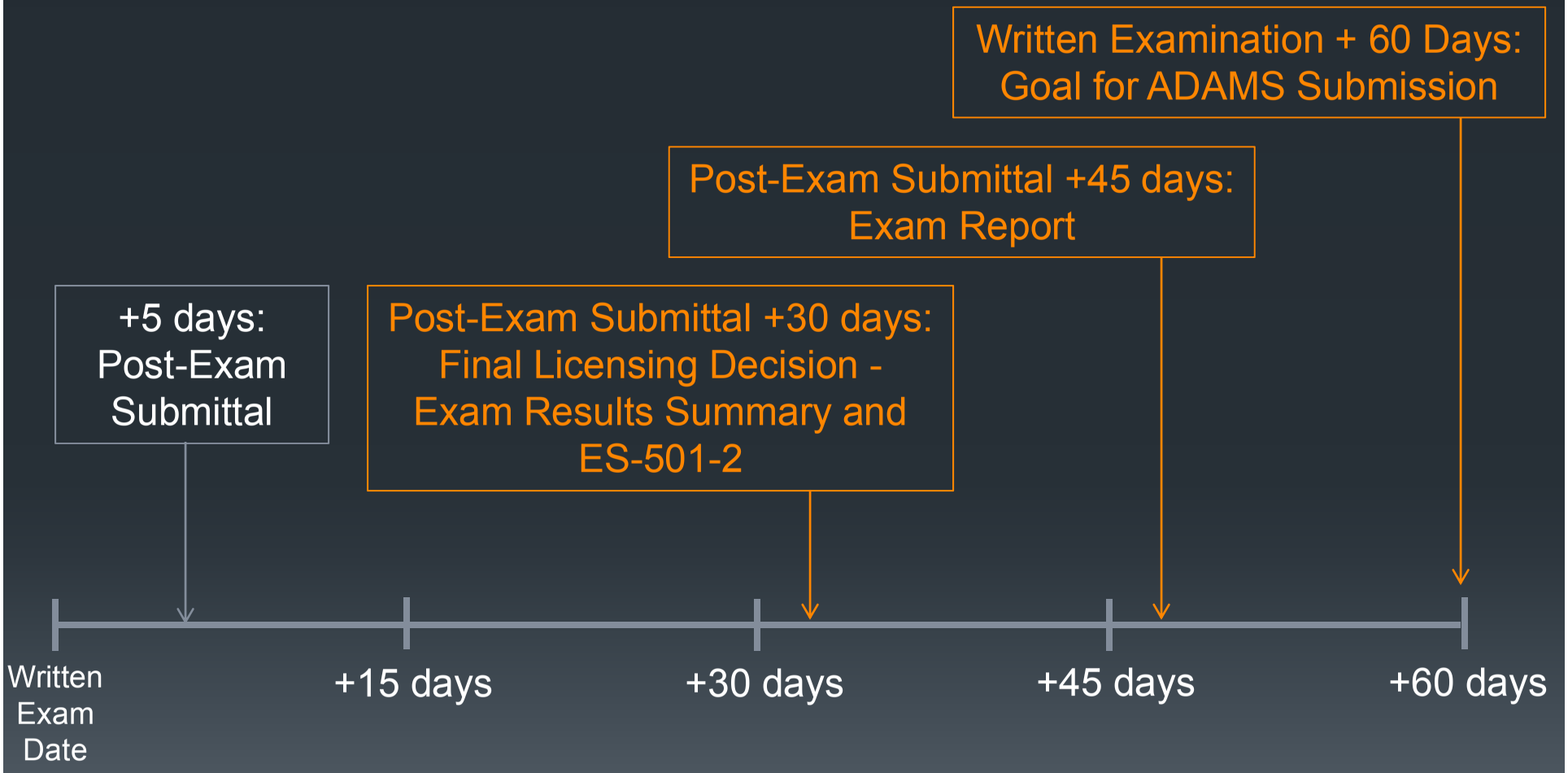
- Along with the license, denial, or notification letter, each applicant also receives their:
  - ES-303-1: Individual Examination Report
  - ES-303-2: Operating Test Comments
  - Appropriate “as-run” ES-D-1: Scenario Outline
  - ES-401(N)-7 (8): RO (SRO) Written Examination Cover Sheets
  - Written Exam answer sheets (copy of the original)

- A license denial package will also include:
  - ES-D-2: Required Operator Actions
  - A copy of the final written exam and answer key

What the NRC Does, Post-Exam

- Finally, the Regional office prepares the Exam Report:
- The exam report documents:
  - The quality of the exam submission (SAT or UNSAT)
  - Any delays in administering the examination (with reasons)
  - Any extensions required for administration of the written examination
  - Exam results, including any significant grading deficiencies (for facility graded exams)
  - An overview of the exam security measures and activities evaluated
  - Any other issues or findings discussed at the exit meeting
  - The report will also include (or reference):
    - A copy of the final written exam and answer key, including any changes
    - Post-Exam Comments and resolutions
    - NRC explanation for accepting or rejecting each facility recommendation
    - a Simulator Fidelity Report

Post Exam Activities



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Questions?

- Presentations remaining…
  - K/A Matching: Rick Baldwin
  - Plausibility: Michael Meeks
  - Examination OE: Bruno Caballero
  - SRO-Only Guidance: Andreas Goldau
  - Alternate Path JPM's and Cueing: David Lanyi
  - Operating Test changes in Rev 10: Mark Bates
  - NUREG 1021 Rev 11 Preview: Dan Bacon

K/A MATCHING – SAMPLE PLAN GENERATION

”Nothing truly valuable can be achieved except by the unselfish cooperation of many individuals.” Albert Einstein

2015

Exam Writers’ Workshop

Rick Baldwin

K/A Matching/Mismatching

SAMPLE PLAN GENERATION

- ES-401, “Preparing Initial Site-Specific Written Examinations,” D. Examination Preparation, D.1 Develop the Outline.
- NUREG-1122, 1123, “Knowledge and Abilities Catalog[s] for Nuclear Power Plant Operators: Pressurized [and Boiling Water] Reactors”

K/A Matching/Mismatching

- D.1.b Sample Plan must be: “Systematically and random using the specific K/A statements.”
  a) Maintain examination consistency; licensee specific KA cannot be used.
  b) A broad sample is required.
- Other methodologies are allowed provided they are:
  a) Reproducible, comprehensible, free of bias.

K/A Matching/Mismatching

- Pre-screening is useable, provide those K/A statements that do not represent the current plant. However, DO NOT remove a system that has been replaced by another system, use that original system in the K/A catalog.
  a) Discard randomly selected K/As during outline development.
  b) Pre-Screen the entire K/A catalog before beginning the random selection process.

K/A Matching/Mismatching

- For example: February 2008: Examiners conducted a review of the licensee's K/A Suppression List and identified knowledge and abilities suppressed in the following BWR K/A Catalog Sections, which were still applicable to BFN:
  - Section 202001, Recirculation System. Licensee suppressed K/As related to Motor-Generator (MG) Set knowledge and abilities even though the K/As still applied to licensee's new Variable Frequency Drives (VFD).

K/A Matching/Mismatching

IN REGION II WE:

- Provide the Sample plan when requested
- When ready to put staff on the project, request a sample plan. Request it early!
- This is done because it is a faster process for the examiners. There is no additional requirement for the chief to FIGURE OUT your process. This has been done!

K/A Matching/Mismatching

- PWR sample plans are developed by Michael Meeks and BWR sample plans are developed by Phillip Capehart.

- Contact the chief examiner to request the sample plan. Make sure the security agreement form has been filled out before the chief sends you the sample plan.

- Suppressed K/As discuss with chief examiner and provide those K/As for incorporation into RII computer generation program.

K/A Matching/Mismatching

- NOTE: "The fact that a K/A does not have a corresponding facility learning objective, was not covered in training, or is subject to election in multiple tiers, are NOT sufficient bases for eliminating the K/A from any tier of the outline." [ES-401, page 4 of 50]

K/A Matching/Mismatching

- Spend NO MORE than 2 hours on a K/A.
- If you cannot write a question to the K/A ask for help, get ideas from chief, or get a new K/A.
- Request an K/A replacement. This can be done by any chief examiner in the office.
- If the chief is not available, ask who will be available to facilitate the change.

K/A Matching/Mismatching

- Questions that have K/A ‘s that state:

Ability to (a) predict the impacts of the following or operations of CVCS (XXXX); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Emergency Boration

The K/A has to meet the second part at MINIMUM.

K/A Match, Example 1

- APE005 2.2.21 - Inoperable/Stuck Control Rod

APE005 GENERIC - Knowledge of pre- and post-maintenance operability requirements. (CFR: 41.10 / 43.2)

- Given the following Unit X conditions:
  - Time = 1200
  - Reactor Power = 100%
  - Control Rod Group 5 Rod 4 ONLY has partially inserted and indicates 90% withdrawn
  - Time = 1330
  - Reactor Power = 55% stable
  - Time = 1400
  - Control Rod Group 3 Rod 1 has dropped and indicates 0% withdrawn

1. At Time = 1330 Control Rod Group 5 Rod 4 is considered __(1)__ in accordance with Tech Spec 3.1.4 (Control rod Group Alignment Limits).

2. At Time = 1400 the CRS will direct the RO's to __(2)__.

K/A Match, Example 1

- Which ONE of the following completes the statements above?

A. 1. misaligned ONLY
   2. notify SPOC to reduce RPS trip setpoints

B. 1. misaligned ONLY
   2. trip the Reactor

C. 1. Inoperable
   2. notify SPOC to reduce RPS trip setpoints

D. 1. Inoperable
   2. trip

K/A Match, Example 1

- Which ONE of the following completes the statements above?

A. 1. misaligned ONLY
   2. notify SPOC to reduce RPS trip setpoints

B. 1. misaligned ONLY
   2. trip the Reactor

C. 1. Inoperable
   2. notify SPOC to reduce RPS trip setpoints

D. 1. Inoperable (Correct Answer)
   2. trip

ANALYSIS K/A MATCH, Example 1

- Analysis:
- NO, this does not match the KA.
- This K/A is knowledge of both pre- and post-test maintenance. This question has nothing to do with maintenance.

K/A Match, Example 2

- SYS003 A3.02 - Reactor Coolant Pump System (RCPS) Ability to monitor automatic operation of the RCPS, including: (CFR: 41.7 / 45.5) Motor current……..
  - Given the following Unit X conditions:
    - Initial conditions:
      - Time = 0400:00
      - Reactor power = 100%
      - 1B1 RCP Amps = 527
    - Current conditions:
      - Time = 0400:01
      - 1B1 RCP Amps = 255

    Reactor power will __ (1) __ and feedwater will __ (2) __.

K/A Match, Example 2

- Which ONE of the following completes the statement above?

A. 1. decrease (Correct Answer)
   2. re-ratio

B. 1. decrease
   2. NOT re-ratio

C. 1. stay the same
   2. re-ratio

D. 1. stay the same
   2. NOT re-ratio

ANALYSIS K/A Match, Example 2

- Does NOT match
- Just because Motor Currents appear in the stem of the question, this does not make it match the KA.

K/A Match, Example 3

- SYS015 A1.07 - Nuclear Instrumentation System (NIS) Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the NIS controls including: (CFR: 41.5 . 45.5)

Changes in boron concentration .....

K/A Match, Example 3

Given the following conditions on Unit 1:

- Initial Conditions:
  - Reactor power is 75%
  - Rods are in "AUTO"
  - Control Bank "D" is 192 steps withdrawn
  - Combined error signal = (±) 0°F
- Current conditions:
  - An NCS boration event is occurring

K/A Match, Example 3

- At a Combined error signal of (±) 4°F, rod motion would be (1) at (2) steps per minute.

- Which ONE (1) of the following completes the statements above?

A. 1. negative
   2. 32
B. 1. negative
   2. 40
C. 1. positive
   2. 32
D. 1. positive
   2. 40

Analysis K/A Match, Example 3

- Q=K/A: The power mismatch portion of the system (prior to a Tavg/Tref error) is the link to hitting the K/A statement (operating NI controls); however, the question only tests the temperature control portion of the circuit, which isn't associated with NI topic.

- To clarify, is the boration "event" rapid enough to cause the anticipatory power mismatch portion of the system to generate a rate of change error in this event? If not, then the NI portion of the K/A isn't being tested.

- In order to hit the K/A, it seems like the question should pose a situation where a load reject occurs and then test the applicant's knowledge of the combined error signal. The 2nd fill-in-the-blank statement could still apply.

Analysis K/A Match, Example 3

- Licensee’s comment:
  - We had a very difficult time with the K/A match on this one. What we're having trouble with is the "associated with operating the NIS controls" part. There's really nothing we do related to operating the NIS controls that is dependent upon a change in boron concentration. What we tried to do was ask a question related to the Reactor Control system response related to an inadvertent boration event where the combined change in NIS input (Power Mismatch) and change in NCS temperature (Temperature Mismatch) to the reactor control system results in rod motion. This is as close as we're going to be able to come to a match with this K/A. If the Chief Examiner isn't okay with the match, we'll need a replacement K/A.

K/A Match

- Is a “STORY” required for simple knowledge level questions?
  - NO, this is not required, for lets say a power supply question. It can be just that what is the power supply.
  - However, if you want to make it a higher cognitive level, then you need more of the “STORY.”

K/A Match

- How do you meet a Tier 3 generic RADCON question without going to systems, or when is going to systems is okay?
- WHEN?
  - When the chief says so? NOT! Even though it may seem this way.
  - Or better answer is when you use Technical Specifications to answer the question. It could be setpoint requirements or Action Times.

Recognizing the Non-Plausible…

Based on Distractor 'Interplay'

Michael Meeks
USNRC Region II

Recognizing the Non-Plausible…

SILENCE
Cell Phones
And Pagers

Based on Distractor 'Interplay'

Michael Meeks
USNRC Region II

Background

- Indian Point 3 SRO
- NRC Region II – August 2008
- Qualified on Westinghouse, Babcock & Wilcox, Combustion Engineering, and AP-1000

Three Examples…

Three Examples…

Three Examples…

Three Examples…

During the ship's April 1912 voyage, R.M.S. *TITANIC* _____ prove to be an "unsinkable" ship.

A. did

C. did

Three Examples…

During the ship's April 1912 voyage, R.M.S. *TITANIC* _____ prove to be an "unsinkable" ship.

A. did

C. did

Not Plausible!

Three Examples…

Three Examples…

During the 1948 U.S. Presidential Election, Dewey ____ defeat Truman.

A. does

C. does

Three Examples…

During the 1948 U.S. Presidential Election Dewey ____ defeat Truman.

A. does

C. does

Three Examples…

During the August 2015 Region II Writer's Workshop Plausibility Presentation, everyone present _____ agree with everything presented as non-plausible.

A. will

B. will

Three Examples…

During the August 2015 Regional Writers' Workshop Plausibility Presentations, everyone present _____ agreed with everything presented as not plausible.

A. will

B. will

Topics

- Short Introduction:
  - Methodology
  - Subsets – way to introduce ‘interplay’
- Lots of Examples of Interplay:
  - Distractors ‘Too Strong’
  - Distractors ‘Too Weak’
  - Final Warning

References

- NUREG 1021, rev 10

References

- NUREG 1021, rev 10

- "Supplemental Guidance for Writing Multiple Choice Questions"
  - www.nrc.gov/reactors/operator-licensing/regs-guides-comms.htm
  - ADAMS ML13281A409

Methodology

- Put yourself in mindset of a novice operator who does not know the answer

Methodology

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- Can you use **logic**, **basic** plant knowledge, and/or the relationship ("**interplay**") between distractors to eliminate distractors?

Methodology

- Put yourself in mindset of a novice operator who does not know the answer
- Can you use **logic**, **basic** plant knowledge, and/or the relationship ("**interplay**") between distractors to eliminate distractors?
- If yes, distractor(s) **may** not be plausible.

‘Subset’ Issue 101

Our Hypothetical PWR:

Low Pressure Rx Trip = 1900 psig

Low Pressure SI = 1800 psig

‘Subset’ Issue 101

Rx Trip = 1900 psig SI = 1800 psig

Given the following:

- Unit 1 at 100% power.
- Pressurizer (PZR) pressure begins to lower rapidly.

Which ONE of the following PZR pressure values results in an automatic Reactor Trip and SI?

'Subset' Issue 101

A. 1930 psig

B. 1900 psig

C. 1800 psig

D. 1785 psig

'Subset' Issue 101

A. 1930 psig

B. 1900 psig

C. 1800 psig

D. 1785 psig

'Subset' Issue 101

A. 1930 psig

B. 1900 psig

C. 1800 psig

D. 1785 psig

'Subset' Issue 101

A. 1930 psig

B. 1900 psig

C. 1860 psig

D. 1800 psig

'Subset' Issue 101

A. 1930 psig

B. 1900 psig

C. 1860 psig

D. 1800 psig

'Subset' Issue 101

A. 1930 psig {not as bad as ↓}

B. 1900 psig {not as bad as ↓}

C. 1860 psig {not as bad as ↓}

D. 1800 psig {worst case choice}

'Subset' Issue 101

A. 1930 psig {not plausible}

B. 1900 psig {not plausible}

C. 1860 psig {not plausible}

D. 1800 psig

Another 'Subset' Example

Given the following conditions:

- Unit at 100% power.
- Pressurizer (PZR) Pressure Channel I fails and is removed from service in accordance with [applicable plant procedure and TITLE].

Which ONE of the following identifies the minimum number of RPS and ESF actuation logic channels required to initiate a Reactor Trip and SI on Low PZR pressure?

Another 'Subset' Example

	Rx Trip Channels	SI Channels
A.	2	1
B.	1	1
C.	2	2
D.	1	2

Another 'Subset' Example

	Rx Trip Channels	SI Channels
A.	2	1
B.	1	1
C.	2	2
D.	1	2

Another Type of Subset Issue?

Another Type of Subset Issue?

Given the following:

•Operators are preparing to release the "C" Waste Gas Decay Tank

• [….]

In accordance with [the applicable plant procedure designator and TITLE], the gaseous release permit can be authorized by __(2)__.

Another Type of Subset Issue?

A. (2) any on-watch licensed SRO

B. (2) the Shift Manager (SM)

C. (2) any on-watch licensed SRO

D. (2) the Shift Manager (SM)

Another Type of Subset Issue?

Given the following:

•Operators are preparing to release the "C" Waste Gas Decay Tank

• [….]

In accordance with [the applicable plant procedure designator and TITLE], the lowest level of authorization for the gaseous release permit is __(2)__.

Distractors ‘Too Strong’

Distractors 'Too Strong'

Given the following conditions:

- Site has declared a General Emergency
- EOF and TSC are fully staffed and activated
- {…}

Which ONE of the following … (2) identifies whose approval is required to exceed 10 CFR 20 exposure limits?

Distractors 'Too Strong'

A. (2) RP Manager

B. (2) Emergency Coordinator

C. (2) RP Manager

D. (2) Emergency Coordinator

Distractors 'Too Strong'

A. (2) RP Manager

B.(2) Emergency Coordinator

C. (2) RP Manager

D.(2) Emergency Coordinator

Distractors 'Too Strong'

A. (2) RP Manager
{EC does not have authority}

B. (2) Emergency Coordinator

C. (2) RP Manager
{EC does not have authority}

D. (2) Emergency Coordinator

Distractors 'Too Strong'

(2) In accordance with [applicable site procedure], the RP Manager _____ have the authority to authorize exceeding 10 CFR 20 exposure limits?

A. (2) does

B. (2) does NOT

Distractors 'Too Strong'

(2) In accordance with [applicable site procedure], the Emergency Coordinator _____ delegate the authority to authorize exceeding 10 CFR 20 exposure limits to the RP Manager?

A. (2) can

B. (2) can NOT

Distractors 'Too Strong'

In accordance with [applicable site procedure] methodology for determining analytical limits, Technical Specification ESFAS setpoints _____ .

Distractors 'Too Strong'

A. improve the overall reliability of RPS

B. provide Steam Generator overfill protection

C. ensure the plant design safety analysis is not exceeded

D. guarantee RCS pressure is less than 120% design setpoint

Distractors 'Too Strong'

A. improve the overall reliability of RPS

B. provide Steam Generator overfill protection

C.ensure the plant design safety analysis is not exceeded

D. guarantee RCS pressure is less than 120% design setpoint

Distractors ‘Too Weak’

Distractors 'Too Weak'

- Ask yourself the question: can I provide an example in my plant where _____ occurs?

Distractors 'Too Weak'

- Ask yourself the question: can I provide an example in my plant where _____ occurs?

- If not, distractor may not be plausible.

Distractors 'Too Weak'

A. … with PRT level being controlled automatically.

B. … with PRT level being controlled manually.

C. … with PRT level being controlled automatically.

D. … with PRT level being controlled manually.

Distractors 'Too Weak'

Given the following conditions:

- Gas Decay Tank relief valve is lifting
- RM-0014, Waste Gas Exhaust Rad Monitor, generates a valid HIGH RADIATION signal

Which ONE of the following …

(1) The release path _____ automatically isolate on the HIGH RADIATION signal

Distractors 'Too Weak'

Current conditions:

- ES-1.1, "SI Termination," step is in progress to determine if a bubble exists in the pressurizer (PZR)
- PZR level is 92% and rising …

(1) The Shift Supervisor _____ required to transition to FR-I.1, "Response to High Pressurizer Level."

Distractors 'Too Weak'

Which ONE (1) of the following describes the basis for OPERABILITY limits on accumulator volume and boron to ensure the assumptions used to accumulator injection in the safety analysis are met?

Distractors 'Too Weak'

A. All THREE (3) accumulators are required to provide the initial core cooling for a postulated Loss of Coolant Accident and ….

B. ONLY TWO (2) accumulators are required to provide the initial core cooling for a postulated Loss of Coolant Accident and ….

Classic Distractor 'Interplay'

Initial Conditions:

- Unit 1 is at 100% power

- All control systems in AUTOMATIC

Current Conditions:

-Pressurizer Master Pressure Controller output fails to 0%.

What effect will this have on PRZR Backup (B/U) heaters and spray valves over the next few minutes?

Classic Distractor 'Interplay'

	B/U Heaters	Spray Valves
A.	energize	remain shut
B.	energize	open
C.	remain off	remain shut
D.	remain off	open

Classic Distractor 'Interplay'

	B/U Heaters	Spray Valves
A.	energize {LP}	remain shut
B.	energize {LP}	open
C.	remain off	remain shut
D.	remain off	open

Classic Distractor 'Interplay'

	B/U Heaters	Spray Valves
A.	energize {LP}	remain shut
B.	energize {LP}	open
C.	remain off {HP}	remain shut
D.	remain off {HP}	open

Classic Distractor 'Interplay'

	B/U Heaters	Spray Valves
A.	energize {LP}	remain shut {LP}
B.	energize {LP}	open
C.	remain off {HP}	remain shut {LP}
D.	remain off {HP}	open

Classic Distractor 'Interplay'

	B/U Heaters	Spray Valves
A.	energize {LP}	remain shut {LP}
B.	energize {LP}	open {HP}
C.	remain off {HP}	remain shut {LP}
D.	remain off {HP}	open {HP}

Classic Distractor 'Interplay'

	B/U Heaters	Spray Valves
A.	energize {LP}	remain shut {LP}
B.	energize {LP}	open {HP}
C.	remain off {HP}	remain shut {LP}
D.	remain off {HP}	open {HP}

Final Warning!

Final Warning!

Given the following:

-A Station Blackout occurred.

-Diesel Generator (DG) ‘A’ was successfully emergency started.

-During the performance of ECA-0.0, Loss of All AC Power, it was noted that the DG ‘A’ load was 4760 KW.

-In accordance with an ECA-0.0 CAUTION, DG ‘A’ load must be reduced within __(1)__.

Final Warning!

A. (1) 30 minutes

B. (1) 7 days

C. (1) 30 minutes

D. (1) 7 days

Final Warning!

CAUTION - **Steps 31 and 32**

The following DG loading limits must NOT be exceeded, to prevent failure of the DG (Attachments 7 and 8 list equipment with significant KW ratings):

- 5100 KW for 30 minutes.
- 4676 KW for 7 days.
- 4250 KW continuous operation.

31 **Ensure the following equipment is loaded on an ESF bus:**

- 480 volt ESF buses. ☐
- Battery Chargers. ☐

In Summary

- Methodology – with caveat

In Summary

- Methodology – with caveat

- Distractors ‘Too Strong’
  -subsets
  -Emergency Coordinator authority
  -statements that are always true

In Summary

- Methodology – with caveat
- Distractors 'Too Strong'

- Distractors 'Too Weak'
  - -does ___ ever happen at your plant?
  - -optional entry procedures
  - -single failure criteria
  - -basic system response

NRC Exam Operating Experience Items

Bruno Caballero
Senior Operations Engineer, RII

Personally, I'm always ready to learn, although I do not always like being taught." by Winston S. Churchill

NRC Exam OE Items

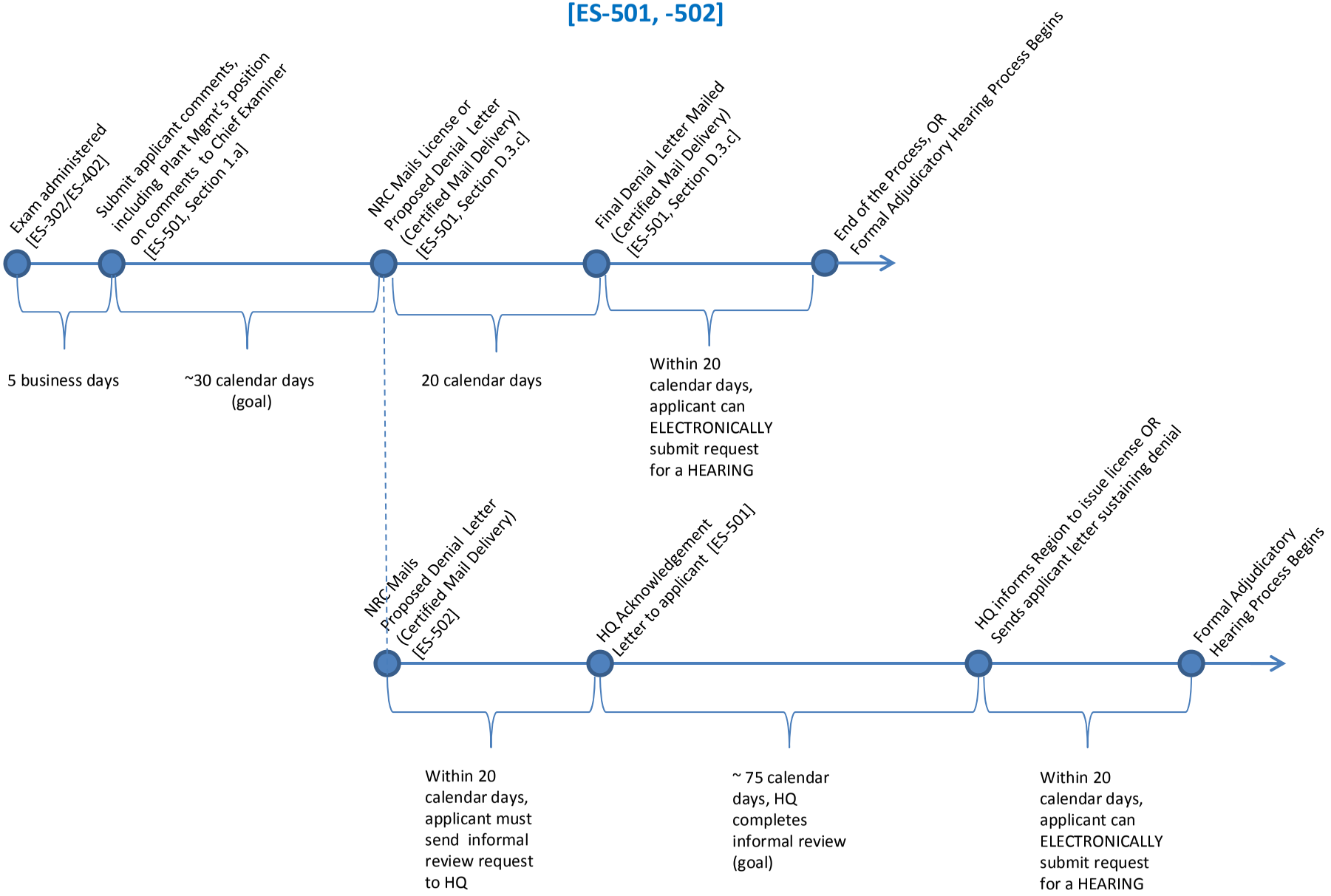
- Last 5 years' data for Region II
  - Pass rates (# licenses issued/ # apps rec'd)
  - Exam submittal quality
- Post-exam Comment & Appeal Process
- Scenario Exam OE Items
  - Scenario critical task issues
  - Video-taping exam scenarios
  - Grading Tech Spec Events
- Exam Security "near miss" Events

REGION II PASS RATES (# of licenses issued / # of applications)					
	2010	2011	2012	2013	2014
Browns Ferry	11/12	12/13 (Feb) 7/13 (Aug)	13/16	6/8 (Jun) 2/2 (Sept)	9/9
Brunswick	10/10	n/a	12/12	n/a	11/11
Catawba	13/13	n/a	12/12	7/8	9/9
Farley	3/6	16/16	9/10	2/3	11/11
Harris	n/a	10/10	11/12	11/13	1/1 (Feb) 10/10 (Nov)
Hatch	n/a	8/9	6/6	13/13	n/a
McGuire	8/9	7/8	14/14	10/10	9/9
North Anna	15/15	n/a	8/9 1/1	n/a	9/9
Oconee	9/9 (Apr) 9/9 (Oct)	8/8 (May) 9/9 (Oct)	9/9 (Jun) 8/9 (Dec)	4/4 (Jun) 12/12 (Dec)	7/7 (Jun) 8/8 (Dec)
Robinson	n/a	7/9	n/a	5/5	4/7
Sequoyah	6/7 (Feb) 9/12 (Sept)	1/1	13/13 (Jan) 6/6 (Dec)	4/5 (May) 8/10 (Dec)	n/a
St. Lucie	n/a	12/15	9/14	n/a	n/a
Summer	n/a	10/11	n/a	10/12	n/a
Surry	12/14	n/a	11/11		11/11
Turkey Point	9/10	1/1 (Mar) 5/6 (Dec)	n/a	9/10	n/a
Vogtle	3/3	3/10	20/22	8/14	8/8
Watts Bar	12/15	14/14 (Jun) 5/5 (Dec)	n/a	7/14 (Mar) 8/9 (Oct)	n/a

NRC Developed

Did not meet NUREG acceptability

Process for Post-exam Comments & Appeals [ES-501, -502]



Scenario Exam OE Items

- *Scenario critical task issues*
- *Videotaping exam scenarios*
- *Grading Scenario Tech Spec Events*

Scenario Critical Task

Improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the PLANT.

[NUREG 1021, Appendix D, Section D.1.a]

Scenario Critical Task (CT) Issue #1

- No safety significance within the context of the scenario [NUREG 1021, App D, Section D.1.a, Page D-12]
  - Example: Failure to manually start & load the EDG won't degrade the mitigative capability of the plant *unless* *the other EDG is also unavailable during a LOOP.*
  - Example: Failure to spray the drywell won't degrade the mitigative capability of the plant *unless* *the drywell design temp/press will actually be exceeded*
  - Example: Failure to feed the SG in FR-H.1 won't degrade the mitigative capability of the plant *unless* *the scenario can actually achieve feed and bleed criteria*
  - **Ensure that the scenario's initial conditions (e.g., equipment out-of-service, time in core life) and major event can achieve the parameter values that make the task critical within the context of the scenario.**

Scenario Critical Task (CT) Issue #2

- Lack of a measurable performance indicator
  [NUREG 1021, App D, Section D.1.c, Page D-14]

- Ideas that may be good, measurable performance indicators:
  - Failure to perform CT leads to unnecessary entry to Red/Orange Path or other EOP Contingency: Use F-0 parameters for Red/Orange Path as measurable performance indicator. For example, BWR example, use steam cooling entry conditions if failure to perform CT leads to unnecessary entry to Steam Cooling.
  - Failure to perform CT leads to higher E-plan classification: Use parameters that E-plan uses to upgrade classification such as CETs, fission product barriers, etc.
  - Failure to perform CT within the time allowances described in the plant's list of "time critical operator actions."

- **Whenever possible, setpoints and other parameters should be included to provide an objective method of evaluating the applicants' performance; use of "*before exiting procedure XYZ*" isn't desirable.**

Scenario Critical Task (CT) Issue #3

- "Unidentified" CTs before the EOPs (not pre-identified in the scenario guide)
  - *Credited* critical tasks are ones that are EOP based; other CTs may lie within the events that occur before the major event, such as CTs that are the result of improper operator action or inaction, i.e., such as an unintentional RPS or ESF actuation. [NUREG 1021, App D, Section C.2.j, Page D-12]

ES-301 Simulator Scenario Quality Checklist Form ES-301-4

	Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes	--	--	--
1.	Malfunctions after EOP entry (1-2)	/ /			
2.	Abnormal events (2-4)	/ /			
3.	Major transients (1–2)	/ /			
4.	EOPs entered/requiring substantive actions (1–2)	/ /			
5.	EOP contingencies requiring substantive actions (0-2)	/ /			
6.	EOP based Critical tasks (2–3)	/ /			

Scenario Critical Task (CT) Issue #3

- "Unidentified" CTs before the EOPs (not pre-identified in the scenario guide)
  - Example: Manually controlling Feed water because of a Feed water component malfunction; should be identified in the scenario as a critical task

- **Ensure you validate each event with and without operator action to identify events that can lead to an unintentional RPS trip; these items should be pre-identified in the scenario as a CT, but do not count towards the EOP CT target attribute.**

Video-Taping Initial Exam Scenarios

Video recording of the administration of simulator operating tests is encouraged if the simulator is equipped with properly functioning video and audio recording capability. [ES-302, Section D.1.i, pg 3 of 12]

Guidelines for Video-taping Exam Scenarios [ES-302, Section D.1.i,]

- After initial set up/alignment of the camera(s) and audio microphone(s) by facility licensee personnel under observation of the Chief Examiner, the video and audio examination recordings will be made with no changes to the camera(s) or microphone(s) set up. The only intervention allowed will be to change out the recording media as necessary.
- The facility licensee will retain a copy of the video and audio recordings until the NRC notifies the facility licensee that the recordings are no longer necessary, at which time they should be erased or destroyed. Additionally, the facility licensee will not review the video and audio recordings unless approved by the NRC.
- The facility licensee will make the video and audio recordings available to the NRC for resolving/confirming examiner documentation of specific applicant errors.
- Applicants who receive a proposed denial letter from the NRC based on their simulator operating test performance will be provided an opportunity to review those portions of the video and audio recordings under facility licensee supervision that directly affect their simulator operating test failure decision. The facility licensee will notify the NRC chief examiner prior to reviewing the video and audio recordings.

Grading Tech Spec Events

- "TS" designator should be included on Form ES-D-1 (Scenario Outline)
- TS Credit cannot be assigned to events with only a Tracking LCO; event must include entry to LCO required action

Event No.	Malf. No.	Event Type*	Event Description
1	1	T.S. / SRO	Containment personnel air lock door fails leak test.
2		R / RO N / BOP, SRO	Raise power to 100%
3	2	C / RO	Primary Water Makeup valve FCV-2210X fails open during dilution.
4	3	C / BOP	Bearing failure on 2A TCW Pump.
5	4	T.S. / SRO	2A SG safety channel pressure transmitter PT-8013B fails low
6	5	C / RO	RCP 2A1 Seal HX CCW outlet valve HCV-14-11A1 fails closed due to TE - 31A1 failing.
7	6	M / All	B MSIV closes at power. Rx trip. LOOP. Two B MSSV's stick open
8	7	C / BOP	2B EDG output breaker fails to re-close after opening on SIAS.
9	8	C / BOP	MV-09-11 AFW to 2A SG fails to open. Open MV-09-9 with the crosstie valves open and feed the 2A SG.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Grading Tech Spec Events

The Tech Spec Functional Unit & Action/Condition ID# should be clearly listed in ES-D-2 (Required Operator Actions)

Event No.	Malf. No.	Event Type*	Event Description
1	1	T.S. / SRO	Containment personnel air lock door fails leak test.
2		R / RO N / BOP, SRO	Raise power to 100%
3	2	C / RO	Primary Water Makeup valve FCV-2210X fails open during dilution.
4	3	C / BOP	Bearing failure on 2A TCW Pump.
5	4	T.S. / SRO	2A SG safety channel pressure transmitter PT-8013B fails low
6	5	C / RO	RCP 2A1 Seal HX CCW outlet valve HCV-14-11A1 fails closed due to TE - 31A1 failing.
7	6	M / All	B MSIV closes at power. Rx trip. LOOP. Two B MSSV's stick open
8	7	C / BOP	2B EDG output breaker fails to re-close after opening on SIAS.
9	8	C / BOP	MV-09-11 AFW to 2A SG fails to open. Open MV-09-9 with the crosstie valves open and feed the 2A SG.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

3/4.3.1 REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT 6. Steam Generator Pressure – Low

ACTION 2 - a.

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT 4. MAIN STEAM LINE ISOLATION (MSIS)

ACTION 9

b. Steam Generator Pressure – Low

Grading Tech Spec Events

- Every missed Tech Spec is a performance deficiency and is graded as a SEPARATE ERROR [ES-303.D.1.c], <u>even if it's part of the same scenario event</u>

Event No.	Malf. No.	Event Type*	Event Description
1	1	T.S. / SRO	Containment personnel air lock door fails leak test.
2		R / RO N / BOP, SRO	Raise power to 100%
3	2	C / RO	Primary Water Makeup valve FCV-2210X fails open during dilution.
4	3	C / BOP	Bearing failure on 2A TCW Pump.
5	4	T.S. / SRO	2A SG safety channel pressure transmitter PT-8013B fails low
6	5	C / RO	RCP 2A1 Seal HX CCW outlet valve HCV-14-11A1 fails closed due to TE - 31A1 failing.
7	6	M / All	B MSIV closes at power. Rx trip. LOOP. Two B MSSV's stick open
8	7	C / BOP	2B EDG output breaker fails to re-close after opening on SIAS.
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* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

3/4.3.1 REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT 6. Steam Generator Pressure – Low

ACTION 2 - a.

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT 4. MAIN STEAM LINE ISOLATION (MSIS)

ACTION 9

b. Steam Generator Pressure – Low

Grading Tech Spec Events

Event No.	Malf. No.	Event Type*	Event Description
5	4	T.S. / SRO	2A SG safety channel pressure transmitter PT-8013B fails low

3/4.3.1 REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT 6. Generator Pressure – Low

ACTION 2 - a.

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT 4. MAIN STEAM LINE ISOLATION (MSIS)

ACTION 9 b. am Generator Pressure – Low

ES-303, Rev. 9 Individual E

PRIVACY ACT INFORMATIO

Applicant Docket Number: **55-XXXXX (Last Name)**

Senior Reactor Operator Simulator Operating Test Grading De

Competencies/ Rating Factors (RFs)	RF Weights	RF Scores	des	Comp. Grades	Comment Page No.
6. Technical Specifications a. Recognize and Locate b. Compliance	0.40 0.60	3	1.80		

Since RPS & ESFAS TS are counted as TWO separate errors, this RF Score is a "1", unless the applicant Recognized & Located TS correctly during Event #1

Exam Security “near miss” Events

- *Someone on security agreement observed applicants’ training scenarios*
- *Staff and/or Managers walked into simulator while exam security in place*
- *Lost NRC Exam Room Key*
- *Pink “out-of-service tag” left hanging on a component in simulator*
- *“Marked up” laminated sheet left from scenario validation previous day*
- *“Marked up” Boron/Dilution procedure left on shelf; Just-in-time training for shift personnel conducted later that evening*
- *Someone on security agreement participated in oral board for RO applicant*
- *Admin JPM Initial Condition Hand-out Sheets swapped for ROs and SROs*
- *Others???*

Exam Operating Experience Items

- Last 5 years' data for Region II
  - Exam pass rates (# of apps rec'd / # licenses issued)
  - Exam submittal quality
- Process for Post-exam Comments & Appeals
- Scenario Items
  - Scenario critical task issues
  - Video-taping exam scenarios
  - Grading Tech Spec Events
- Exam Security "near miss" Events

SRO Only written exam

"Obedience may have its uses, but it is no substitute for willing, un-coerced cooperation."

— Eleanor Roosevelt

SRO written exam items

"Special attention is required to ensure that the SRO examination tests at the appropriate level."

Andreas Goldau, Region II

Objectives

- Summarize 3 requirements for SRO questions
- Describe how to write an SRO question
- Review 5 SRO questions to identify the:
  - licensee's bases for why the question was acceptable;
  - the reason why the NRC graded the question as unacceptable; and
  - the final version of the question.

3 requirements for SRO questions

- Must be “A2”, “G”, or fuel handling

  [ES-401, Section D.1.c, page 5 of 50]

- Must evaluate the additional knowledge & ability for the higher license level in accordance with 10CFR55.43(b).

  [ES-401, Section D.2.d, page 7 of 50]

- Must relate to one of the 10CFR55.43(b)topics.

  [ES-401, Section D.2.c, page 7 of 50]

How to write an SRO question

- Read the K/A.
- Choose 1 of the 7 items in 10CFR55.43(b) that lends itself to the K/A wording.

  Most often…….. (but not limited to)

  - Item # 2 (Tech Specs & Bases)
  - Item # 5 (Procedure *Selection*)
- Write the question to target the K/A and to test the additional SRO knowledge/ability for the selected 10CFR55.43(b) item.

Which 10CFR55.43(b) item lends itself to the wording of your K/A?

(1) Conditions and limitations in the facility license.

(2) Facility operating limitations in the technical specifications and their bases.

(3) Facility licensee procedures required to obtain authority for design and operating changes in the facility.

(4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

(6) Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects on core reactivity.

(7) Fuel handling facilities and procedures.

Five examples of unacceptable SRO written exam items

- licensee's bases for why the question was acceptable;
- the reason why the NRC graded the question as unacceptable; and
- the final version of the question.

Tier 2, Group 1
215003 IRM

G2.1.27 Knowledge of system purpose and/or function

Q#1

Unit 1 is in Mode 2, control rod withdrawal is in progress in accordance with 1-GOI-100-1A, Unit Startup. Reactor Engineering is performing 1-SR-3.3.1.1.5, SRM and IRM Overlap Verification. The following are current conditions:

- SRM C is INOPERABLE and bypassed
- SRM readings are A - 50,000 cps, B – 40,000 cps, D – 45,000 and rising
- IRMs are on range 1 with the following indications:
- IRM A trending higher at 8
- IRM B trending higher at 11
- IRM C trending higher at 10
- IRM D trending higher at 10
- IRM E downscale light lit, stable at 4
- IRM F trending higher at 9
- IRM G downscale light lit, stable at 5
- IRM H stable at 7

Which ONE of the following completes the statement below?

SRM and IRM overlap verification _____.

A. is MET

B. is NOT MET; IRM E and G ONLY do NOT currently meet the overlap acceptance criteria

C. is NOT MET; IRM E, G, and H ONLY do NOT currently meet the overlap acceptance criteria

D. is NOT MET; IRM A, E, G and H do NOT currently meet the overlap acceptance criteria

Q#1

New K/A selected.

261000 SBGT

G2.1.27 Knowledge of system purpose and/or function

Q#1 revised

The following conditions exist:

- Units 1 **AND** 3 are at 100% Reactor Power
- Unit 2 is in Mode 3, with cooldown to mode 4 in progress
- Standby Gas Treatment (SGT) System A was removed from service at 1000 on 3/1/12 for planned maintenance

At 1200 on 3/2/12 a coolant leak in the Drywell on Unit 2 results in the following plant conditions:

- Drywell Pressure is 2.85 psig
- Reactor Water Level is being controlled (+)2 to (+)51 inches with RCIC
- SGT B Blower tripped immediately upon initiation

SGT System B is restored to Operable at 1800 on 3/2/12.

Which ONE of the following completes the statements below?

The latest time / date that Tech Specs require Units 1 **AND** Unit 3 to be in Mode 4 is __(1)__.

In accordance with Tech Specs, the design basis for the SGT System is to mitigate the consequences of a __(2)__.

Reference Provided

A. (1) 2200 on 3/8/12
(2) loss of coolant accident

B. (1) 2200 on 3/8/12
(2) fuel handling accident

C. (1) 2200 on 3/9/12
(2) loss of coolant accident

D. (1) 2200 on 3/9/12
(2) fuel handling accident

Q#1 revised

Tier 3: G.2.1.36

Knowledge of procedures and limitations involved in core alterations.

Q#2

The following conditions exist:

- Unit 3 is operating in MODE 6 with RCS temperature at 105°F and stable.
- Core reload activities were temporarily suspended with 7 fuel assemblies loaded in the core.
- The Unit Supervisor directed Attachment 5, Restart Minimum Equipment Checklist, of 3-NOP-040.02, Refueling Core Shuffle, to be performed before restarting fuel reload.
- The last items checked on the Restart Minimum Equipment Checklist were:
  - Emergency Air Lock Doors – ACTUAL STATUS: one of two doors is closed
  - NIS Channels – ACTUAL STATUS: N32 is OOS
    N31 is available
    Both Gamma Metric Channels are available
  - R-3-11 and R-3-12 – ACTUAL STATUS: R-3-11 and R-3-12 are available without Normal Containment Coolers running

Which ONE of the following describes the required action(s), if any, prior to the Refueling SRO recommencing fuel reload?

A. Ensure Emergency Air Lock Doors are both closed.

B. Ensure NIS Channel N32 is returned to service.

C. Ensure one Normal Containment Cooler is running.

D. No action is required.

Q#2

Given the following:

Date	Time	Activity
12/31/2011	0000	A Unit 4 Shutdown to MODE 3 is commenced.
12/31/2011	0630	Unit 4 enters MODE 3.
12/31/2011	1320	Unit 4 enters MODE 4.
12/31/2011	2210	Unit 4 enters MODE 5.
01/01/2012	2200	The first Reactor Vessel Head Stud is detensioned.
01/03/2012	0100	The Reactor Vessel Head is removed.

Which ONE of the following is (1) the EARLIEST time to commence fuel movement in accordance with Technical Specifications, and (2) the basis for the time requirement?

A. (1) 01/03/12 at 0630
(2) Ensures the heat load assumptions specified in the safety analysis are met to prevent boiling in the Spent Fuel Pool.

B. (1) 01/03/12 at 0630
(2) Ensures that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the values specified in the safety analysis.

C. (1) 01/04/12 at 2200
(2) Ensures the heat load assumptions specified in the safety analysis are met to prevent boiling in the Spent Fuel Pool.

D. (1) 01/04/12 at 2200
(2) Ensures that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the values specified in the safety analysis.

Q#2 revised

Tier 3: G.2.4.31

Knowledge of annunciators, alarms, indications, or response procedures

Q#3

Unit 3 is at rated power with the following indications and annunciators in alarm:

- RECIRC PUMP MTR 'B' TEMP HIGH (3-9-4B, Window 13)
- RBCCW EFFLUENT RADIATION HIGH (3-9-3A, Window 17)
- RBCCW SURGE TANK LEVEL HIGH (3-9-4C, Window 6)
- RBCCW PUMP SUCT HDR TEMP HIGH (3-9-4C, Window 5)
  - RBCCW Suction Header Temperature indicator (3-TIS-70-3) is reading 101°F and slowly rising
- RECIRC PMP MTR 3A/3B Winding and BRG TEMP recorder, 3-TR-68-71 on panel 3-9-21 has the following readings:
  - Recirc PMP MTR 3B-CLG WTR from SEAL CLG 150°F
  - Recirc PMP MTR 3B-SEAL NO. 2 Cavity 215°F and rising

Which ONE of the following describes the actions that should be taken in accordance with plant procedures?

A. Trip and isolate Reactor Recirculation Pump 3B and enter 3-AOI-68-1A, Recirc Pump Trip/Core Flow Decrease OPRMs Operable.

B. Trip and isolate Reactor Recirculation Pump 3B and immediately commence a shutdown in accordance with 3-GOI-100-12A, Unit Shutdown from Power Operation to Cold Shutdown and Reductions in Power During Power Operations.

C. Enter 3-AOI-70-1, Loss of Reactor Building Closed Cooling Water, maximize cooling to Reactor Recirculation Pump 3B.

D. Enter 3-AOI-70-1, Loss of Reactor Building Closed Cooling Water, manually scram the reactor and then trip and isolate Reactor Recirculation Pump 3B.

Q#3

Unit 3 is refueling, a fuel bundle is being loaded into a fuel cell for control rod 18-43.

- Refueling personnel report gas bubbles coming from the location that the bundle is being lowered into and the "Hoist Loaded" light extinguished before the bundle was seated in the core
- SRM A count rate increased 50 cps

Which ONE of the following completes the statement below given the attached illustrations?

The Unit Supervisor should direct entry to __(1)__.

The Emergency Classification (if any) is __(2)__.

Reference and Illustration Provided

A. (1) 3-AOI-79-1, Fuel Damage During Refueling
(2) Alert

B. (1) 3-AOI-79-2, Inadvertent Criticality During Incore Fuel Movements
(2) Alert

C. (1) 3-AOI-79-1, Fuel Damage During Refueling
(2) NONE, no classification currently exists

D. (1) 3-AOI-79-2, Inadvertent Criticality During Incore Fuel Movements
(2) NONE, no classification currently exists

Q#3 revised

Tier 3: G.2.2.35

Ability to determine Tech Spec Mode of Operation

Q#4

Which ONE of the following describes (1) the required Technical Specification MODE to place Overpressure Mitigating Systems (OMS) in service and (2) in accordance with 0-ADM-536, Technical Specification Bases Control Program, the bases for the required HHSI flow path alignment when OMS is in service?

A. (1) MODE 3
(2) High Pressure Safety Injections flow paths to the RCS shall be **isolated** to limit the mass input into the RCS during low temperature conditions

B. (1) MODE 3
(2) High Pressure Safety Injections flow paths are **unisolated** to provide sufficient core cooling following a LOCA

C. (1) MODE 4
(2) High Pressure Safety Injections flow paths to the RCS shall be **isolated** to limit the mass input into the RCS during low temperature conditions

D. (1) MODE 4
(2) High Pressure Safety Injections flow paths are **unisolated** to provide sufficient core cooling following a LOCA

Proposed Answer: C

Q#4

A plant cooldown is in progress on Unit 3:

- RCS temperature is 260°F.
- RCS pressure is 350 psig.
- OMS was placed in service at 0900 at 275°F.
- At 1000, the crew discovered 3-OSP-041.4, Overpressure Mitigating System Nitrogen Backup Leak and Functional Test, was NOT completed for both PORVs.

Which ONE of the following describes the current MODE and the LATEST time the OMS Surveillance is required to be completed?

REFERENCE PROVIDED

	Unit 3 Status	3-OSP-041.4 must be complete by
A.	MODE 3	0900, tomorrow
B.	MODE 3	2100, today
C.	MODE 4	2100, today
D.	MODE 4	0900, tomorrow

Q#4 revised

Proposed Answer: C

REACTOR COOLANT SYSTEM

OVERPRESSURE MITIGATING SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.9.3 The high pressure safety injection flow paths to the Reactor Coolant System (RCS) shall be isolated, and at least one of the following Overpressure Mitigating Systems shall be OPERABLE:

a. Two power-operated relief valves (PORVs) with a lift setting of ≤ 468 psig, or

b. The RCS depressurized with a RCS vent of greater than or equal to 2.20 square inches.

APPLICABILITY MODES 4 (when the temperature of any RCS cold leg is less than or equal to 275°F), 5, and 6 with the reactor vessel head on.

ACTION

Associated requirements for accomplishing specific tests and verifications in SR 4.4.9.3.1.a and 4.4.9.3.1.d allow a 12 hour delay after decreasing RCS cold leg temperature to ≤ 275°F. The bases for the 12 hour relief in completing the analog channel operation test (ACOT) and verifying the OPERABILITY of the backup Nitrogen supply are provided in the proposed license amendment correspondence L-2000-146 and in the NRC Safety Evaluation Report provided in the associated Technical Specification Amendments 208/202 effective October 30, 2000.

Common Problems with SRO test items

"Back Doors"

- The correct answer can be deduced using one or more "**back-door**" methods:
  - "Systems" knowledge
  - Overall mitigative strategy for an event
  - Immediate trip criteria, listed in foldout pages
  - LCO info "above-the-line"

"Tack-Ons"

- "**Tacking-on**" a piece of SRO testable knowledge that is not itself linked to the wording of the K/A statement

Tier 1, Group 1:
011 Large Break LOCA

EA2.02: Ability to determine or interpret the following as they apply to LB LOCA: Consequences to RHR of not resetting safety injection.

Q#5

Unit 1 has experienced a LOCA with the following conditions:

- EEP-1.0, Loss of Reactor or Secondary Coolant, is in progress.
- The following annunciators are in alarm:
  - CH2, RWST LVL A TRN LO
  - CH3, RWST LVL B TRN LO
- The Safety Injection signal can NOT be reset.

Which one of the following completes the statements below?

Transition to (1) is required for these conditions.

Once the procedure transition is made, if a Red or Orange path CSF occurs, Functional Restoration Procedures are required to be implemented (2) .

A. 1) ESP-1.3, Transfer to Cold Leg Recirculation

   2) when directed by ESP-1.3

B. 1) ESP-1.3, Transfer to Cold Leg Recirculation

   2) immediately

C. 1) ECP-1.1, Loss of Emergency Coolant Recirculation

   2) when directed by ECP-1.1

D. 1) ECP-1.1, Loss of Emergency Coolant Recirculation

   2) immediately

Q#5

New K/A selected.

011 Large Break LOCA

EA2.14: Ability to determine or interpret the following as they apply to LB LOCA:

Actions to be taken if limits for PTS are violated

Q#5

81. EEP-1.0, Loss of Reactor or Secondary Coolant, is in progress on Unit 2. The following conditions exist:

- RCS Pressure is 15 psig.
- LHSI flow is 3300 gpm on each Train.
- RCS Cold leg temperatures are 225°F.
- Containment radiation levels are 12 R/hr.
- Containment pressure peaked at 28 psig and is now reading 3.5 psig.
- The integrated dose levels inside containment have **NOT** been verified.

Which one of the following completes the statement below?

The required response to a valid RED PATH condition for the RCS Integrity Status Tree is to ____ .

Procedure titles:
EEP-1.0, Loss of Reactor or Secondary Coolant
FRP-P.1, Response to Imminent Pressurized Thermal Shock (PTS) Conditions

A. immediately enter FRP-P.1; and when directed, the crew will return to the EEP-1.0 step in progress when EEP-1.0's use was suspended

B. immediately enter FRP-P.1; and when directed, the crew will return to EEP-1.0 beginning at step 1, regardless of the step in progress when EEP-1.0's use was suspended

C. remain in EEP-1.0; Do not transition to FRP-P.1.
Adverse containment criteria CAN be exited at this time if a channel check is completed.

D. remain in EEP-1.0; Do not transition to FRP-P.1.
Adverse containment criteria CANNOT be exited at this time if a channel check is completed

Q#5 revised

SRO written exam items

"Special attention is required to ensure that the SRO examination tests at the appropriate level."

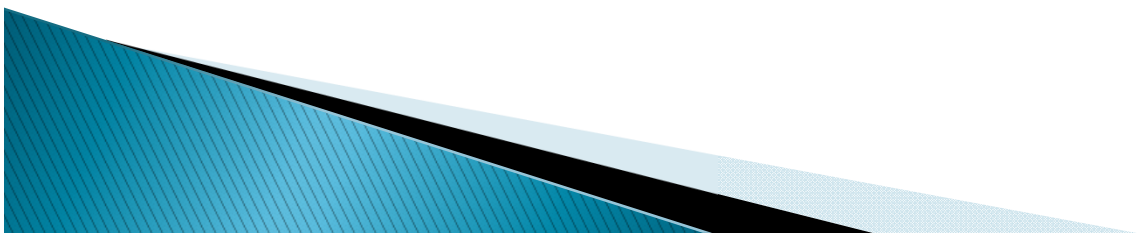
Andreas Goldau, RII

ALTERNATE PATH AND TIME-CRITICAL JPMs

2015 Exam Writers' Workshop

David Lanyi

"It's okay to look back at your past. Just don't stare." — Benjamin Dover



ALTERNATE PATH JPMs

- 10CFR55.40 Implementation
- "… The Commission shall also use the criteria in NUREG-1021 to evaluate the written examinations and operating tests prepared by power reactor facility licensees pursuant to paragraph (b) of this section."

- "(b) Power reactor facility licensees may prepare, proctor and grade the written examinations required by 10CFR55.41 and 10CFR55.43 and may prepare the operating tests required by 10CFR55.45, subject to …."

ALTERNATE PATH JPMs

- 10CFR55.45, Operating Tests
  - Identify annunciators and condition indicating signals and perform appropriate remedial actions when appropriate.
  - Identify the instrumentation systems and significance of facility instrument readings.
  - Use procedures, manipulate controls, etc.

ALTERNATE PATH JPMs

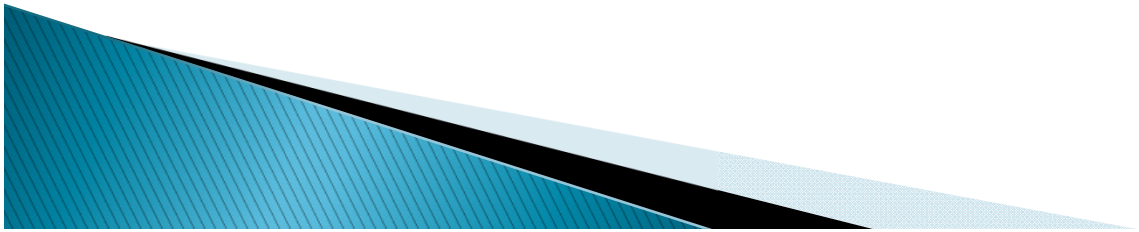
- NUREG-1122 and -1123 (K/A Catalogs for PWRs and BWRs, respectively)
  - K6 – Knowledge of the effect of a loss or malfunction on the following [SYSTEM] components:
  - A2 – Ability to (a) predict the impacts of the following malfunctions or operations on the [SYSTEM], and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
  - Other K/As also may be tested using alternate path JPMs ("cause-effect" relationships, power supplies, etc.)

ALTERNATE PATH JPMs

- Purpose
  - With regard to the operating test, 10CFR55.45 specifically requires an assessment of the examinees' understanding of and ability to perform actions specified in the regulation. Alternate Path JPMs are used to assess such understanding during the walk-through (a.k.a., JPM) because they require examinees to evaluate unplanned conditions or events while executing procedures and to implement acceptable, alternative methods of accomplishing the assigned task. [NUREG-1021, Appendix A]

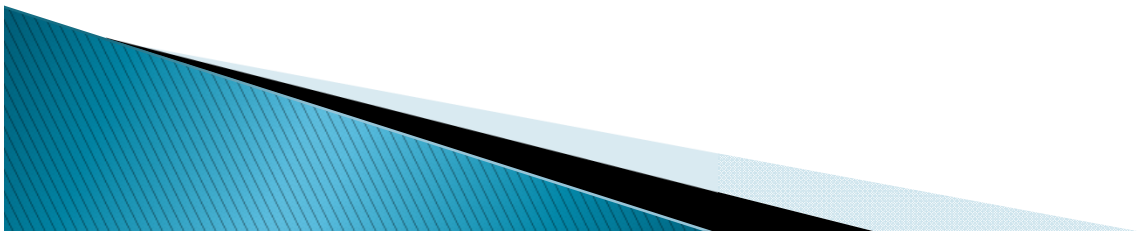
ALTERNATE PATH JPMs

- Definition
  - Alternate paths incorporate malfunctions of instrumentation or components that require the examinee to perform actions other than those performed when a system responds normally. [NUREG-1021, Appendix C]
  - Alternate path JPMs, JPMs in which malfunctions occur, are used to provide a methodology to evaluate whether an examinee has the skills and knowledge at the level needed to safely operate the system. [NUREG-1021, Appendix C]



ALTERNATE PATH JPMs

- History
  - Why do we have Alternate Path JPMs?
    - Alternate Path JPMs were developed when pre-scripted questions were eliminated from the walkthrough portion of the exam.
    - Questions previously were used to evaluate knowledge of how to respond when the expected plant response was not obtained.
    - Alternate Path JPMs are now used to test the individual operator knowledge/abilities associated with malfunctions.

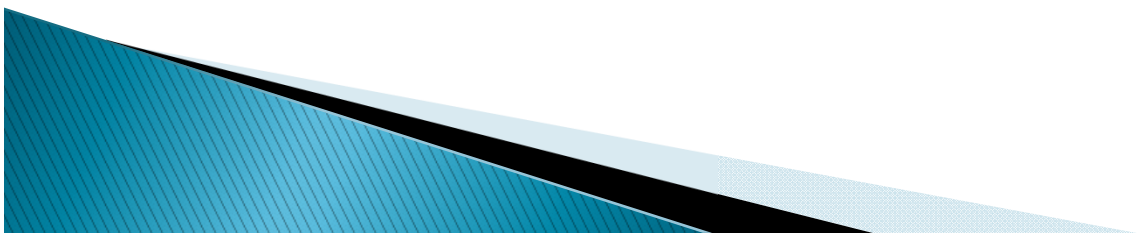


ALTERNATE PATH JPMs

- Five characteristics of alternate path JPMs:

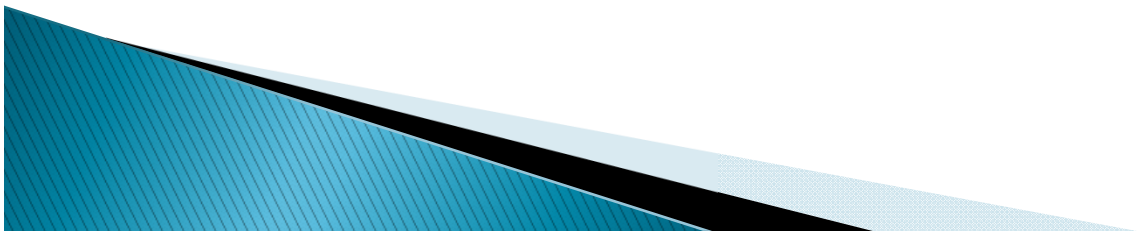
1. Valid success path
2. Procedurally driven
3. Logical sequence
4. Independent of crew dynamics
5. Validated in advance

[NUREG-1021, Appendix C]



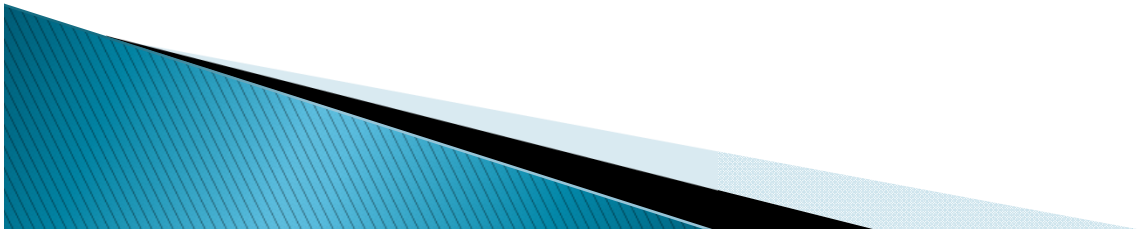
ALTERNATE PATH JPMs

- Valid Success Path
  - May require the applicant to analyze initial conditions to determine an alternate method for completing the task, mitigating a system-related problem that occurs during the task, or realigning the system. [NUREG-1021, Appendix C]
  - A representative of Operations Management, as well as the Exam Development Team, should agree on the technical validity of the defined success path.



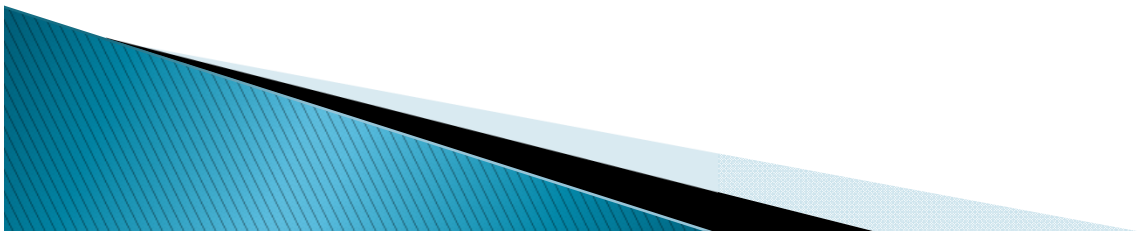
ALTERNATE PATH JPMs

- Procedurally Driven
  - A procedure must address the actions that are required. [NUREG-1021, Appendix C]
    - Alarm Response Procedures
    - AOP / ONP
    - Response-Not-Obtained
    - Precaution or Limitation
    - Caution or Warning
    - Administrative Procedures (Conduct of Operations)
    - Operations Policy



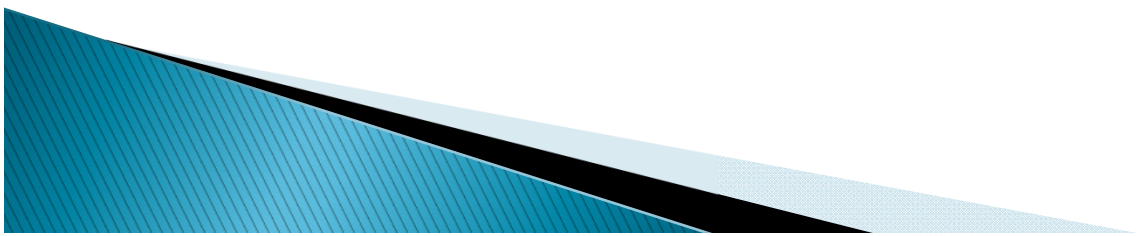
ALTERNATE PATH JPMs

- Logical Sequence
  - The sequence should be logical, but it should not evolve into a “mini-scenario.”
  - The examinee should not be expected to correct a problem by entering ARPs, then AOPs, and then transition into the EOPs – this is better tested on the dynamic portion with the help of team members.
  - Does this mean that (for example) it should not be expected that E-0, Reactor Trip or Safety Injection (Westinghouse), entry be tested?



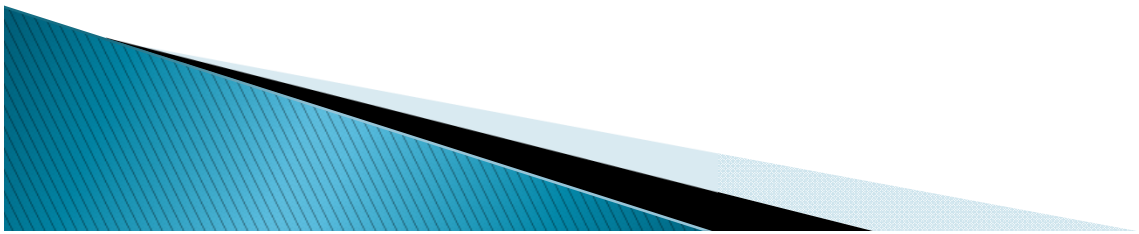
ALTERNATE PATH JPMs

- Independent of Crew Dynamics
  - JPM should allow the examinee to complete the task, or mitigate the problem that occurs during a task, without having to rely on the actions of other control room operators.
    - What does this mean?
    - Does this prevent the booth operator from performing field actions (simulating) when requested by the examinee? Is this OK as the action for an Alt Path?
    - Does this prevent another board operator from being on the simulator floor to address other items unrelated to the JPM?



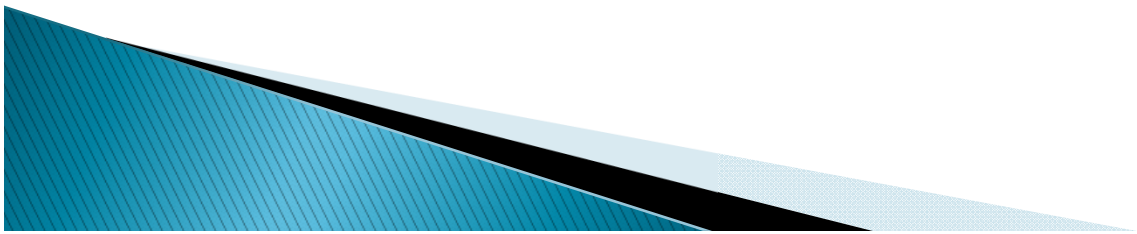
ALTERNATE PATH JPMs

- Validated in Advance
  - Each JPM should be validated before exam administration (actually before the draft submittal) and should not be changed thereafter.



ALTERNATE PATH JPMs

- Litmus Test
  - The actions required to complete the task must be different than the actions expected based on the initiating cue for the task.
  - FAQ 301.9 (Feedback from NRC public website):
    - Although most alternate path JPMs do involve some sort of system fault, the goal is to assess the applicant's response to a situation that is not as it should be or is somehow different from what the applicant might have expected based on the initiating cue for the task.

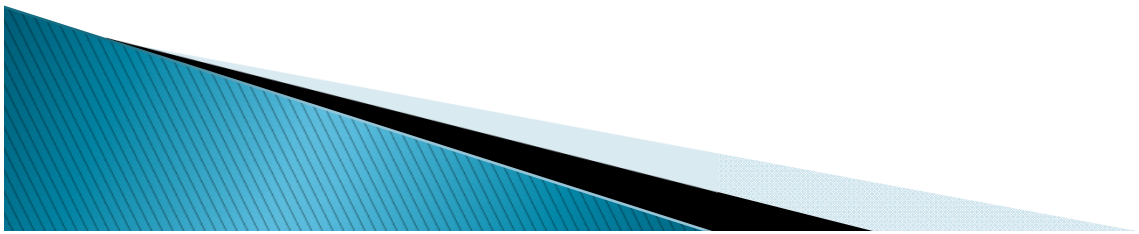


ALTERNATE PATH JPMs

- Does a “respond-to-plant conditions” JPM (a.k.a. “no-tell” JPMs) qualify as alternate path?

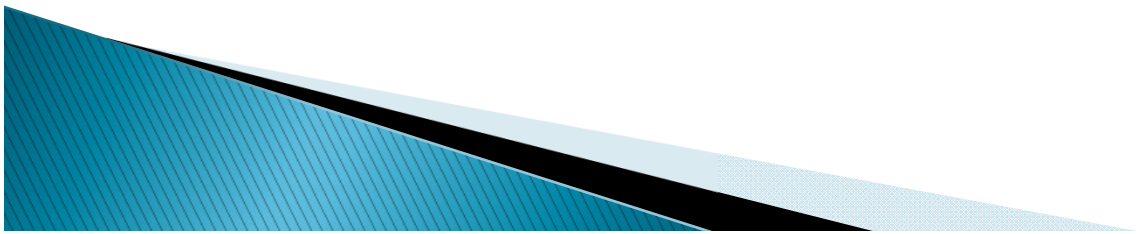
ALTERNATE PATH JPMs

- Do “respond-to-plant conditions” JPMs (a.k.a. “no-tell” JPMs) qualify as alternate path?
  - No
  - If a “no-tell” JPM is used, then the event itself should not be considered as the alternate path.
  - After the initiating event, IF an additional failure or malfunction occurs that requires the applicant to mitigate or address that additional malfunction, then it would be an acceptable Alternate Path JPM.



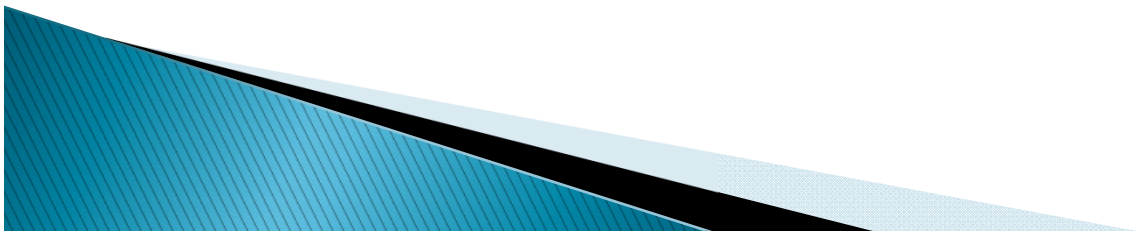
ALTERNATE PATH JPMs

- "No-Tell" Example: Przr PORV Fails Open
  - If the action for successful completion of the JPM is to close the PORV, then the JPM does not qualify as an alternate path.
  - If the PORV does not close when the operator attempts to close it and the operator then closes the block valve in response, then the JPM does qualify as an alternate path.



ALTERNATE PATH JPMs

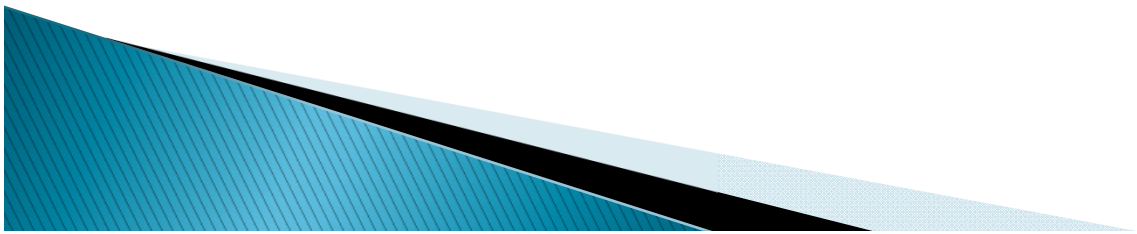
- Response-Not-Obtained
  - Q: Does use of the RNO constitute an Alternate Path JPM?



ALTERNATE PATH JPMs

- Response-Not-Obtained
  - Q: Does use of the RNO constitute an Alternate Path JPM?

- Maybe
  - The RNO is a syntax that presents an If/Then conditional statement. If the conditions are addressing a malfunction, then the RNO may by appropriate for providing guidance for an alternate path.



ALTERNATE PATH JPMs

- Example where use of the RNO would not qualify as an Alternate Path:
  - Phase ‘B’ CIS has just occurred. The examinee is instructed to manually perform the attachment to verify alignment of Phase ‘B’ valves.

Left Column	RNO
◦ Valve B1 closed?	Manually close Valve B1

ALTERNATE PATH JPMs

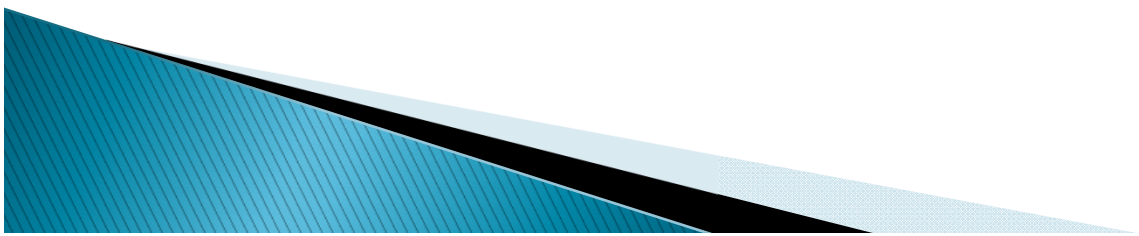
- Example where use of the RNO would meet the intent of an Alternate Path JPM:

- [1] ___ MANUALLY TRIP REACTOR … *(Rx trips)*
- [2] ___ VERIFY TURBINE TRIP:
- a) Manually Trip Turbine *(turbine does not trip)*
- b) Verify all Turbine Stop Valves – CLOSED *(valves NOT closed – failure during performance of task)*

- [2] RNO
- b) Put both EHC Pumps in PTL.
  - IF Turbine is still NOT tripped, THEN manually run back Turbine.
  - IF Turbine cannot be run back, THEN close MSTVs and Bypass Valves.

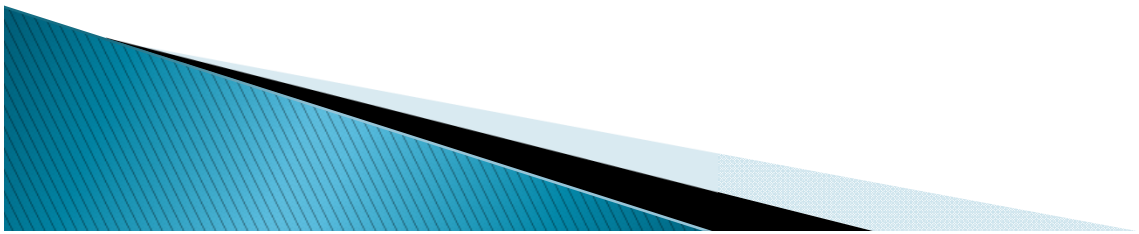
ALTERNATE PATH JPMs

- Performance Criteria (Standard)
  - Criteria must be objective.
  - Criteria must be supported by procedures, analysis, vendor information, etc. – especially when there is a time requirement.
    - How soon must a valve be closed? How soon must an EDG be stopped? How soon must the reactor be tripped?
  - Preferable to have the standard for successful completion tied to a plant parameter.
    - e.g.: close PORV BV to avoid reactor trip.



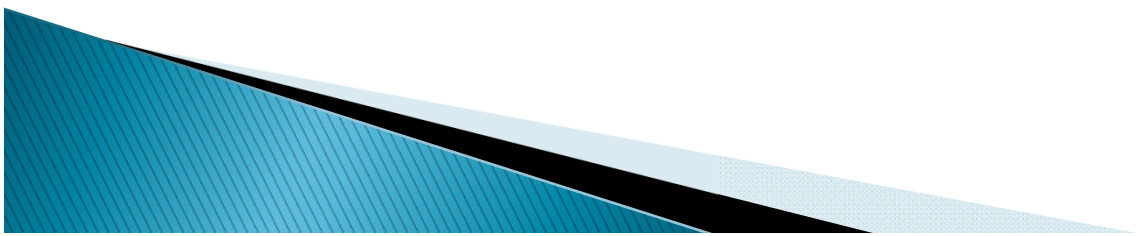
ALTERNATE PATH JPMs

- Objective Criteria:
  - 4 to 6 Alternate Path JPMs for ROs and Instant SROs.
  - 2-3 Alternate Path JPMs for Upgrade SROs. [NUREG-1021, Form ES-301-2]
- Form ES-201-2 also contains one line-item that requires a signature for verification that the exam contains the required number of alternate path JPMs.
- Smart to target 5.



ALTERNATE PATH JPMs

- Questions?

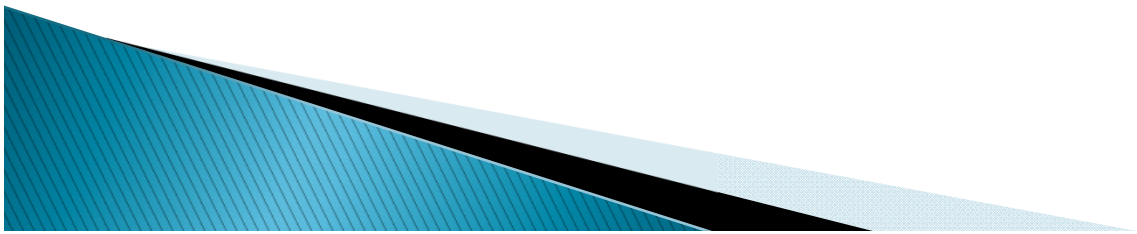


TIME-CRITICAL JPMs

- What is a "time-critical" JPM?
- "Time-critical" JPMs evaluate tasks identified in the facility's JTA that must be completed within a defined time period for each licensed position.
  - Time requirements must have a basis:
    - E-Plan classification / communication requirement
    - Safety implications – time bounded by analysis

TIME-CRITICAL JPMs

- Successful Completion of JPM
  - To successfully complete a time-critical JPM, the operator must perform the “time-critical” steps within a pre-specified time period, in addition to successfully performing all of the critical steps that are not time-critical.

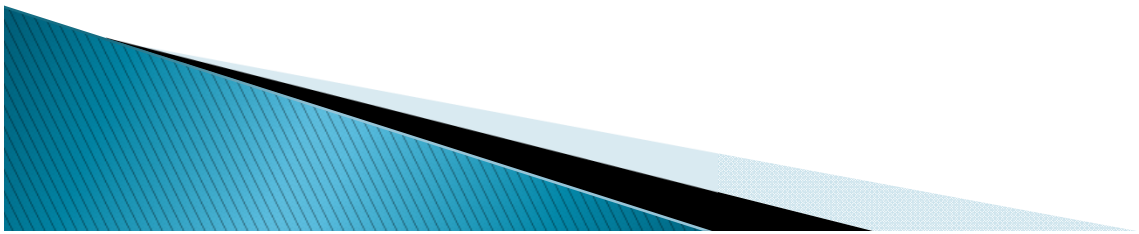


TIME-CRITICAL JPMs

- Checklists
  - Form ES-301-3, "Operating Test Quality Checklist"
  - Form ES-701-7, "LSRO Operating Test Quality Checklist"

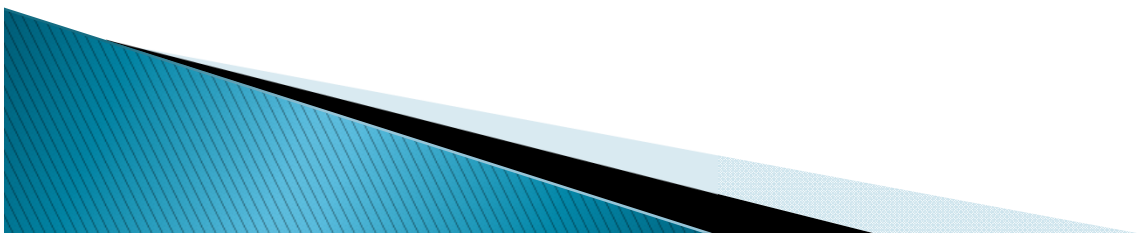
TIME-CRITICAL JPMs

- Appendix E, Policies and Guidelines for Taking NRC Examinations
  - Examiner will state to the applicant that the task contains time-critical elements.
  - The examiner will not provide the actual time requirement to the applicant.
  - Time-critical JPMs have been validated by your facility and must be completed within the predetermined time interval in order to obtain a satisfactory grade for that JPM.



TIME-CRITICAL JPMs

- Questions?



RII Exam Writers' Workshop

NUREG 1021 - Rev 10

"The best way to predict the future is to invent it."
— Alan Kay

Mark Bates

Senior Operations Engineer

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Division of Reactor Safety
US NRC Region II

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NUREG 1021 - Rev 10

- Purpose:
  - –Discuss changes with development, administration, and grading of initial license exams.

NUREG 1021 - Rev 10

ES-201

Initial Operator Licensing Exam Process

- New Reactors
  - ES-401N
  - NRO
  - NUREGs 2103/4
- Timeline Changes (ES-201-1)

NUREG 1021 - Rev 10

ES-201

Form ES-201-1 Timeline Changes

- Phone Call and Notification letter changed from -120 Days to -150 Days.
- Outline Submittal changed from -75 Days to -90 Days.
- Draft Exam Submittal changed from -45 Days to -90 Days.

NUREG 1021 - Rev 10

ES-201

Form ES-201-1 Timeline Changes

- Exam review complete -45 Days (new)
- Additional reviews/approvals target completion changed from -14 Days to -21 Days.
- Licensee management asked about their views on exam (new)

NUREG 1021 - Rev 10

ES-201

Attachment 1: Other Considerations

- Exam Security and Predictability
  - Measures need to be taken so that applicants cannot predict exam content
  - Examples that we have been seeing are related to test items from exams three, four, or five exams back (outside of the previous two exams for which hard criteria exists)

NUREG 1021 - Rev 10

ES-202

Preparing & Reviewing Operator Licensing Apps

D.4 – Cold Licensing Eligibility

NEI06-13A, "Template for an Industry Training Program Description," is required to be used prior to fuel load and completion of pre-operational testing.

NUREG 1021 - Rev 10

ES-204

Processing Waivers Requested by RO/SRO

- "Routine Waiver" changed to "Waivers Approved by Region"
  - The previous title was misleading
- D.1.k – Added 4th Waiver Criteria

NUREG 1021 - Rev 10

ES-301

Preparing Initial Op Tests

- D.3.d – Admin JPM category changed to: "Emergency Plan" (A.4)
- D.3.i – 60 not 45 (typo for Draft Exam Submittal)
- D.4 – Control Room JPMs now require ESF JPM for all applicants, not just upgrade SRO applicants.

NUREG 1021 - Rev 10

ES-301

Preparing Initial Op Tests - cont

- D.5.d – Simulator Op Test
  - Added reference to Attach 2, Verifiable Action Guidelines
  - Clarification to I/C failures after MT

NUREG 1021 - Rev 10

ES-301

ES-301-4 Sim Scenario Quality CL

- Deleted “No more than one non-mechanistic failure without a credible preceding event,” from Target Qualitative Attributes
- Deleted “Total number of malfunctions” from Target Qualitative Attributes
- Added ”EOP based” to the Critical Task criteria

NUREG 1021 - Rev 10

ES-301

ES-301-5 Transient & Event CL

- Instruction 4 at the bottom of the CL states that under certain circumstances an Instant SRO can be tested in the BOP position and not in the ATC position.
  - NRR has addressed this in FAQ 301.19.

NUREG 1021 - Rev 10

ES-302

Administering Op Tests to IL Applicants

- D.1.i – Test Admin Inst & Policies
  - video recordings encouraged (not required)

NUREG 1021 - Rev 10

ES-303

Documenting & Grading Initial Op Tests

- D.2.b – grading non-critical errors

NUREG 1021 - Rev 10

ES-303

ES-303-1 Sim Op Test Grading Details

- "Control Board Operations" changed to "Operate Plant Components" and RO/SRO RF weights changed to be almost the same.

NUREG 1021 - Rev 10

ES-401

Preparing Initial Site-Specific Written Exams

- The only significant changes to the written exam are centered around accommodating the new reactor technologies and the new K/A Catalogs.

2015
Exam Writers' Workshop
Region II

NUREG-1021 Revision 11 Preview

"If at first you don't succeed, skydiving is not for you."
–Arthur McAuliff

Dan Bacon

Senior Operations Engineer

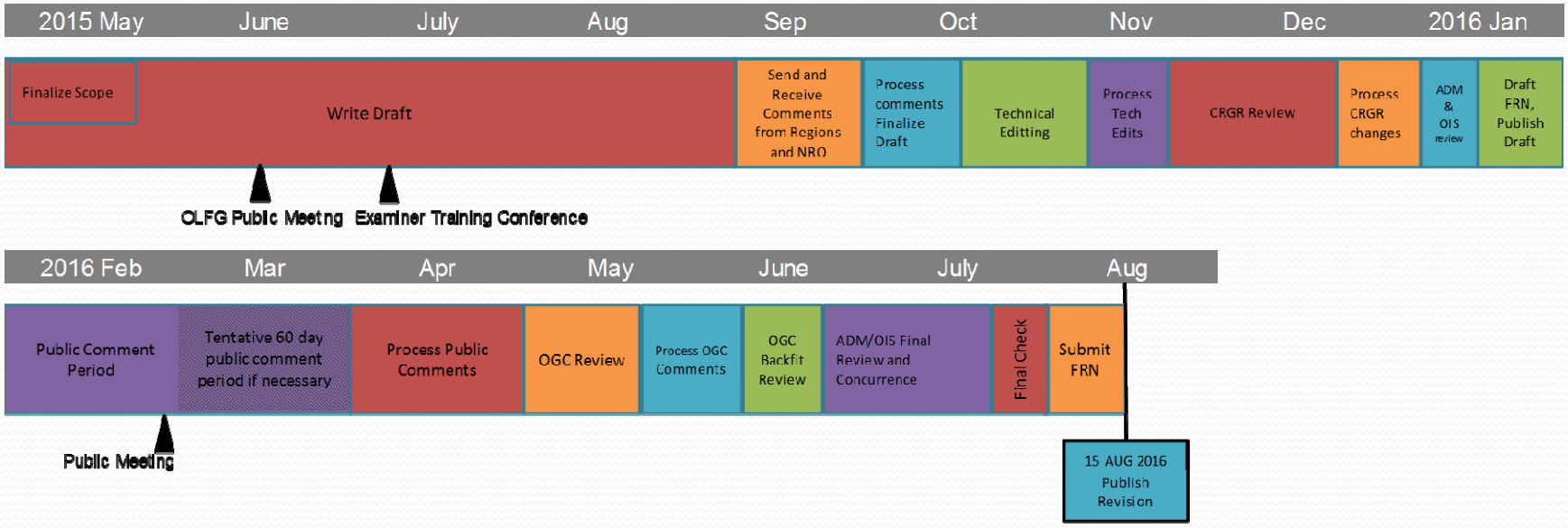
Operations Branch 2

Division of Reactor Safety

US NRC Region II

Work: 404-997-4518

Timeline for Revision 11



Operator Licensing Lessons Learned Review Team (LLRT) Objective

- The objective of this Lessons Learned Review Team was to conduct, in light of the Atomic Safety and Licensing Board (ASLB's) decision overturning the staff's denial of a senior reactor operator (SRO) license application from an applicant, a focused review of the U.S. Nuclear Regulatory Commission (NRC) processes for initial operator licensing simulator tests and staff administrative reviews (appeals) in order to identify and recommend areas of improvement.

LLRT Charter

- The scope of the review effort included, but was not limited to, the following:
  - potential enhancements to the NUREG-1021 grading criteria for simulator operating tests and regional consistency
  - the waiver process for portions of initial operator licensing examinations that an applicant previously passed
  - the informal review process for applicant appeals regarding simulator operating tests and regional consistency
  - examination team composition

LLRT Composition

- Senior Executive Service (SES) level Team Leader
- Experienced representatives from each NRC region and the Office of New Reactors

LLRT Report

- ADAMS Accession No: ML15124A615
- The LLRT recommended twenty-three improvements to the operator licensing process.

Operator Licensing Implementation Team (OLIT)

- The OLIT was provided a charter that directed a review of the LLRT report, a determination of the extent to which each recommendation would affect the NRC's Operator Licensing Program, and the development of an action plan for each of the LLRT recommendations, including any barriers to implementation.
- The OLIT consisted of members from each region and was led by the NRC HQ Inspection and Operator Licensing Branch (IOLB).

OLIT

- Action Plan
  - ADAMS Accession No: ML15126A138
- Detailed Action Plan
  - ADAMS Accession No: ML15149A306

Specific Issue Teams (SIT)

- Five SITs were established to implement the vast majority of LLRT recommendations.
- Each team consisted of members from at least two different regions.
- The final product resulting from the efforts of each SIT was presented to the Operator Licensing Branch Chiefs from each region and the NRC HQ IOLB. A final consensus was reached on all of the changes at the Branch Chief level.

NUREG-1021 Revision 11 Changes

- Waivers
- Definitions
- Exam team composition
- Operating test abeyance
- Simulator grading criteria
- Critical Task (CT) definition enhancement

Note: During the remainder of the presentation, wording related to concepts to be incorporated into Rev 11 may not be present exactly as shown in the final proposed version of NUREG 1021 Rev 11.

LLRT “Waiver" Recommendations

- “Waiver” requests and decisions will be dispositioned in formal correspondence. Should emphasize that licensees submit “waivers” early in the process.
- Establish a “marginal performance band” such as scoring between 80-84 on the written exam, scoring between 1.8 and 2.0 on any competency on the simulator exam, and achieving >80% on the JPM portion. If an applicant fails a portion of the exam but scores above the marginal performance band in other portions, then the Region may grant a “waiver” of the passed sections.

Waivers

- We need to discuss the following definitions before we talk about “waivers”:
  - Waive
  - Defer
  - Excuse
  - Early

Waive

- To forgo or relinquish a legal requirement which the NRC is legally entitled to enforce. Forgoing such a requirement is documented as a "waiver." The NRC's ability to waive examination and test requirements is specified in 10 CFR Part 55.47.

Defer

- To put off completion of a license application/condition requirement(s) until a later date, typically after an initial NRC licensing examination. This is a sub-category of "waivers." The allowance for an applicant to do this is documented as a "deferral," and requirements addressed this way are in the state of being "deferred."

Excuse

- To release a re-applicant from the requirement to complete portions of a re-examination or test in accordance with 10 CFR Part 55.35(b). Granting such a release is referred to as an “excusal.”

Early

- Use NUREG 1021 as a method of communicating our definition of EARLY to the licensees.
- 10CFR55.35(a) states that a retake applicant "… may file a new application two months after the date of denial."
- OGC was consulted, but offered no regulation-based opinion.
- Recommended a target time of 60 days.

ES-201 C.2.c (Rev 10)

- The regional office should contact the facility licensee by telephone approximately 5 months before the scheduled examinations to reconfirm the expected number of applicants and the examination dates, and to make other preliminary arrangements for developing the examinations.
  - This discussion should include any licensee intentions regarding potential waivers for any portion(s) of the licensing examination. This provides the NRC ample time to consider the preliminary justification for the waiver request(s).

ES-202, C.1.e (concept to be added in Revision 11)

- Preliminary waiver/excusal requests should be submitted 60 days before the retake examination date or as early as possible to allow evaluation of the sufficiency of the justification. Failure to allow adequate time to review sufficiency of the justification could result in the excusal being denied.

10 CFR 55:35(b)

- An applicant who has passed either the written examination or operating test and failed the other may request in a new application on Form NRC-398 to be excused from re-examination on the portions of the examination or test which the applicant has passed. The Commission may in its discretion grant the request, if it determines that sufficient justification is presented.

Excusals

- Started by reviewing NUREG-1021's OGC comments and requesting their input on the concept of a Marginal Performance Band.
- While OGC provided examples of how a band could be properly implemented and not circumvent 10 CFR 55.35(b), their examples fell short of the LLRT's intent to simplify the granting or denying of excusals.

Excusals (continued)

- Since we did not implement a Marginal Performance Band, what DID we do?
  - ES-204, section D.1.a will be revised to provide specific requirements for excusal justifications.
  - ES-501, Attachment 4, Sample Final Denial Letter, will be revised to officially notify the applicant at the earliest applicable time of the need to request an excusal and refers him/her to the justification requirements of ES-204.

ES-204, section D.1.a (Proposed Rev 11)

- A statement, which shall be documented in block 17 of NRC Form 398, affirming that the applicant was fully remediated per the licensee's approved SAT-based training program;
- Documentation showing the content and scope of remediation and retraining efforts completed with the applicant since the first examination failure;
- Content of the testing and evaluations the applicant has completed since the first examination failure, including the applicant's results; and

ES-204, section D.1.a (Proposed Rev 11) (continued)

- Evidence of the applicant's participation in the licensee's licensed operator requalification training program since the first examination failure, including the results of any evaluations of the applicant.

Exam Team Composition

- ES-201 Section C.2.c & D.1.a – Section was revised to include criteria for who may participate in retake of the operating test.
  - No examiner who participated in any way (including OJT for examiner qualifications) with the administration of an operating test retake applicant's initial operating exam will be assigned any role in administering the retake operating examination. Examiners from other regions may need to be used to fulfill this requirement, or the scheduled examination may need to be postponed as needed based on the regional office's examiner schedule.

Exam Team Composition (continued)

- Any examiner assigned to an examination that includes an operating test retake applicant is prohibited from both reviewing that applicant's previous performance and participating in any discussions of waivers/excusals concerning that applicant.
- A different regional supervisor authorized to issue operator's licenses (not the same individual who signed the retake applicant's original examination ES-303s) is responsible for the final licensing decision and final signature on the retake applicant's Form ES-303-1.

Exam Team Composition (continued)

- Any deviation from these requirements be authorized by the responsible Chief, NRR/NRO operator licensing program office, in writing.

Operating Test License Abeyance

- Licenses may be held in abeyance for the simulator test or walkthrough test when certain criteria are met (Rev 11).
- Similar to holding licenses for applicants who received 82% or lower on the written examination overall (or 74%/84% as applicable for SRO-Only items) pending the results of any appeals/hearings.
- These applicants would be issued “pass” letters.

Operating Test Abeyance Criteria

- Thresholds have been established to hold licenses in abeyance for both the “Walk-Through” and “Simulator” portions of the Operating Test, similar to the concept of holding licenses when there is a Written Exam failure.
- Licenses are held in abeyance for Operating Test results that border on failure and are related to “Contested Items Only.”

Operating Test Abeyance Criteria (Simulator Test)

- OLIT position: Appeal Panel should have the ability to assign a post-exam Critical Task (CT) to a Contested Item.
- Simulator Test abeyance criteria are based upon this premise and utilize a “Same Scenario - Same Event” error conceptual approach.

Operating Test Abeyance Criteria (Simulator Test) (cont'd)

- A "Same Scenario - Same Event" error occurs when a "failing" applicant and a "non-failing" applicant both make an error during the same scenario event (note that abeyance criteria is not limited to a single operating crew), and regional evaluation determined that there was a potential for the licensing decision to be affected.

Operating Test Abeyance Criteria (Simulator Test) (cont'd)

1) A "failing" applicant and a "non-failing" applicant both make an error during the **same scenario event**, and
2) A regional evaluation of the "non-failing" applicant's "**Same Scenario -Same Event**" error determines that it would result in a failure if assessed as a critical task during an administrative review.

Operating Test Abeyance Criteria (Simulator Test) (cont'd)

- Regional evaluation shall consist of individually setting each identified "**Same Scenario - Same Event**" error to "0" (or a "1" for Communications errors) to see if any passing applicant would fail if the error were to become a critical task. Any affected license would subsequently be placed on hold.

Operating Test Abeyance Criteria (Simulator Test) (cont'd)

- The "**Same Scenario - Same Event**" error approach:
  - Covers any case where errors may be assessed under different competencies and/or rating factors,
  - Works "cross-license-level," given that RO and SRO competency areas don't always match,
  - Extends the evaluation process to "non-failing" applicants on other crews who may have made the same or similar errors,

Operating Test Abeyance Criteria (Simulator Test) (cont'd)

- Provides a straight-forward, stream-lined, and focused evaluation process that is limited in scope and minimizes the number of licenses subject to delayed issuance, and
- Ensures a consistently fair and equitable grading standard for all applicants in the event a contested item is assessed as a post-exam critical task during the administrative review process.

Operating Test Abeyance Criteria (Walk-Through Test)

- Applicants who passed the operating test with a grade of Satisfactory on 80% of the “Walk-Through” (where the percentage of Satisfactory grades in the Administrative Topics area, as described in Section D.2.a of ES-303, was met), and regional evaluation determined that there was a potential for the licensing decision to be affected.

Operating Test Abeyance Criteria (Walk-Through Test) (cont'd)

- Licensing decision for a Walk-Through Test abeyance applicant would be negatively affected if the outcome of an administrative review resulted in elimination of the contested JPM.

Simulator Scenario Grading

- The practice of “restoring a point when two non-critical errors are offset by correctly performing another activity in the same rating factor” will be discontinued.
- Why?
  - An applicant who had three opportunities to demonstrate competency performing a rating factor and only performed it correctly one time would receive a score of “2” in that rating factor. This is a passing score (>1.8) for that particular rating factor. This is not discriminating.

1. Interpret/Diagnose Events and Conditions Based on Alarms, Signals, and Readings

Rating Factors	Weighting Factors		RF Scores	RF Grades	Comp. Grade
(a) Did the applicant RECOGNIZE and VERIFY off-normal trends and status?	N/O	= 0	3		
	Nominal	**= 0.33**	2		
	(b) or (c) N/O	= 0.5	1		
(b) Did the applicant correctly INTERPRET/DIAGNOSE plant conditions based on control room indications?	N/O	= 0	3		
	Nominal	**= 0.34**	2		_____
	(a) or (c) N/O	= 0.50	1		
(c) Did the applicant ATTEND TO annunciators, alarm signals, and instrument readings in order of importance and severity?	N/O	= 0	3		
	Nominal	**= 0.33**	2		
	(a) or (b) N/O	= 0.50	1		

2. Comply with and Use Procedures, References, and Technical Specifications

Rating Factors	Weighting Factors		RF Scores	RF Grades	Comp. Grade
(a) Did the applicant REFER TO and/or VERIFY the appropriate procedure or reference in a timely manner?	N/O	= 0	3		
	Nominal	**= 0.30**	2		
	(c) N/O	= 0.43	1		
	(b) N/O	= 0.50			
(b) Did the applicant COMPLY WITH procedures (including precautions and limitations) and references in an accurate and timely manner?	N/O	= 0	3		
	Nominal	**= 0.40**	2		_____
	(a) or (c) N/O	= 0.57	1		
(c) Did the applicant RECOGNIZE plant conditions that are addressed in technical specifications?	N/O	= 0	3		
	Nominal	**= 0.30**	2		
	(a) N/O	= 0.43	1		
	(b) N/O	= 0.50			

Simulator Scenario Grading (continued)

- For simulator performance scoring (except communications), the range of scoring should be from “0” to “3” instead of “1” to “3.”
- The minimum score for any communications rating factor will remain “1.” No points are deducted for the first non-critical communications error.
- The passing threshold will remain greater than 1.8.

Simulator Scenario Grading (continued)

- Why?
  - An applicant could make an infinite number of errors and perform nothing correctly in a rating factor and still get some credit for that rating factor. This is not discriminating.
  - Wanted to minimize the weighting of communications, because there are so many opportunities for errors that have no consequence.

Types of Errors

- Critical Errors
  - The terms “critical error,” “critical task error,” and “missed CT” are used interchangeably, and refer to an error associated with the failure of a critical task (CT).
- Non-critical Errors
  - “Non-critical errors” are all other errors (i.e., not associated with the failure of a critical task).

Critical Errors

- Making a critical error (failing a critical task) will result in the minimum rating factor (RF) score for that rating factor.
  - Non-communications critical errors: RF Score = 0
  - Communications critical errors: RF Score = 1
- Making a critical error in one rating factor will not result in a failing grade (≤ 1.8) for that competency area by itself.

1. Interpret/Diagnose Events and Conditions Based on Alarms, Signals, and Readings

Rating Factors	Weighting Factors		RF Scores	RF Grades	Comp. Grade
(a) Did the applicant RECOGNIZE and VERIFY off-normal trends and status?	N/O	= 0	3		
	Nominal	**= 0.33**	2		
	(b) N/O	= 0.5	1		
	(c) N/O	= 0.5	0		
(b) Did the applicant correctly INTERPRET/DIAGNOSE plant conditions based on control room indications?	N/O	= 0	3		
	Nominal	**= 0.34**	2		
	(a) N/O	= 0.50	1		
	(c) N/O	= 0.50	0		
(c) Did the applicant ATTEND TO annunciators, alarm signals, and instrument readings in order of importance and severity?	N/O	= 0	3		
	Nominal	**= 0.33**	2		
	(a) N/O	= 0.50	1		
	(b) N/O	= 0.50	0		

2. Comply with and Use Procedures, References, and Technical Specifications

Rating Factors	Weighting Factors		RF Scores	RF Grades	Comp. Grade
(a) Did the applicant REFER TO and/or VERIFY the appropriate procedure or reference in a timely manner?	N/O	= 0	3		
	Nominal	**= 0.33**	2		
	(c) N/O	= 0.50	1		
	(b) N/O	= 0.50	0		
(b) Did the applicant RECOGNIZE plant conditions that are addressed in technical specifications?	N/O	= 0	3		
	Nominal	**= 0.33**	2		
	(a) N/O	= 0.50	1		
	(c) N/O	= 0.50	0		
(c) Did the applicant COMPLY WITH procedures (including precautions and limitations) and references in an accurate and timely manner?	N/O	= 0	3		
	Nominal	**= 0.34**	2		
	(a) N/O	= 0.50	1		
	(b) N/O	= 0.50	0		

Potential Impact of Grading Criteria Change

- We mathematically re-graded operating tests for applicants who received “borderline” scores during 2013 and 2014. Some 2012 exams were re-graded for licensees who did not have 2013 exams.
- There were 172 borderline cases nationally out of 740 new/upgrade applications received. This was 22% of the total new/upgrade applications received.

What constitutes a "borderline" case?

- Any applicant that received a score of 2.4 or lower on any single competency grade (2.6 for TS)
- Any applicant that received a score of 1 on any rating factor
- Any applicant that initially failed the Simulator portion of the operating test, but received a license based on appeals

Results of the Re-grading?

- The total percentage of failures goes from 8% to 12% of all new and upgrade applications received (62 failures up to 89 – 95 failures). The range is due to Technical Specification (TS) differences in initial grading.
- Of those 172 cases:
  - 29 would fail the simulator test if TS were assessed the same way the original grader assessed them.
  - 35 would fail the simulator test if all TS were assessed at the TS-level and a two-part TS Competency Area (CA).
  - 2 of these were denied a license already for failing other portions of the exam. (27 to 33 additional failures using 0-3 grading scheme)

Results of the Re-grading? con't

- It is important to note that these regrades occurred *before* the OLIT modified the grading discussion in Rev 11.
- For example, weighting factors in RO CA 2 were found to be inappropriate as a result of the regrade and were adjusted accordingly.
- Thus, the estimated total percentage of failures on the previous slide is an **OVER**estimate and does NOT reflect OLIT modifications to the LLRT recommendation.

Technical Specification Grading

- The NUREG-1021 ES-301-5 Transient and Event Checklist requires a minimum of 2 TS events.
- TS are graded at the individual TS level, not at the event level.
  - While grading SRO competency 6 (Comply with and Use Technical Specifications) in accordance with current guidance, an applicant could fail the operating test due to missing the TS calls for one event.
  - TS calls for one event more important than missing a critical task?

6. Comply with and Use Technical Specifications (TS)

Rating Factors	Weighting Factors		RF Scores	RF Grades	Comp. Grade
(a) Did the applicant RECOGNIZE when conditions were covered by the TS and LOCATE the appropriate TS?	N/O	= 0	3		
	Nominal	**= 0.4**	2		_____
	(b) N/O	= 1.0	1		
(b) Did the applicant ensure correct COMPLIANCE with TS and LCO action statements?	N/O	= 0	3		
	Nominal	**= 0.6**	2		
	(a) N/O	= 1.0	1		

6. Comply with and Use Technical Specifications (TS)

Rating Factors	Weighting Factors	RF Scores	RF Grades	Comp. Grade
(a)* Did the applicant RECOGNIZE when instruments/components were inoperable and when conditions were covered by the TS? *(If TS are not addressed at all by the applicant, this weighting factor becomes 1.0.)	N/O = 0	3		
	Nominal = 0.30	2		
	(b) N/O = 0.43	1		
	(c) N/O =0.50	0		
(b) Did the applicant LOCATE the appropriate TS for the equipment they determined was inoperable and/or covered by TS?	N/O = 0	3		
	Nominal = 0.30	2		
	(a) N/O = 0.43	1		
	(c) N/O = 0.50	0		
(c) Did the applicant ensure correct COMPLIANCE with TS and LCO action statements?	N/O = 0	3		
	Nominal = 0.40	2		
	(a) N/O = 0.57	1		
	(b) N/O = 0.57	0		

Rev 11 TS Grading

- Three Rating Factors
  - Recognize conditions covered by TS.
  - Locate the appropriate TS.
  - Ensure correct compliance with TS and LCO action statements.
- Does not carry errors forward.
- Assigns a weighting factor of “1” to RF 6.a, if TS not addressed at all by applicant.

Enhanced Critical Task Guidance

- Entire definition strengthened and clarified, but not changed
- Differentiated between “creating” a critical task and identifying a previously unidentified critical task post-scenario
- Enhanced guidance on “performance standards” (previously called “performance indicators”)

Enhanced Critical Task Guidance (continued)

- D.1.c: When bounding critical tasks, in addition to asking what constitutes how the task is met, it can be helpful to ask how an applicant or operator could fail the task. If objective criteria for failure cannot be determined, the task may not actually be critical.
- Included verbiage similar to ES 604 D.2.e in Appendix D section D.2 (post scenario CT evaluation).

Enhanced Critical Task Guidance (continued)

- Discussion on pre-identifying CTs before the major event
- Large discussion on how to identify whether unanticipated events should be classified as CTs (C.2.j).

Enhanced Critical Task Guidance (continued)

- Proposing to allow use of a blanket statement in scenario guides similar to:
  - If an applicant's, or group of applicant's, actions result in an unnecessary plant trip or ESFAS actuation, these unnecessary actions may constitute a critical task failure. The actions taken will be validated using NUREG 1021 Appendix D methodology for critical tasks.
- Reiteration that the recommended number of CTs is a target rather than an absolute limit.

ES-301 D.5.d

- The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool, but may not fit within the ranges. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate. Whenever possible, the critical tasks should be distributed so that each applicant is required to respond. Care should be taken when assigning scenario sets so that applicants are evaluated on a similar number of pre-identified critical tasks.

Facility:	Date of Exam:	Scenario Numbers: / /	Operating Test No.:

QUALITATIVE ATTRIBUTES	Initials a	Initials b*	Initials c#
1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.			
2. The scenarios consist mostly of related events.			
3. Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) or conditions that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)			
4. The events are valid with regard to physics and thermodynamics.			
5. Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			
6. If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.			
7. The simulator modeling is not altered.			
8. The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			
9. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.			
10. All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			
11. The scenario set provides the opportunity for each applicant to be evaluated in each of the applicable rating factors. (Competency Rating factors as described on forms ES-303-1 and ES-303-3.)			
12. Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).			
13. The level of difficulty is appropriate to support licensing decisions for each crew position.			

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes	--	--	--
1. Malfunctions after EOP entry (1-2)	/ /			
2. Abnormal events (2-4)	/ /			
3. Major transients (1–2)	/ /			
4. EOPs entered/requiring substantive actions (1–2)	/ /			
5. EOP contingencies requiring substantive actions (0-2)	/ /			
6. EOP-based Critical tasks (2–3)	/ /			
7. Total number of Critical Tasks (2–6)	/ /			
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.				

Other Changes

- Some other minor changes were made for consistency.
- Example:
  - Modified RO Competency Area (CA) 3 Weighting Factors (WF) to align with SRO CA 3 WFs.
  - Why would a RO applicant operating plant component controls as the OATC be different than an SRO-I?

Questions?