

**2013 DUANE ARNOLD ENERGY CENTER**

**INITIAL LICENSE EXAMINATION**

**PROPOSED EXAM FILES**



January 25, 2013

NG-13-0017  
NUREG 1021

U.S. Nuclear Regulatory Commission, Region III  
Attention: Bruce Palagi  
2443 Warrenville Road  
Suite 210  
Lisle, IL 60532-4352

Duane Arnold Energy Center  
Docket 50-331  
Renewed Op. License No. DPR-49

Examination Material for Duane Arnold Energy Center Initial License  
Examination Week of April 8, 2013

In accordance with the guidelines of NUREG 1021, "Operating License Examination Standard for Power Reactors," Revision 9, we are sending you the written examination portion of the initial license examinations to be administered at our facility the week of April 8, 2013.

NUREG 1021 physical security requirements state that the enclosed examination materials shall be withheld from public disclosure until after the examination is complete.

You may direct any questions or comments regarding this material to Eric Murray at 319-851-7203.

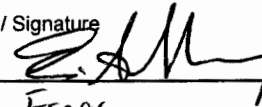
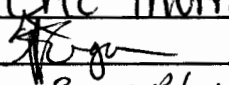
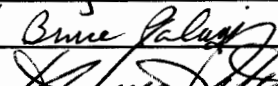
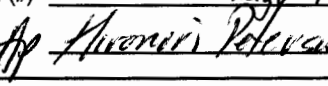
This letter contains no new commitments.

A handwritten signature in black ink that reads "Richard L. Anderson".

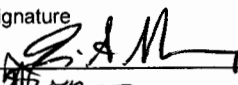
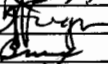
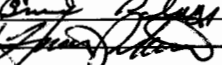
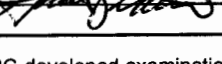
Richard L. Anderson  
Vice President, Duane Arnold Energy Center  
NextEra Energy Duane Arnold, LLC

Enclosure

CC: Chief Operator License Branch, Region III  
NRC Resident Inspector  
NRC Document Control Desk

Facility:		Date of Examination:		Operating Test Number:		
1. General Criteria				Initials		
				a	b*	c#
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AP
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
2. Walk-Through Criteria				--	--	--
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>• initial conditions</li> <li>• initiating cues</li> <li>• references and tools, including associated procedures</li> <li>• reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee</li> <li>• operationally important specific performance criteria that include:                         <ul style="list-style-type: none"> <li>— detailed expected actions with exact criteria and nomenclature</li> <li>— system response and other examiner cues</li> <li>— statements describing important observations to be made by the applicant</li> <li>— criteria for successful completion of the task</li> <li>— identification of critical steps and their associated performance standards</li> <li>— restrictions on the sequence of steps, if applicable</li> </ul> </li> </ul>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
b.	Ensure that any changes from the previously approved systems and administrative walk-through outlines (Forms ES-301-1 and 2) have not caused the test to deviate from any of the acceptance criteria (e.g., item distribution, bank use, repetition from the last 2 NRC examinations) specified on those forms and Form ES-201-2.			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
3. Simulator Criteria				--	--	--
The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP
	Printed Name / Signature			Date		
a.	Author	Eric Murray 		1/22/13		
b.	Facility Reviewer(*)	 Tim Erger		1/23/13		
c.	NRC Chief Examiner (#)	Bruce Palagyi / 		4/4/13		
d.	NRC Supervisor	 Khroneri Peterson		4/4/13		
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.						

Facility: <u>Duane Arnold</u>		Date of Exam: <u>1/8/13</u>		Scenario Numbers: <u>1 / 2 / 3</u>		Operating Test No.: <u>2013</u>	
QUALITATIVE ATTRIBUTES			Initials				
			a	b*	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.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
2.	The scenarios consist mostly of related events.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
3.	Each event description consists of <ul style="list-style-type: none"> <li>the point in the scenario when it is to be initiated</li> <li>the malfunction(s) that are entered to initiate the event</li> <li>the symptoms/cues that will be visible to the crew</li> <li>the expected operator actions (by shift position)</li> <li>the event termination point (if applicable)</li> </ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
5.	The events are valid with regard to physics and thermodynamics.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
7.	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.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
8.	The simulator modeling is not altered.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
9.	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.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
10.	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.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
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).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BP		
Target Quantitative Attributes (Per Scenario; See Section D.5.d)		Actual Attributes		--	--	--	
1.	Total malfunctions (5-8)	7	8	7	<input checked="" type="checkbox"/>	BP	
2.	Malfunctions after EOP entry (1-2)	1	1	2	<input checked="" type="checkbox"/>	BP	
3.	Abnormal events (2-4)	2	4	3	<input checked="" type="checkbox"/>	BP	
4.	Major transients (1-2)	1	2	1	<input checked="" type="checkbox"/>	BP	
5.	EOPs entered/requiring substantive actions (1-2)	1	2	2	<input checked="" type="checkbox"/>	BP	
6.	EOP contingencies requiring substantive actions (0-2)	1	2	2	<input checked="" type="checkbox"/>	BP	
7.	Critical tasks (2-3)	2	2	3	<input checked="" type="checkbox"/>	BP	

Facility:	Date of Exam:	Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>
Item Description		Initial
		a      b*      c*
1.	Questions and answers are technically accurate and applicable to the facility.	SM    [initials]    BP
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	SM    [initials]    OP
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401	SM    [initials]    BP
4.	The sampling process was random and systematic (if more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office).	SM    [initials]    BP
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input checked="" type="checkbox"/> the audit exam was systematically and randomly developed; or <input type="checkbox"/> the audit exam was completed before the license exam was started; or <input type="checkbox"/> the examinations were developed independently; or <input type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain)	[initials]    [initials]    BP
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank      Modified      New
		39/28      0 / 0      61/72
7.	Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	Memory      CIA
		44 / 20      56 / 80
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.	[initials]    [initials]    BP
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.	[initials]    [initials]    BP
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.	[initials]    [initials]    BP
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.	[initials]    [initials]    BP
a. Author	Printed Name / Signature <u>Eric Murray</u> 	Date 1/22/13
b. Facility Reviewer (*)	<u>Tim Enger</u> 	1/23/13
c. NRC Chief Examiner (#)	<u>Bruce Raloff</u> 	2/22/13
d. NRC Regional Supervisor	<u>Mr. Hillman</u> 	4/4/13
Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.		