

**VARIOUS SIGNATURE CHECKLIST OUTLINE FORMS**

**FOR THE DUANE ARNOLD INITIAL EXAMINATION - JAN/FEB 2005**

November 4, 2004

NG-04-0699  
NUREG 1021

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

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

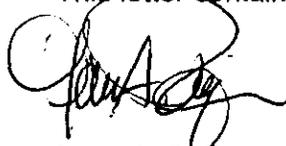
Examination Material for Duane Arnold Energy Center Initial License Examination Week of  
January 31, 2005

In accordance with the guidelines of NUREG 1021, "Operating License Examination Standard for Power Reactors", Revision 9, we are sending you the integrated examination outlines for the initial license examinations to be administered at our facility the week of January 31, 2005.

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 George Thullen at 319-851-7945 or Kelly Gassman at 319-851-7427.

This letter contains no new commitments.



Mark A. Peffer  
Site Vice President, Duane Arnold Energy Center  
Nuclear Management Company, LLC

Enclosures (20)

CC: Chief Operator License Branch, Region III w/o  
NRC Resident Inspector w/o

NOV 05 2004

**Enclosure 1**  
**ES-201-2 Examination Outline Quality Checklist**

Facility: <u>DAEC</u>		Date of Examination: <u>1/31/05</u>		
Item	Task Description	Initials		
		a	b*	c#
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
2. S I M U L A T O R	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	<i>WR</i>	<i>JMD</i>	<i>JMD</i>
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.	<i>WR</i>	<i>JMD</i>	<i>JMD</i>
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	<i>WR</i>	<i>JMD</i>	<i>JMD</i> *
3. W / T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	<i>WR</i>	<i>JMD</i>	<i>JMD</i> *
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations	<i>WR</i>	<i>JMD</i>	<i>JMD</i> *
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.	<i>WR</i>	<i>JMD</i>	<i>JMD</i>
4. G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	d. Check for duplication and overlap among exam sections.	<i>RET</i>	<i>JMD</i>	<i>JMD</i> *
	e. Check the entire exam for balance of coverage.	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	<i>RET</i>	<i>JMD</i>	<i>JMD</i>
a. Author	<u>G. Thull</u> <u>Wayne Rander</u> Printed Name/Signature			<u>11/2/04</u> Date
b. Facility Reviewer (*)	<u>Wayne Rander</u> <u>Mike Davers</u>			<u>11/1/04</u> <u>11/3/04</u>
c. NRC Chief Examiner (#)	<u>Shrookri Peterson</u>			<u>11/9/04</u>
d. NRC Supervisor	<u>RJ Lankburg</u>			<u>11/10/04</u>

Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

\* Note: See Outline Comments.

**Enclosure 10**  
**ES 301-4 Simulator Scenario Quality Checklist**

Facility: <u>DAEC</u>		Date of Exam: <u>1/31/05</u>		Scenario Numbers: <u>1/2/3</u>		Operating Test No.: <u>2005-01</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.	W	JMD	SP			
2.	The scenarios consist mostly of related events.	W	JMD	SP			
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>	NOT FOR OUTLINE				N/A	
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.	W	JMD	SP			
5.	The events are valid with regard to physics and thermodynamics.	W	JMD	SP			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	NOT FOR OUTLINE				N/A	
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.	N/A				N/A	
8.	The simulator modeling is not altered.	W	JMD	SP			
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.	NOT FOR OUTLINE				N/A	
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.	W	JMD	SP			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	W	JMD	SP			
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).	W	JMD	SP			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	W	JMD	SP			
Target Quantitative Attributes (Per Scenario; See Section D.5.d)		Actual Attributes		--	--	--	
1.	Total malfunctions (5-8)	6	7	7	W	JMD	SP
2.	Malfunctions after EOP entry (1-2)	1	1	1	W	JMD	SP
3.	Abnormal events (2-4)	2	2	2	W	JMD	SP
4.	Major transients (1-2)	1	1	2	W	JMD	SP
5.	EOPs entered/requiring substantive actions (1-2)	2	1	2	W	JMD	SP
6.	EOP contingencies requiring substantive actions (0-2)	0	1	2	W	JMD	SP
7.	Critical tasks (2-3)	2	2	2	W	JMD	SP

**Enclosure 12**  
**ES 301-5 Transient and Event Checklist**

Facility: DAEC Date of Exam: 1/31/05 Operating Test No.: 2005-01

P P L I C A N T	E V E N T  T Y P E	Scenarios												
		ESG 1			ESG 3			T O T A L	M I N I M U M	Spare/ESG 2				
		Crew Position			Crew Position					Crew Position				
		SRO	ATC	BOP	SRO	ATC	BOP			SRO	ATC	BOP		
RO	Rx		E-1						1	1				
	NOR						E-1		1	1			E-1	
	I/C		E-2 E-4				E-3 E-4 E-6		5	4			E-4 E-6 E-8	
	MAJ		E-8				E-7 E-9		3	2			E-7 E-9	
	TS										N/A			
		SRO	ATC	BOP	SRO	ATC	BOP					SRO	ATC	BOP
RO	Rx					E-8			1	1			E-2	
	NOR			E-3					1	1				
	I/C			E-5 E-6 E-7		E-2 E-5			5	4			E-3 E-5	
	MAJ			E-8		E-7 E-9			3	2			E-7, E-9	
	TS										N/A			
		SRO	ATC	BOP	SRO	ATC	BOP					SRO	ATC	BOP
SRO/ U														
	Rx	E-1			E-8				2	1				
	NOR	E-3			E-1				2	1			E-3	
	I/C	E-2 E-4 E-5 E-6 E-7			E-2 E-3 E-4 E-5 E-6				10	4				
	MAJ	E-8			E-7 E-9				3	2			E-7 E-9	
	TS	E-2 E-6			E-3 E-4 E-5				5	2			E-2 E-4 E-5	

Instructions:

1. Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and the "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
2. Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. \*Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1 for-1 basis
3. whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirement.

Author:

Wayne Rensler

NRC Reviewer

Thomas J. Brown

*note: comments on outline*

Facility: DAEC

Date of Exam: 1/31/05

Operating Test No.: 2005-1

Scenarios

A P P L I C A N T	E V E N T T Y P E	ESG 1			ESG 2			ESG 3			T O T A L	M I N I M U M
		Crew Position			Crew Position			Crew Position				
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		
RO	Rx		E-1							1	1	
	NO R						E-1			2	1	
	I/C		E-2 E-4				E-4 E-6 E-8			8	4	
	MAJ		E-8				E-7 E-9			5	2	
	TS											
		<b>SRO</b>	<b>ATC</b>	<b>BOP</b>	<b>SRO</b>	<b>ATC</b>	<b>BOP</b>	<b>SRO</b>	<b>ATC</b>	<b>BOP</b>		
SR O/I	Rx	E-1				E-2		E-8		3	1	
	NO R	E-3						E-1		2	1	
	I/C	E-2 E-4 E-5 E-6 E-7				E-3 E-5		E-2 E-3 E-4 E-5 E-6		13	4	
	MAJ	E-8				E-7 E-9		E-7 E-9		5	2	
	TS	E-2 E-6						E-2 E-4 E-5		5	2	
		<b>SRO</b>	<b>ATC</b>	<b>BOP</b>	<b>SRO</b>	<b>ATC</b>	<b>BOP</b>	<b>SRO</b>	<b>ATC</b>	<b>BOP</b>		
SR O/I	Rx				E-2				E-8	2	1	
	NO R			E-3	E-1					2	1	
	I/C			E-5 E-6 E-7	E-3 E-4 E-5 E-6 E-8				E-2 E-5	10	4	
	MAJ			E-8	E-7 E-9				E-7 E-9	5	2	
	TS				E-3 E-4 E-5					3	2	

Instructions:

1. Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers controls (ATC)" and the "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
2. Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a pf Appendix D. \*Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1fro-1 basis
3. whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirement.

Author: Wayne Rander

NRC Reviewer [Signature]

*Note: see Checklist Comments*

**Enclosure 13**  
**ES 301-6 Competencies Checklist**

Facility <u>DAEC</u> Date of Examination: <u>1/31/05</u> Operating Test NO: <u>2005-01</u>												
Competencies	APPLICANTS											
	ATC			BOP								
	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	1	2	3	1	2	3	1	2	3
Interpret/Diagnose Events and Conditions	E-2, E-4, E-8	E-3, E-5, E-7, E-9	E-2, E-5, E-7, E-9	E-4, E-5, E-6, E-7, E-8	E-4, E-6, E-7, E-8, E-9	E-3, E-4, E-6, E-7, E-9	E-2, E-4, E-5, E-6, E-7, E-8	E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-2, E-4, E-5, E-6, E-7, E-8	E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9
Comply with and Use Procedures (1)	E-1, E-2, E-4, E-8	E-2, E-3, E-5, E-7, E-9	E-2, E-5, E-7, E-8, E-9	E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-4, E-6, E-7, E-8, E-9	E-1, E-3, E-4, E-6, E-7, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9
Operate Control Boards (2)	E-1, E-2, E-4, E-8	E-2, E-3, E-5, E-7, E-9	E-2, E-5, E-7, E-8, E-9	E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-4, E-6, E-7, E-8, E-9	E-1, E-3, E-4, E-6, E-7, E-9						
Communicate and Interact	E-1, E-2, E-4, E-8	E-2, E-3, E-5, E-7, E-9	E-1, E-5, E-7, E-8, E-9	E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-4, E-6, E-7, E-8, E-9	E-1, E-3, E-4, E-6, E-7, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9
Demonstrate supervisory Ability (3)							E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9	E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9
Comply With and Use Tech. Specs. (3)							E-2, E-6	E-3, E-4, E-5	E-3, E-4, E-5	E-2, E-6	E-3, E-4, E-5	E-3, E-4, E-5

Notes:

- (1) Includes Technical Specification compliance for RO.
- (2) Optional for an SRO-U.
- (3) Only applicable to SROs

Instructions:

Circle the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author:

A handwritten signature in black ink, appearing to read "Wayne Rendon", written over a horizontal line.

NRC Reviewer

A handwritten signature in black ink, appearing to read "James H. [unclear]", written over a horizontal line.