

# \* NRC - Generated Operating Test \*

ES-301

Operating Test Quality Checklist

Form ES-301-3

Facility: BRYON		Date of Examination: June 20, 2000		Operating Test Number: 50/454-2000301	
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).	km Gm	MEB	AMS	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	km Gm	MEB	AMS	
c.	The operating test shall not duplicate items from the applicants' audit test(s) (see Section D.1.a).	N/A	MEB	AMS	
d.	Overlap with the written examination and between operating test categories is within acceptable limits.	km Gm	MEB	AMS	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	km Gm	MEB	AMS	
2. WALK-THROUGH (CATEGORY A & B) 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>validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee</li> <li>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>	km Gm	MEB	AMS	
b.	The prescribed questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.	N/A	MEB	AMS	
c.	Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.	km Gm	MEB	AMS	
d.	At least 20 percent of the JPMs on each test are new or significantly modified.	km Gm	MEB	AMS	
3. SIMULATOR (CATEGORY C) CRITERIA					
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	km Gm	MEB	AMS	
Printed Name / Signature		Date			
a. Author	George Wilson/ <u>George Wilson</u> Dell McNeil/ <u>Dell McNeil</u>	4/13/00			
b. Facility Reviewer(*)	Michael Bielby/ <u>Michael E Bielby</u>	4/18/00			
c. NRC Chief Examiner (*)	Ann Marie Stone/ <u>Ann Marie Stone</u>	5/16/00			
d. NRC Supervisor (*)	David Hills/ <u>David Hills</u> FOR	5/26/00			
(*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.					

NOTE: Facility volunteered to write additional scenarios. This Quality Checklist is only for NRC-generated material.

Final Operating Test Ready to Administer: Ann Marie Stone 6/14/2000  
 Authorization to Administer: David E.H. 11/5/2000 David E.H. 6-16-00

# \* NRC-Generated Scenarios \*

ES-301

## Simulator Scenario Quality Checklist

Form ES-301-4

Facility: <u>BRYON</u> Date of Examination: <u>June 20, 2000</u> Scenario Numbers: <u>/ /</u> Op Test #: <u>50/454-2000301</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.			Jm Gm	MEB	AMS
2.	The scenarios consist mostly of related events.			Jm Gm	MEB	AMS
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>			Jm Gm	MEB	AMS
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.			Jm Gm	MEB	AMS
5.	The events are valid with regard to physics and thermodynamics.			Jm Gm	MEB	AMS
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			Jm Gm	MEB	AMS
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.			Jm JLA Gm	MEB	AMS
8.	The simulator modeling is not altered.			Jm Gm	MEB	AMS
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.				D	
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.4 of ES-301.			Jm Gm	MEB	AMS
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			Jm Gm	MEB	AMS
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).			Jm Gm	MEB	AMS
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			Jm Gm	MEB	AMS
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)				Actual Attributes		
		#1	#2	#3	#4	
1.	Total malfunctions (5-8)	6	5	1	5	Jm Gm
2.	Malfunctions after EOP entry (1-2)	2	2	1	2	Jm Gm
3.	Abnormal events (2-4)	4	3	1	3	Jm Gm
4.	Major transients (1-2)	2	1	1	1	Jm Gm
5.	EOPs entered/requiring substantive actions (1-2)	3	3	1	2	Jm Gm
6.	EOP contingencies requiring substantive actions (0-2)	1	1	1	1	Jm Gm
7.	Critical tasks (2-3)	3	3	1	3	Jm Gm

## OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO	Reactivity	1	1	3	2	1
	Normal	1	2	4	3	2
	Instrument	2	3, 4	1,2,5	1,4	3,4
	Component	2	6,7,9,10	7,8,9	5,7,8	6,7
	Major	1	8,11	6	6	5
As RO  SRO-I  As SRO	Reactivity	1	1	3	2	1
	Normal	0		4	3	2
	Instrument	1	3,4	1,2,5	1,4	3,4
	Component	1	6,7,9,10	7,8,9	5,7,8	6,7
	Major	1	8,11	6	6	5
	Reactivity	0	1	3	2	1
	Normal	1	2	4	3	2
	Instrument	1	3,4	1,2,5	1,4	3,4
	Component	1	6,7,9,10	7,8,9	5,7,8	6,7
	Major	1	8,11	6	6	5

- Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
- (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author:



Chief Examiner:



Competencies	SRO				RO				BoP			
	Applicant #1				Applicant #2				Applicant #3			
	RO/SRO-I/SRO-U				RO/SRO-I/SRO-U				RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	3,4 5,6	1,2 5	1,4 5	1,4 5	4,5,6 7,8	2,5 6,8	1,5	4,5	3	1	7	1
Diagnose Events and Conditions	3,4,5 6,7,8 9,10	1,2 5,6 7,8	1,4,5 6,7,8	3,4,5 6,7,8	4,5,6 7,8 9,10	2,5 6,8	1,5	4,5 6,7	3,7 6,9 10	1,6 7	4,6 7,8	3,6 8
Understand Plant and System Response	3,4,5 6,7,10	1,2 4,5 6,8	1,4,5 8	3,4 5,6 8	4,5,6 7,10	2,5 6,8	1,2 5,6	1,4 5,6 7	2,3 7,10	1,4 6,7	3,4 6,7 8	2,3 6,8
Comply With and Use Procedures (1)	4,5,6 7,8,10	1,2,5 6,7 8	1,4,5 6,7,8	3,4 5,6 7,8	1,4,5 6,7,8 10	2,3 5,6	1,2 5,6	1,4,5 6,7	2,3 7,8,9 10	1,4 6,7	3,4 6,7 8	2,3 6,8
Operate Control Boards (2)					1,4,5 6,8	2,3 5,6 8	1,2 5,6	1,4,5 6,7	2,3 8,9	1,4 7	3,4 6,7 8	2,3 6,8
Communicate and Interact With the Crew	3,4,5 6,8,10	1,2 5,6 7,8	1,4,5 6,7,8	3,4,5 6,7,8	1,4 5,6 8	2,3 5,6 8	1,2 5	1,4,5 7	2,3 9	1,4 7	3,4 7,8	2,3 8
Demonstrate Supervisory Ability (3)	3,4,5 6,8,10	1,2,5 6,7,8	1,4,5 6,7,8	3,4,5 6,7,8								
Comply With and Use Tech. Specs. (3)	4 8	2	5,7 8	4,5								

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

## Instructions:

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

Author:

Chief Examiner:

*See all vlog.* *David R. McNeil*

*Ann Marie Stone*

# Facility-developed scenarios - only

ES-301

Operating Test Quality Checklist

Form ES-301-3

Facility: Byron		Date of Exam: Weeks of 6/19/00 and 6/26/00		Operating Test Number: 1	
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).	JA	EB	AMS	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	N/A	N/A	AMS	
c.	The operating test shall not duplicate items from the applicants' audit test(s) (see Section D.1.a).	JA	EB	AMS	
d.	Overlap with the written examination and between operating test categories is within acceptable limits.	N/A	N/A	AMS	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	JA	EB	AMS	
2. WALK-THROUGH (CATEGORY A & B) 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>validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee</li> <li>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>	N/A	N/A	N/A	
b.	The prescribed questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.	N/A	N/A	N/A	
c.	Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.	N/A	N/A	N/A	
d.	At least 20 percent of the JPMs on each test are new or significantly modified.	N/A	N/A	N/A	
3. SIMULATOR (CATEGORY C) CRITERIA		--	--	--	
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	JA	EB	AMS	
Printed Name / Signature		Date			
a. Author	Terry Holder / Jerry A. Holden	5-22-00			
b. Facility Reviewer(*)	Ed Bendis / Ed Bendis	5/22/00			
c. NRC Chief Examiner (*)	AnnMarie Stone / AnnMarie Stone	5/25/00			
d. NRC Supervisor (*)	DAVID L. PETERSON / DAVID L. PETERSON FOR D. HILLS	5/26/00			
(*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.					

Scenarios Ready to Administer: AnnMarie Stone 6/16/2000

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NUREG-1021, Revision 8

Authorization to Administer: David E. Hills / David E. Hills 6/16/00

Facility: Byron		Date of Exam: Weeks of 6/19/00 and 6/26/00		Scenario Numbers: 1 / 2 / Extra		Operating Test No.: 1	
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.			JH	EB	AMS	
2.	The scenarios consist mostly of related events.			JH	EB	AMS	
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>			JH	EB	AMS	
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.			JH	EB	AMS	
5.	The events are valid with regard to physics and thermodynamics.			JH	EB	AMS	
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			JH	EB	AMS	
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.			JH	EB	AMS	
8.	The simulator modeling is not altered.			JH	EB	AMS	
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			JH	EB	AMS	
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.4 of ES-301.			JH	EB	AMS	
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			JH	EB	AMS	
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).			JH	EB	AMS	
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			JH	EB	AMS	
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)				Actual Attributes			
1.	Total malfunctions (5-8)			7 / 7 / 7	JH	EB	AMS
2.	Malfunctions after EOP entry (1-2)			2 / 3 / 3	JH	EB	AMS
3.	Abnormal events (2-4)			4 / 2 / 2	JH	EB	AMS
4.	Major transients (1-2)			1 / 2 / 2	JH	EB	AMS
5.	EOPs entered/requiring substantive actions (1-2)			1 / 2 / 2	JH	EB	AMS
6.	EOP contingencies requiring substantive actions (0-2)			0 / 1 / 1	JH	EB	AMS
7.	Critical tasks (2-3)			4 / 3 / 2	JH	EB	AMS

## OPERATING TEST NO.: 1

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO	Reactivity	1	2/	1/	1/	
	Normal	1	1/2	1/1	1/1	
	Instrument	2	6/3	3/4	2/3	
	Component	2	1,5,8,9/ 1,4,5,9	6,8/2,6	4,5,7/4	
	Major	1	7/7	5,7/5,7	6,8/6,8	
As RO	Reactivity	1	2	1	1	
	Normal	0				
	Instrument	1	6	3	2	
	Component	1	1,5,8,9	6,8	4,5,7	
	Major	1	7	5,7	6,8	
SRO-I	Reactivity	0				
	Normal	1	2	1	1	
	Instrument	1	3,6	3,4	2,3	
	Component	1	1,4,5,8,9	2,6,8	4,5,7	
	Major	1	7	5,7	6,8	
As SRO	Reactivity	0	N/A	N/A	N/A	
	Normal	1	N/A	N/A	N/A	
	Instrument	1	N/A	N/A	N/A	
	Component	1	N/A	N/A	N/A	
	Major	1	N/A	N/A	N/A	
SRO-U	Reactivity	0	N/A	N/A	N/A	
	Normal	1	N/A	N/A	N/A	
	Instrument	1	N/A	N/A	N/A	
	Component	1	N/A	N/A	N/A	
	Major	1	N/A	N/A	N/A	

- Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
- (2) Reactivity manipulations must be significant as defined in Appendix D.

NOTE: Scenario Number 3 is a "spare" scenario and is represented for comparison purposes only in Examination Outline submittal.

The "/" in the cells for the "RO" applicant type represents the position the applicant is expected to fill during the scenario. The events are listed for the identified position: RO / BOP.

Author:

Jerry Holder 5-22-00

Chief Examiner:

Marie Stone 5/25/00

## Operating Test: 1

Competencies	Applicant #1 RO/SRO-I/SRO-U				Applicant #2 RO/SRO-I/SRO-U				Applicant #3 RO(BOP)/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	1,3-8	2-8	2-6,8		1,5-8	3,5-8	2,4-6,8		1,3-5,7	2,4-7	3,4,6,8	
Diagnose Events and Conditions	1,3-9	2-8	2-8		1,5-9	3,5-8	2,4-8		1,3-5,7,9	2,4-7	3,4,6,8	
Understand Plant and System Response	1-9	1-8	1-8		1,2,5-9	1,3,5-8	1,2,4-8		1-5,7,9	1,2,4-7	1,3,4,6,8	
Comply With and Use Procedures (1)	1-9	1-8	1-8		1,2,5-9	1,3,5-8	1,2,4-8		1-5,7,9	1,2,4-7	1,3,4,6,8	
Operate Control Boards (2)	N/A	N/A	N/A		1,2,5-9	1,3,5-8	1,2,4-8		1-5,7,9	1,2,4-7	1,3,4,6,8	
Communicate and Interact With the Crew	1-9	1-8	1-8		1,2,5-9	1,3,5-8	1,2,4-8		1-5,7,9	1,2,4-7	1,3,4,6,8	
Demonstrate Supervisory Ability (3)	1-9	1-8	1-8		N/A	N/A	N/A		N/A	N/A	N/A	
Comply With and Use Tech. Specs. (3)	1,3,5,6	2,3	2		N/A	N/A	N/A		N/A	N/A	N/A	
Notes:  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

## Instructions:

Circle the applicant's license type and enter the event numbers that test the competency for each scenario in the set.

**NOTE: OPERATING TEST NO.: 1.** Scenario Number 3 is a "spare" scenario and is represented for comparison purposes only in Examination Outline submittal. The order of listing for candidates is SRO, RO and BOP by position.

Author:

Jerry Holde 5-22-00

Chief Examiner:

AunMarie Stone 5/25/00