

June 14, 1991

MEMORANDUM FOR: William T. Russell, Associate Director
for Inspection and Technical Assessment, NRR

FROM: Jack W. Roe, Director
Division of Licensee Performance
and Quality Evaluation, NRR

SUBJECT: FINAL DRAFT EXAMINER STANDARD FOR REQUALIFICATION
SIMULATOR CREW EVALUATIONS

In a memorandum dated May 9, 1991, I forwarded to you a copy of an early draft revision of Examiner Standard (ES) 604, which described the proposed simulator crew evaluation methodology planned for use during the upcoming pilot examination program. The methodology proposed in that draft Standard was reviewed with representatives from the regional offices in a meeting here at Headquarters during the week of May 20, 1991. The meeting was very productive and generated a number of changes in the pilot examination methodology, which, I believe, are an improvement on the original proposal, continue to satisfy management's directives, and address many of the regions' concerns. I am enclosing, for your information, a copy of the current draft revision of ES-604 and a two-page summary of the revised methodology. The revisions are indicated by marginal bars.

The Operator Licensing Branch (LOLB) presented an overview of the current pilot methodology to the industry during a national meeting sponsored by the Nuclear Management and Resources Council (NUMARC) in St. Louis, MO, on May 29 and 30, 1991. On June 3 and 5, 1991, LOLB discussed the new simulator evaluation methodology in detail with representatives from the first two pilot facilities, Oconee and Indian Point 3; those examinations are scheduled to begin on July 22 and 29, 1991, respectively. Both facilities were provided with copies of the pilot Examiner Standard.

As noted in my May 9, 1991, memorandum, ES-604 (pilot) will be updated based on observations and conclusions made during the pilot examination process. The other pilot facilities (Callaway, Waterford, and Palo Verde) will be briefed on any changes prior to their respective examinations.

At this time the evolving positions are not considered backfile. The final review of ES-604 will be conducted in accordance with NRR Office Letter 1500, which establishes the guidelines and procedures for making revisions to the Examiner Standards.

ORIGINAL SIGNED BY

Jack W. Roe, Director
Division of Licensee Performance
and Quality Evaluation, NRR

Enclosures:
As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20565

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SUMMARY OF PILOT PROGRAM

EXAMINATION ADMINISTRATION

1. The facility develops the examination and proposes the crew configurations and rotation policies.
2. The examination team agrees on the scenarios, crew configurations, rotation policies and the identification of critical tasks.
3. This examination will be used to fulfill the operator's annual operating and biennial written test requirements. The facility shall provide a sufficient number of evaluators to ensure that individual evaluations can be performed for all crew. The NRC will use two examiners to evaluate the crews and review the facility's individual evaluations.
4. In order to facilitate any individual follow-up of identified weaknesses observed during the operator's performance in the dynamic simulator exam, the pilot examinations will be performed in the following order: dynamic simulator, written examination, walkthrough. Performing the examinations in this order will allow the exam team to select or modify any job performance measures necessary for the walkthrough that probe weaknesses identified during the operator's performance of critical tasks in the dynamic simulator portion of the examination.

EVALUATION METHODOLOGY

1. Crews: A crew's rating of satisfactory or unsatisfactory will be based on the evaluation of crew competencies associated with the performance of critical tasks. NRC and facility evaluators will perform critical task assessments and competency evaluations independently.

The behavioral anchors associated with the crew competencies have been modified to reflect the current emphasis on crew performance.
2. Individuals: In order to fulfill the requirements of 10 CFR 55.59(b), the facility is expected to grade and document the performance of all operators during the simulator examination in accordance with their requalification program requirements.

Facility evaluators will be expected to review each individual's performance at the completion of the crew's scenario set and identify the operators who perform poorly during the execution of critical tasks. The facility is expected to perform an analysis to determine the cause of the operator's performance deficiencies. During the individual walkthrough examination each operator will then be evaluated on the performance of seven JPMs. For those operators displaying performance deficiencies in the execution of critical tasks during the dynamic simulator examination, two of the seven JPMs will be modified so that the depth and scope of the operator's deficiencies can be investigated. An operator must achieve a score of 80% or greater to pass the operating test (e.g. satisfactorily complete 6 of 7 JPMs). The current pass/fail criteria for passing the individual walkthrough examination remains unchanged.

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For the purposes of the pilot program, prescribed JPM follow-up questions will not be used to evaluate individuals. Examiners may ask follow-up questions to verify operator performance that is unclear. Follow-up questions that result in grading the operator "UNSATISFACTORY" for a JPM shall be fully documented by the examiner.

REMEDATION

1. Identification and implementation of post-examination remediation will be the responsibility of the facility in accordance with their NRC approved requalification program. Individuals identified by the facility evaluators as needing remediation must successfully complete the additional training in accordance with the facility's requalification program. If the facility's program is UNSATISFACTORY, the NRC will participate in the process of returning the operator to licensed duties.

EXAMINATION RESULTS

1. The results of the crew and individual examinations will be used as input to determine if the facility program meets the current criteria for a satisfactory program established in ES-601. In order for the facility program to receive a rating of SATISFACTORY: (1) seventy-five percent of all operators must pass the individual written examination and walkthrough portion of the operating test, (2) two-thirds of all crews evaluated must pass the simulator portion of the operating test, and (3) there must be 90% agreement between the facility and NRC evaluators on the results of the individual evaluations.

REQUALIFICATION DYNAMIC SIMULATOR EXAMINATION

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A. PURPOSE

The NRC dynamic simulator requalification examinations are conducted using this standard per the provisions of 10 CFR 55.59(a)(2)(iii). This standard is to be used by NRC examiners for the preparation and administration of all NRC dynamic simulator requalification examinations.

The dynamic simulator examination provides a comprehensive evaluation of the integrated plant knowledge and skills required of operating crews in a real time environment. It is effective in evaluating a crew's communication skills and team-dependent behavior and in determining if there are areas in which retraining is needed to upgrade licensed operator and senior operator knowledges and abilities pursuant to the provisions of the facility-developed requalification program.

B. SCOPE

The dynamic simulator examination will normally consist of two scenarios. Each scenario should be constructed to last approximately 1 hour. The actual "run" time of the scenarios will depend upon the specific events within the scenarios and should allow the crew the necessary time to perform the actions required to respond to each event. To successfully complete the NRC examination, the crew must demonstrate the ability to operate effectively as a team while completing a series of critical tasks (CTs), which measure the crew's ability to safely operate the plant during normal, abnormal and emergency situations.

Each crew's performance will be evaluated using standardized competency rating scales. Each competency will be rated based upon the crew's ability to satisfactorily complete the tasks which have been designated as critical (i.e., necessary to place and maintain the reactor in a safe operational or shutdown condition) within that crew's scenario set. Each valid CT must: 1) have plant or public safety significance, 2) provide at least one crew member with appropriate cues, 3) have measurable performance indicators, and 4) give at least one member of the crew feedback regarding the effect of the crew's action(s) or inaction(s). Failure of the crew to correctly perform a CT indicates a significant deficiency in the knowledge, skill or ability of that crew to demonstrate team dependent behavior and will be evaluated using the Simulator Crew Evaluation Form, ES-604-2 (competency checklists).

The NRC examiners will not conduct pass/fail performance evaluations on individual operators during the dynamic simulator examination; those evaluations will be restricted to the walk-through portion of the operating test. However, in order to meet the requirements of 10 CFR 55.59 (a)(2), the facility licensee will conduct its annual individual operator performance evaluations on the dynamic simulator in accordance with its requalification program requirements.

If an operator demonstrates significant performance deficiencies during the dynamic simulator examination, the facility is expected to discuss those deficiencies with the NRC examiners at the completion of the simulator portion of the operating test. The facility evaluators and NRC examiners will then

modify that operator's walk-through examination to probe those deficiencies. Only those deficiencies linked to the execution of CTs should normally require the modification of an operator's walk-through examination. However, even if an individual operator's performance exhibits only minor deficiencies and is satisfactory for completion of 10 CFR 55.59(a) testing, it may still warrant the administration of remedial retraining and reevaluation. Such a decision will be made by the facility in accordance with the its requalification training program.

This standard should be used in conjunction with ES-601, which contains administrative requirements for NRC requalification program evaluations.

C. EXAM DEVELOPMENT

1. Facility Responsibilities

- a. The facility is responsible for developing the dynamic simulator scenarios with identified CTs which meet the guidance specified in ES-601, Attachment 1, Enclosure 1, "Reference Material Requirements;" Form ES-601-2, "Evaluation Checklist for Facility Reference Material;" and Form ES-604-1, "Simulator Scenario Review Checklist."
- b. The scenarios should be based upon the training that was conducted during the requalification cycle, recent industry events, LERs, emergency and abnormal procedures, and design and procedural changes. The scenarios should exercise the crew's ability to use facility procedures in accident prevention and mitigation. Some of the scenarios should contain dominant accident sequences for the facility or actual events that have occurred at that or a similar facility.
- c. The facility examination team representatives will be given the opportunity to review any scenario modifications made by the NRC. They may recommend changes to events that are critical to plant safety, but must substantiate the reason for those changes. The examination team shall agree on the content validity of each scenario prior to the examination.
- d. The facility is expected to provide a qualified simulator operator to support the development and administration of the simulator examinations. The simulator operator must be available to support the examination team during the examination preparation week, normally two weeks before the examination. The assigned simulator operator must sign a security agreement at the time that the chief examiner determines that he or she has access to specialized knowledge of any part of the examination.

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2. NRC Responsibilities

- a. During the preparation week, the NRC chief examiner or a designee shall complete Form ES-604-1 (Simulator Scenario Review Checklist) for each scenario provided by the facility for use during the examination. In addition to the individual scenario review items listed in Form ES-604-1, the following factors should also be considered when reviewing all of the scenarios selected for the examination by the facility:
 - a broad spectrum of EOPs should be covered, including, for one scenario per crew, the performance of contingency paths within EOPs;
 - the scenarios should incorporate a range of failures with varying mitigation strategies.
- b. If the proposed scenarios do not meet the guidance provided on Form ES-604-1, then the NRC examiners shall inform NRC regional management and determine the appropriate course of action to be taken. The NRC may revise the scenarios, as appropriate, or augment the facility scenarios with NRC-developed scenarios, if required. The final scenarios will be reviewed with the facility's examination team representatives prior to administration. The NRC has the final authority in deciding the content of the scenarios and determining whether or not a task is critical and can be used by the NRC examiners for evaluating crew competencies.

3. Examination Team Responsibilities

- a. The NRC and facility representatives on the examination team will jointly validate the CTs in each scenario using the methodology contained in Attachment 1, "Critical Task Methodology."
- b. Any changes made to the scenarios by the NRC will be reviewed and validated with the facility representatives on the examination team.

D. EXAM ADMINISTRATION

1 Administrative Requirements

- a. The operating crews will be briefed prior to the start of the simulator scenarios using the "Dynamic Simulator Briefing Checklist," ES-604, Attachment 2.
- b. Crews should be given adequate time to respond to all planned and unplanned events. The scenarios' contact time (not including time spent on briefings, simulator setup or simulation facility problems) should be approximately 1 hour. This time should be used as guidance.

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- c. The operating crew members should maintain the same operating positions used during requalification training. Position rotation should be identical to facility rotation practices during the facility's requalification evaluation process.
 - d. SROs must be evaluated in at least one scenario in an SRO licensed crew position to fulfill their license renewal requirement. More than two simulator scenarios may be required to examine crews that consist mostly of staff SROs.
 - e. A facility management representative with responsibilities for the conduct of plant operations (as a minimum, first level above shift supervisor) should be present during administration of the simulator examinations. The NRC chief examiner will be the principal point of contact between the facility management and the NRC. The chief examiner or a designee shall be present during the administration of all dynamic simulator examinations.
 - f. The NRC shall normally assign two examiners to perform crew competency evaluations during the dynamic simulator examinations.
2. Post-Scenario Activities
- a. Follow-up questioning is permitted if unclear or ambiguous actions are noted during the simulator scenario. The NRC examiners and facility evaluators may question the crew members as necessary to obtain complete documentation on the performance of events during the scenario. Questions should be factual in nature and are intended to clarify performance related to observations. The facility evaluator should document all follow-up questions.
 - b. When follow-up questioning is completed or no follow-up questioning is required, the crew should be dismissed to await the next scenario and informed that they may discuss the completed scenario among themselves.
 - c. The NRC examiners and facility evaluators shall meet separately to compare observations and determine if any CTs were omitted or incorrectly performed by the crew.
 - d. The facility evaluators shall discuss the crew's performance with the NRC examiners after each scenario to clarify any performance deficiencies that may have been noted. The examination team shall determine if any pre-designated CTs are in question or if any new CTs should be designated due to unpredicted events or actions taken by the crew during the scenario. The examination team will revalidate the CTs in each scenario using the methodology contained in Attachment 1, "Critical Task Methodology."

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- e. After the last scenario is complete, the NRC examiners and the facility evaluators will independently complete a Simulator Crew Evaluation Form, ES-604-2, as discussed in Section E. The facility evaluators will also evaluate individual operator performance. The facility evaluators are expected to identify those operators who demonstrated deficiencies in the execution of CTs. The NRC examiners shall review the facility's individual operator performance evaluations after completing each crew evaluation.

E. PERFORMANCE EVALUATIONS

1. Crew Evaluations

After administering the dynamic simulator scenario set as discussed in Section D, the NRC examiners and facility evaluators shall independently evaluate the crew's performance by completing a preliminary copy of the Simulator Crew Evaluation Form, ES-604-2. The facility shall provide its preliminary crew evaluations to the NRC examiners before the end of the examination week.

The following guidelines should be applied when conducting crew evaluations:

- a. Review the notes taken while administering the simulator scenarios and annotate them with the number and letter of the rating factor they most accurately reflect.
- b. Evaluate the crew's performance on each applicable rating factor by weighing its actions against the associated behavioral anchors and selecting the appropriate grade. Based upon the tasks planned and performed during the crew's scenario set, it may not be possible to evaluate every rating factor for every crew.

The examination team should pay particular attention to the completion of tasks which were identified as critical to plant safety. Actions performed incorrectly by individual operators may be compensated for by the crew, as long as the critical task was completed satisfactorily. If the crew failed to perform a valid CT or performed it incorrectly, then a grade of "1" is required on at least one rating factor. Other less significant deficiencies should also be factored into the rating factor evaluations to provide a source of input for remedial training.

- c. All rating factor grades of "1" must be justified and documented in the space for "Comments" on the ES-604-2 form.
- d. If the crew receives a "1" on two or more rating factors under any single competency, then it shall be evaluated as unsatisfactory overall. If the crew receives a "1" on only one rating factor, then it may be evaluated unsatisfactory

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overall, based on the safety-significance of the CT that was omitted or incorrectly performed. The NRC chief examiner shall make the final decision on all crew failures resulting from a single rating factor evaluation of "1".

2. Individual Evaluations

- a. Individual operator evaluations on the dynamic simulator examination and the resulting remedial training are the responsibility of the facility licensee and will not affect the NRC's assessment of the facility's requalification program.
- b. The facility evaluators will document and grade individual operator performance during the dynamic simulator examination in accordance with the facility licensee's requalification program requirements. The NRC expects that the facility's grading methodology will identify individual operator deficiencies and that those deficiencies will be discussed with the NRC examiners during the post-scenario meetings as noted in Section D. The facility evaluators will, at a minimum, determine which operator(s) on the crew was (were) directly responsible for the omission or incorrect performance of validated CTs.
- c. The NRC examiners will not evaluate individual operator performance during the simulator portion of the operating test. The NRC examiners will, however, review the facility evaluators' individual performance documentation and discuss those results with the facility evaluators during the post-scenario meetings as noted in Section D. Those discussions should focus on those CTs that were either omitted or incorrectly executed.
- d. The examination team will evaluate each omitted or incorrectly performed CT to determine which operator(s) on the crew was (were) directly responsible for the error. The team will attempt to identify the specific knowledge or ability deficiencies that were exhibited by that (those) operator(s) so that they can be further investigated during the walk-through portion of the operating test.
- e. Normally, each operator will be administered seven preplanned JPMs during the walkthrough portion of the operating test. However, those operators identified in paragraph (d) above will have two of their seven JPMs focused on the specific knowledge or ability deficiencies demonstrated during their simulator examination. The examination team will extract additional JPMs from the facility's examination bank or develop such additional JPMs as might be necessary to make the required substitutions.

F. REMEDIATION

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1. Crew

For any crew rated as unsatisfactory, the facility is expected to provide remedial training and reevaluation in accordance with its requalification training program.

- a. If the facility's requalification program is satisfactory, then the crews that did not perform satisfactorily are expected to be remediated in accordance with the facility's requalification program.
- b. If the facility requalification program is determined to be unsatisfactory, NRC involvement will be needed prior to the crew being returned to licensed duties. NRC involvement may be accomplished through participation in another crew evaluation or other appropriate action. The crew members should not be allowed to return to licensed duty as substantially the same crew until the provisions for remediating the crew's unsatisfactory performance, as stipulated in the facility's requalification program, have been completed.

In order to determine what constitutes substantially the same crew, the facility should evaluate the individual activities that were responsible for the unsatisfactory crew performance. This individual deficiency evaluation, which was used to identify those operators requiring walk-through JPMs, may also be used to identify those operators who may return to shift duties on another crew. The NRC must concur in the facility's recommendation prior to returning those operators to duty on another crew.

2. Individual

The NRC expects that the facility's simulator grading methodology will identify individual operator deficiencies and that the significant deficiencies will be discussed with the NRC examiners during the post-scenario meetings described in Section D. Although the NRC examiners will only follow-up on those operator deficiencies associated with omitted or incorrectly performed CTs, it is expected that the facility evaluators will document less significant deficiencies as well and that all identified deficiencies will be remediated and retested in accordance with the facility licensee's requalification training program.

ATTACHMENTS/FORMS:

- Attachment 1, Critical Task Methodology
- Attachment 2, Dynamic Simulator Briefing Checklist
- Form ES-604-1, Simulator Scenario Review Checklist
- Form ES-604-2, Simulator Crew Evaluation Form

CRITICAL TASK METHODOLOGY

Critical tasks (CTs) have been developed as a tool for evaluating individual and crew performance on tasks that have a plant or public safety significance. It is intended that they be an objective measure by which the NRC examiners and facility evaluators can determine whether an individual's or a crew's performance is satisfactory, requires further investigation, or is unsatisfactory.

A. CT Identification

In order for a task to be considered "critical" it must possess the following elements:

- * have plant or public safety significance
- * provide at least one crew member with appropriate cues
- * have measurable performance indicators
- * give at least one crew member feedback on the crew's action(s) or inaction(s)

1. Safety Significance

The examination team must assess the safety significance of the task when reviewing proposed CTs. Implicit in the elements required to determine the standard of performance of a CT is the safety significance of the task. Each scenario shall be reviewed to ascertain all tasks which could involve an essential safety action. Each task shall be reviewed to determine the adverse consequence(s) of incorrect performance or omission by an operator. Any task which, if omitted or incorrectly performed by members of the crew, would have resulted in adverse consequence(s) or a significant degradation in the mitigative capability of the plant, shall be designated a CT assuming elements 2, 3, and 4 are also met.

The examination team shall determine if an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance. If incorrect performance of a given task by an individual necessitates the crew taking compensating action which complicates the event mitigation strategy, then the task has safety significance.

Examples of CTs involving essential safety actions include:

- (a) Mis-operation or incorrect crew performance which leads to:
- degradation of any barrier to fission product release;
 - degraded ECCS or emergency power capacity;
 - violation of a safety limit;

ATTACHMENT 1, Page 2

- violation of the facility license condition
 - incorrect reactivity control (e.g., failure to initiate Emergency Boration/SLC, or manually insert control rods);
 - a significant reduction of safety margin beyond that irreparably introduced by the scenario.
- (b) A demonstrated inability by the crew to:
- effectively direct/manipulate ESF controls that would lead to (a) above;
 - recognize a failure/incorrect auto actuation of an ESF system or component;
 - take an action or combination of actions that would prevent a challenge to plant safety;
 - prevent inappropriate actions or combination of actions that create a challenge to plant safety (e.g., RPS or ESF actuation).

2. Cuing

For an CT to be valid, at least one operator shall be cued into performance of the task by an external stimulus. A cue prompts the operators into a task-oriented response and provides the initial conditions. It is not intended that the cue necessarily flag the task as "critical."

Examples of appropriate cues include:

- verbal (direction by or reports from other crew members);
- procedural (satisfying entry conditions, steps, response not obtained columns, etc.);
- indication of a system/component malfunction (including passive failures) by meters or alarming devices.

3. Measurable Performance Indicators

Measurable performance indicators shall be established for each CT. A measurable performance indicator is described as positive action(s) taken by at least one member of the crew that an examiner can objectively determine.

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ATTACHMENT 1, Page 3

Examples of measurable performance indicators include:

- actions resulting from transitions in EOPs (e.g., transition to FR-S.1 if reactor (W) cannot be tripped or enter reactor flooding if reactor water level (GE) cannot be determined);
- control manipulations (e.g., manual reactor trip, start of ECCS pump);
- verbal reports or notifications of abnormal parameters or conditions (e.g., all control rods not inserted, high containment pressure).

Examples of performance indicators that are NOT objectively measurable during a simulator scenario include:

- understanding (e.g., of plant response);
- verification that an expected response has occurred;
- passive observations (e.g., verification of automatic or operator response).

4. Performance Feedback

The examination team shall ensure that each CT provides at least one member of the crew with performance feedback. The feedback shall provide at least one crew member with information regarding the effect of the crew's actions or inaction related to the CT. This requirement must be met for all CTs.

B. "Generic" Task Guidance

Examiners should avoid assigning the "CT" designation to generic tasks that have safety significance, but that do not meet all of the criteria to designate a critical task.

Examples of generic CTs to avoid include:

- "Verifying" automatic operations;
- "Entering and performing" EOP transition steps (i.e. no critical actions required or taken); and,
- Entering and classifying events in accordance with the Emergency Plan for an Unusual Event

ATTACHMENT 2, Page 1

DYNAMIC SIMULATOR BRIEFING CHECKLIST

1. Your primary responsibility is to operate the simulation facility as if it were the actual plant.
2. Teamwork and communication between operators is encouraged. It benefits the examination process to verbalize observations, analyses, and reasons for actions more than normally would be done during actual plant operations. Teamwork skills and communication will be evaluated during the simulator examination. The NRC examiners will be evaluating the crew's ability to safely operate the plant. The facility evaluators will be evaluating individual as well as crew performance.
3. If an operator recognizes an incorrect decision, response, answer, analysis, action taken, or interpretation by the crew of which the operator is a part but fails to correct, then the examiner may assume that the operator agrees with the incorrect item.
4. A rough log should be kept during each exercise that would be sufficient to complete necessary formal log entries which may be evaluated under administrative topics.
5. A designated facility instructor will act as the auxiliary operators, radiation health and chemistry technicians, maintenance supervisors, plant management, and anyone else needed outside the control room area.
6. A facility evaluator will provide a shift turnover before the exercise begins. The shift turnover will include present plant conditions, power history, equipment out of service, abnormal conditions, surveillance due, and instructions for the shift.
7. The control board switches may be purposely misaligned to enhance a simulated scenario or transient where appropriate and is not part of the evaluation. If misaligned they should be tagged or otherwise highlighted as appropriate to the facility. The examiners will not misalign switches during the scenario as an awareness drill.

Note: The NRC chief examiner will tell the operators that no control switches will be misaligned on a given scenario or set of scenarios.
8. Operators will be allowed up to ten minutes to familiarize themselves with the status/conditions of the control boards prior to the start of the examination.
9. The dynamic simulator examination will normally consist of two scenarios lasting approximately one hour each. There will be a short break between scenarios to set up the initial conditions for the next exercise.

ATTACHMENT 2, Page 2

10. If the operators have any questions concerning the administration of the operating test, those questions should be answered prior to the start of the test.
11. No aspect of this examination should be discussed with any other examinees from other crews until the conclusion of the examination week.

ES-604-1

SIMULATOR SCENARIO REVIEW CHECKLIST
(Attach separate copy to each scenario reviewed)
This form completes examination team review

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SCENARIO IDENTIFIER: _____
REVIEWER: _____

- ___ 1. The scenario events are designed to involve each crew member.
- ___ 2. Scenario is composed of related or linked events, preferably based upon events that have occurred at the facility on a facility of the same vendor type.
- ___ 3. Scenario is approximately 1 hour in length and is realistic, not a series of unrelated events.
- ___ 4. Scenario is not too complex:
 - beyond scope of EOPs
 - too many events in too short a period of time
 - beyond simulation facility capability
- ___ 5. Scenario is not too simple:
 - absence of component/instrument malfunctions
 - no simultaneous events that require the SRD to prioritization of actions and allocation of crew resources
 - EOPs are not exercised to any depth (no transitions and or decisions to be made on actions to take within the EOPs)
- ___ 6. At least 2 CTs per crew have been designed into the scenario.
- ___ 7. Scenario requires the use of:
 - ___ Abnormal Operating Procedures
 - ___ Emergency Operating Procedures
 - ___ Technical Specifications
 - ___ Emergency Plan Implementation Procedures
- ___ 8. Critical tasks are:
 - ___ Identified by facility
 - ___ Reviewed and approved by exam team as meeting the criteria for CTs in ES-604, Attachment 1, "Critical Task Methodology"

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SIMULATOR CREW EVALUATION FORM

This evaluation form should be used during the dynamic simulator component of the requalification examination. The rating scales are geared toward evaluating the crew as a whole rather than individual operators. Follow the instructions below when rating team performance on the simulator examination:

1. Review the rating scales prior to the simulator examination to familiarize yourself with each competency to be evaluated.
2. Use the "Operator Actions" Form (ES-301, Attachment 4), or an equivalent facility form to make notes during the examination, as described in ES-301 and ES-302.
3. This form should be completed immediately after the simulator examination is over. Evaluate the crew's performance on each applicable rating factor by weighing its actions against the associated behavioral anchors and selecting the appropriate grade. Based upon the tasks planned and performed during the crew's scenario set, it may not be possible to evaluate every rating factor for every crew. Those rating factors that are not evaluated should be so annotated.

The examination team should pay particular attention to the completion of tasks which were identified as critical to plant safety. Actions performed incorrectly by individual operators may be compensated for by the crew, as long as the critical task was completed satisfactorily. If the crew failed to perform a valid CT or performed it incorrectly, then a grade of "1" is required on at least one rating factor. Other less significant deficiencies should also be factored into the rating factor evaluations to provide a source of input for crew remedial training during subsequent requalification training.

4. All rating factor grades of "1" must be justified and documented in the "Comments" section of the form.
5. If the crew receives a "1" on two or more rating factors under any single competency, then it shall be evaluated as unsatisfactory on that competency and unsatisfactory overall on the simulator examination. If the crew receives a "1" on only one rating factor, then it may be evaluated unsatisfactory, based on the safety-significance of the CT that was omitted or incorrectly performed. The NRC chief examiner shall make the final decision on all crew failures resulting from a single rating factor evaluation of "1".

SIMULATOR EXAMINATION SUMMARY SHEET

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CREW MEMBERS: _____

Name

Position

_____	_____
_____	_____
_____	_____
_____	_____

CIRCLE THE OVERALL CREW RATING ON THE SIMULATOR EXAMINATION:

SATISFACTORY
OR
UNSATISFACTORY

Comments: _____

DIAGNOSIS OF EVENTS/CONDITIONS BASED ON SIGNALS/READINGS

DRAFT

DID THE CREW:

(a) RECOGNIZE off-normal trends/status?

3

2

1

Timely and accurate recognition of status/trends

Recognition of status/trends at time of, but not prior to, exceeding established limits

Did not recognize adverse status/trends, even after sounding of alarms and annunciators

(b) USE INFORMATION and use REFERENCE MATERIAL (prints, books, charts, E Plan Procedures) to aid in the diagnosis/classification of events and conditions?

3

2

1

Correct, timely use of information and reference material led to accurate diagnoses

Minor errors by crew in use or interpretation of information and reference material

Failure to use reference material misuse/interpret of information resulted in improper diagnosis

(c) Correctly DIAGNOSE plant conditions based on those control indications?

3

2

1

Diagnoses by crew were accurate and timely

Minor errors/difficulties in diagnoses

Faulty diagnosis resulted in incorrect manipulation(s) of safety control(s)

GRADE ON DIAGNOSIS OF EVENTS/CONDITIONS BASED ON SIGNALS/READINGS: SAT / UNSAT

Comments: _____

UNDERSTANDING OF PLANT/SYSTEMS RESPONSE

DRAFT

DID THE CREW:

(a) LOCATE and INTERPRET control room indicators correctly and efficiently to ascertain and verify the status/operation of plant systems?

3	2	1
Accurate and efficient instrument location & interpretation by all crew members	Minor errors in locating or interpreting instruments and displays; some crew members required assistance	Serious omissions, delays or errors made in interpreting safety-related parameters

(b) Demonstrate an UNDERSTANDING of how the plant, systems, and components operate, including setpoints, interlocks, and automatic actions?

3	2	1
All crew members demonstrated thorough understanding of how systems/components operate	Minor instances of errors due to gaps in crew knowledge of system/component operation some crew members required assistance	Inadequate knowledge of safety system or component operation resulted in serious mistake(s) or in plant degradation(s)

(c) Demonstrate an understanding of how their ACTIONS (or inaction) affected system/plant conditions?

3	2	1
All members understood the effect that actions or directives had on plant/system	Actions or directives indicated minor inaccuracies in understanding by individuals, but actions were corrected by team	Crew appeared to act without knowledge of or disregarded, effect on plant safety

GRADE ON UNDERSTANDING OF PLANT/SYSTEM RESPONSE: SAT / UNSAT

Comments: _____

ADHERENCE/USE OF PROCEDURES

DEPT

DID THE CREW:

(a) REFER TO the appropriate procedures in a timely manner?

3	2	1
Crew used procedures as required; knew what conditions were covered by procedures and where to find them	Minor failures by crew to refer to procedures without prompting, but did affect plant status	Failed to correctly refer to procedure(s) when required, resulting in faulty safety system operation

(b) CORRECTLY IMPLEMENT procedure(s), including following procedural steps in correct sequence, abiding by cautions and limitations, selecting correct paths on decision blocks, and correctly transitioning between procedures?

3	2	1
Timely, accurate enactment of procedural steps by crew, demonstrating thorough understanding of procedural purposes/bases	Minor instances of misapplication, but corrections made in sufficient time to avoid adverse impact	Incorrect procedural adherence led to impede and/or slow event recovery or unnecessary plant safety degradation

(c) RECOGNIZE EOP ENTRY CONDITIONS and carry out appropriate action(s) without the aid of references or other forms of assistance?

3	2	1
Consistently accurate and timely recognition and implementation	Minor lapses or errors; individual crew members needed assistance from others to implement procedures	Failed to accurately recognize degraded plant condition(s) or execute efficient mitigating action(s), even with the use of aids

GRADE ON ADHERENCE/USE OF PROCEDURES: SAT / UNSAT

Comments: _____

CONTROL BOARD OPERATIONS

DRAFT

DID THE CREW:

(a) LOCATE CONTROLS efficiently and accurately?

3	2	1
Controls and indicators were located without hesitation by individual operators	Instances of hesitancy/difficulty in locating controls by one or more operators	Failed to locate control(s) jeopardized system(s) important to safety

(b) MANIPULATE CONTROLS in an accurate and timely manner?

3	2	1
Smooth manipulation of the plant within controlled parameters	Minor shortcomings in manipulations, but recovery from errors without causing problems	Mistake(s) made in manipulating control(s) caused safety system transient(s) and related problems

(c) Take MANUAL CONTROL of automatic functions, when appropriate?

3	2	1
All operators took control, and smoothly operated automatic systems manually, without assistance, thereby averting adverse events	Minor delays and/or prompting necessary before overriding/operating automatic functions, but plant transients were avoided when possible	Failed to control automatic system(s) important to safety manually, even when ample time and indications existed

GRADE ON CONTROL BOARD OPERATIONS: SAT / UNSAT

Comments:

CREW OPERATIONS

DRAFT

THE CREW:

(a) Maintain a command role?

3

Took early remedial/
corrective action when
necessary

2

Minor instances of
failing to take action
within reasonable
period of time

1

Failure to take
timely action
resulted in
deterioration of
plant conditions

(b) Provide WELL THOUGHT OUT DIRECTIONS that facilitated CREW PERFORMANCE and demonstrated appropriate CONCERN for the SAFETY of the plant, staff and public?

2

Directives that were
safe, in line with
crew performance

Minor instances of
incorrect, trivial,
or difficult to carry
out orders

1

Directive(s) in-
hibited safe crew
performance; crew
had to explain why
order(s) couldn't
or shouldn't be
followed

(c) Maintain OVERSIGHT by providing members with an APPROPRIATE AMOUNT of DIRECTION AND GUIDANCE?

3

Crew members stayed
involved, but without
being too intrusive;
anticipated other's
needs and provided
guidance when necessary

2

Members had to solicit
assistance on occasion,
interfering with their
ability to carry out
actions

1

Crew lost big
picture; members
had to repeatedly
request guidance;
crew failed to
verify correct
enactment of
directives

CREW OPERATIONS CONTINUED ON NEXT PAGE

CREW OPERATIONS

DRAFT

DID THE CREW:

(a) Maintain a command role?

3	2	1
Took early remedial/ corrective action when necessary	Minor instances of failing to take action within reasonable period of time	Failure to take timely action resulted in deterioration of plant conditions

(b) Provide TIMELY, WELL THOUGHT OUT DIRECTIONS that facilitated CREW PERFORMANCE and demonstrated appropriate CONCERN for the SAFETY of the plant, staff and public?

3	2	1
Directives enabled safe, integrated crew performance	Minor instances of incorrect, trivial, or difficult to carry out orders	Directive(s) in- hibited safe crew performance; crew had to explain why order(s) couldn't or shouldn't be followed

(c) Maintain OVERSIGHT by providing members with an APPROPRIATE AMOUNT of DIRECTION AND GUIDANCE?

3	2	1
Crew members stayed involved, but without being too intrusive; anticipated other's needs and provided guidance when necessary	Members had to solicit assistance on occasion, interfering with their ability to carry out actions	Crew lost big picture; members had to repeatedly request guidance; crew failed to verify correct enactment of directives

CREW OPERATIONS CONTINUED ON NEXT PAGE

CREW OPERATIONS
(CONTINUED)

DRAFT

DID THE CREW:

(d) SOLICIT and INCORPORATE FEEDBACK from each other to foster an effective, team-oriented approach to problem solving and decision making?

3	2	1
Crew members were involved in problem solving process as appropriate, leading to effective team decision making	At times crew members failed to get involved in decision making when it would have been appropriate, detracting from team-oriented approach	Decision(s) were made without crew participation or consultation; crew divisiveness was counter-productive

GRADE ON CREW OPERATIONS: SAT / UNSAT

Comments: _____

COMMUNICATIONS

DRAFT

DID THE CREW:

(a) EXCHANGE complete and relevant information in a clear, accurate and attentive manner?

3	2	1
Members informed each other of relevant information and accurately sought and listened to information from others as/when necessary	Communications were generally complete and accurate, but sometimes needed prompting, failed to acknowledge evolutions or respond to information from others	Members did not inform each other of abnormal indication(s) or action(s); members were inattentive when important information was requested/prompted

(b) Keep crew members and those outside the control room informed of plant status?

3	2	1
Crew provided others with accurate, pertinent information throughout scenarios	Minor instances of needing to be prompted for information; some incomplete/inaccurate info.	Failed to provide needed information

(c) ENSURES RECEIPT of clear, easily understood communications from the crew and others?

3	2	1
Requests information/clarification when necessary; understands communications from others	Minor instances of failing to require or acknowledge information from others	Failed to request needed info., or inattentive when info. provided; serious misunderstandings among crew

GRADE ON COMMUNICATIONS: SAT/UNSAT

Comments: _____

