ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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Licensee:	Wolf Creek Nuclear Operating Corporation
Facility:	Wolf Creek Generating Station
Location:	1550 Oxen Lane, NE Burlington, Kansas
Dates:	September 23 through October 4, 1996
Inspectors:	S. L. McCrory, Reactor Engineer M. E. Murphy, Reactor Engineer
Approved By:	T. O. McKernon, Acting Chief, Operations Branch

ATTACHMENTS:

Attachment 1:	Supplemental Information
Attachment 2:	List of Documents Reviewed
Attachment 3:	Simulation Facility Report

EXECUTIVE SUMMARY

Wolf Creek Generating Station
NRC Inspection Report 50-482/96-19

This inspection evaluated the licensed operator requalification program to determine whether the program incorporated appropriate requirements for evaluating operators' mastery of training objectives in accordance with 10 CFR Part 55.59(c). The licensed operator requalification program assessment included an evaluation of the program's controls to assure a systems approach to training, and evaluation of operating crews' performances during biennial requalification examinations. This included review of the facility documents, observation of operating and staff crews during dynamic simulator scenarios and plant walkthroughs, and an assessment of the examination evaluators' effectiveness in conducting examinations. The inspection also evaluated the plant referenced dynamic simulator used to conduct the examinations.

The inspection evaluated the effectiveness of several operations related corrective actions implemented after the frazil ice event in January 1996. The evaluation relied on extended control room observations, document reviews, operator interviews, and simulator observations.

Operations

- In the control room, operators exhibited good communication, command and control, annunciator response, procedure usage, self-checking, and application of the "followup" and "timeout" concepts (Section O1.1).

- The operators exhibited good knowledge and ability in all aspects of the requalification examinations. Operator performance in the simulator was consistent with that observed in the control room. The inspectors noted improvement in the use of "followup" buttons (Section O4.1).

- The inspectors concluded that the cognitive level at which many questions were tested was lowered because some operators recognized examination questions as a result of having studied the question bank (Section O4.2).

- The operators expressed good support for the "followup" and "timeout" concepts (Section O4.2).

- The inspectors concluded that there was a general misunderstanding within the operations organization regarding conservatism in making emergency action level classifications. The inspectors concluded that senior operators would likely over-classify an emergency action level situation if they were uncertain of some plant condition or behavior that was part of the threshold for the next higher classification. Further, senior operators did not fully appreciate the potentially negative impacts of over-classifying an event (Sections O4.2 and O5.3).

- The licensee accepted a higher risk of unintentional examination compromise by permitting instructors with specific knowledge of major portions of the examination to continue leading classroom and simulator training. However, the inspectors detected no evidence of actual compromise or degradation of examination validity (Section O5.1).

- Overall, the requalification examinations were well constructed, properly focused and appropriately challenging. However, a number of oversights in conforming to examination development guidelines indicated a need for greater attention to detail (Section O5.1).

- The inspectors concluded that the examinations were well scheduled and administered to maximize evaluation while minimizing operator stress (Section O5.2)

- The inspectors concluded that presenting senior operators with an abbreviated dynamic scenario enhanced examination validity by providing a more realistic setting for evaluating emergency action level classification ability (Section O5.3).

- The evaluators made the appropriate pass/fail determinations for all crews and individual operators. All operators and crews passed all portions of the examinations in weeks two and three. The evaluators did a particularly good job of separating shift supervisor emergency preparedness performance from overall crew performance (Section O5.3).

- The licensee evaluators' performance was generally good even with the minor disruptions to the examination flow due to the diverse cuing methods used. However, the evaluator performance regarding cuing on the emergency diesel generator task did not meet the training management's expectations. The licensee's immediate response to the evaluator performance was appropriate (Section O5.3).

- The licensee's failure to apply the requirements of Section 5 of ANSI/ANS-3.5-1985 to the testing and validation of the upgraded emergency diesel generator model represented a weakness in the licensee's simulator certification program. The licensee's simulator certification program warranted additional licensee review to assure that commitments were being met. The licensee's immediate response to correct the simulator model was appropriate (Section O5.3).

- The licensee's remedial training program was effective, with detailed evaluations of both individual and crew performance used for development of the recommended accelerated requalification training (Section O5.4).

Report Details

Summary of Plant Status

The facility operated at or near full power during the weeks of the inspection.

I. Operations

O1 Conduct of Operations

O1.1 Control Room Observations

a. Inspection Scope (71715)

Using the guidance of Inspection Procedure 71715, "Sustained Control Room and Plant Observation," the inspectors observed activities in the control room. The inspectors compared the observed performance with expected performance as described in facility policies and procedures. Between September 26 and October 1, 1996, the inspectors observed three different shift crews for continuous periods ranging from four to six hours.

b. Observations and Findings

The inspectors observed one shift turnover from the arrival of the relief crew in the control room through the post relief crew brief. The inspectors also observed one additional post relief crew brief for a different shift crew. The inspectors noted that the individual operator reliefs' briefs were thorough and detailed, and that both the oncoming and offgoing operators were alert and diligent in providing a professional turnover. Post relief crew briefs were thorough and comprehensive with each member of the crew providing a status of activities and equipment for their areas. The inspectors also noted that each crew reviewed the elements of the Operations Division Standards at the conclusion of the post relief crew brief. These elements included: safety, attention to detail, questioning attitude, STAR (Stop, Think, Act, Review), communications, housekeeping, "timeout," and "followup".

Shift supervision generally maintained a high degree of control room formality although there were periods of increased noise level due to the number of personnel in the control room and the number of different activities. The noise level impacted the prejob brief for the performance run of spent fuel pool cooling pump "B." An individual engaged in a separate activity in the control room was talking loudly on the phone such that the person conducting the prejob brief was difficult to hear. The supervising operator did not request the individual to suspend his activity or to speak more softly while the prejob brief was in progress. However the individual on the phone quickly realized that he was impacting the brief and lowered his voice so that it no longer impacted the briefing.

An engineer led a briefing of a spent fuel pool cooling pump "B" performance determination that was to be conducted during the shift and would involve control room operators. The brief covered the procedural requirements and the roles of the key participants. At the end of the brief, one of the panel operators pointed out that instrumentation and control testing of electrical components was scheduled to occur concurrent with the performance run. He pointed out that the instrumentation and control testing would generate alarms in the control room that may add confusion to the conduct of the performance run. He requested that the instrumentation and control testing be held up until the pump performance run was complete. The supervising operator concurred and directed that the instrumentation and control testing wait until the pump performance run was complete.

The inspectors observed operator response to a number of unexpected alarms. The first alarm response occurred when someone in the field de-energized a heat trace panel in the circulating water system house without notifying the control room. The alarm received in the control room was a "Trouble Alarm" and required the reactor operator to contact the responsible field operator. The field operator determined what had happened and initiated Performance Improvement Request No. 96-2425. The second alarm response was to a fire alarm in the 2000 ft level pipe penetration room. The response to this alarm was controlled and well coordinated by the supervising operator and it was quickly determined that no actual fire existed and the alarm was apparently from pipe grinding in the area. The third alarm was a Safety Injection Tank low pressure. The reactor operator acknowledged the alarm, announced it to the supervising operator, entered the alarm response procedure, and identified the procedure to repressurize. The fourth alarm was an area radiation monitor alarm. The crew used the alarm response procedure to investigate the alarm. The crew determined that the alarm was due to material being moved in the solid radiological waste storage area. The activity had been authorized; however, no one realized that any of the material to be handled had radiation levels high enough to generate an alarm when passed near the area radiation monitor.

The crew had to deal with a nuisance alarm for flux deviation that occurred frequently. The operators were diligent to check plant indications each time the alarm sounded but were often distracted from other important duties to respond to the alarm. The condition causing the alarm was corrected within a day or two of the alarm becoming a nuisance. Maintenance and surveillance activities generated a number of expected alarms in the control room. The operators were diligent in announcing expected alarms and routinely stated the cause of the alarm when reporting it.

The inspectors observed operator response to a number of unexpected events. The auxiliary building supply fan did not run properly after a maintenance activity. The balance of plant operator used a "followup" button to insure that the control room remained aware that the problem had not been resolved. When maintenance reported that the 'B' chiller pump had burned motor windings from a retest attempt and was inoperable, the Shift Supervisor called a "timeout" to review the contingency plan for a potential loss of all chillers with the control room crew.

The operators generally used 3-legged communications and the inspectors observed only one instance of one way or open-ended communication. While the waste control operator tested radiation waste alarms locally, a control room operator was acknowledging and announcing the expected alarms as they occurred in the control room. The supervising operator did not verbally acknowledge all of these reports of expected alarms.

Control room conduct was formal. The shift supervisor routinely visited the controls area and remained aware of the scope of activity in the plant. The supervising operator maintained a professional environment in the control room. This was of particular interest to the inspectors since candidates in training for senior reactor operator licenses were assigned as supervising operator and shift supervisor under instruction on the crews observed. The inspectors noted that there was no apparent disruption or confusion in the conduct of normal shift routines and activities. The supervising operator and shift supervisor retained command and control during non-routine events or activities.

Operators routinely exhibited self-checking when manipulating controls. The inspectors observed several valve manipulations and pump operations and noted that the operators placed their hands on or near the control switched and looked at the name plate to verify the proper control before operating it.

c. Conclusions

The inspectors concluded that operators exhibited good communication, command and control, annunciator response, procedure usage, self-checking, and application of the "followup" and "timeout" concepts.

O4 Operator Knowledge and Performance

O4.1 Operator Performance on Biennial Requalification Examinations

a. Inspection Scope (71001)

The inspectors observed the performance of shift crews "C" and "F" during the dynamic simulator and job performance measure portions of the biennial requalification examination. The inspectors also reviewed operator responses on the written examination.

b. Observations and Findings

The licensee had implemented a communication practice that used the codeword "timeout" to aid crews in resolving any uncertainty or confusion about plant conditions or operational direction in one or more crew members. The operators used "timeout" during the scenarios to primarily signal status briefings. This use of "timeout" was supported by management in an effort to increase the operators' comfort in using "timeout." During the second scenario for crew "C," the shift supervisor expressed uncertainty regarding containment pressure decrease but did not call "timeout". The shift supervisor subsequently declared a Site Area Emergency based on the containment conditions about which he was uncertain. The classification was one severity level higher than was warranted by actual plant conditions. During the first scenario for crew "F," the letdown relief valve lifted while the reactor operator was restoring the chemical and volume control system to normal after a loss of a vital electrical bus. At least two crew members expressed confusion regarding the lifting of the letdown relief valve but did not use "timeout." During the post-scenario evaluations, the operations manager stated that the operators did not meet his expectations regarding the use of "timeout" in the above instances.

To improve system configuration and operational control, the licensee had implemented the use of "followup" buttons for emergent conditions that could not be immediately resolved by the operators but that required further action to correct. During the scenarios, the operators used the "follow-up" buttons in most cases for which they were appropriate. During the first scenario for crew "F," the supervising operator directed the restoration of off-site power to the electric distribution system without referencing the procedure. However, the panel operator placed a "followup" button on the electrical distribution system controls to ensure that his actions were reviewed against the procedure at the first opportunity. This was notable because part of the root cause contributors to poor operator performance reported in NRC Inspection Report 50-482/96-03 was that operators failed to review their actions against the appropriate procedure. The inspectors noted that the panel operators displayed a significant difference in the tendency to initiate the use of the "followup" buttons. The operators in one crew frequently waited for direction from the supervising operator, shift supervisor, or shift engineer before applying a "followup" button while operators in the other crew routinely initiated the use of the "followup" button and then informed shift supervision. The evaluators and operations management stated that operators had not yet achieved consistent application of the "followup" concept. However, the inspectors noted that operator use of "followup" buttons was significantly more frequent and consistent than had been previously observed and reported in NRC Inspection Report 50-482/96-13.

During the dynamic simulator and job performance measure portions of the examination, the inspectors observed the following generic behaviors among operators:

- Operators routinely exhibited 3-legged communication with only a few lapses into 2-legged communication.
- Operators routinely referred to procedures when responding to alarms and operating systems and components.
- Operators consistently exhibited self-checking behavior when operating system controls.

The inspectors reviewed the operator responses on the written examinations. All operators made high scores on the written examinations. The inspectors did not detect any generic knowledge weaknesses.

c. Conclusions

The inspectors concluded that operators exhibited good knowledge and ability in all aspects of the requalification examinations. Operator performance in the simulator was consistent with that observed in the control room. The inspectors noted improvement in the use of "followup" buttons.

O4.2 Operator Interviews

a. Inspection Scope (71001)

The inspectors interviewed operators regarding operator training, the requalification examination, and corrective actions resulting from the frazil ice event in January, 1996.

b. Observations and Findings

The inspectors asked operators for their impression of the requalification examinations overall. All operators expressed satisfaction with fairness of the examination and the way it was administered.

The inspectors questioned operators regarding satisfaction with the operator requalification training program. The operators expressed satisfaction with the training program overall. The operators were particularly pleased with their ability to request and obtain specialized training for particular crew needs.

The inspectors questioned operators regarding the use of the examination question bank in preparation for examinations. The Operators stated that they had access to all questions developed for the written examination, all job performance measures (except emergency preparedness classifications), and all static scenario turnover information. They also stated that new or revised questions were easily identifiable when the examination bank was accessed through personal computers linked to the local area network. Most operators admitted that they recognized questions on the written examination as a result of their study of the examination bank.

The training department had begun using a "poison pill" during some non-examination scenarios. The "poison pill" involved either a miscommunication in which an operator repeated back an order incorrectly and then carried out the incorrect action if the error was not detected, or an order was incorrectly carried out even though the communications were correct. During the interviews, the operators expressed only mild concern regarding the possible overuse of the "poison pill", but otherwise accepted it as a legitimate training technique.

The inspectors discussed the "followup" button and "timeout" concepts developed following the frazil ice event. The operators expressed strong support for both concepts. Further they expressed expectations that both concepts would become long standing practices rather than temporary measures. Some operators expressed concern that the use of "timeout" for routine crew status briefs could reduce its impact when an operator had a truly significant problem. Most of the operators acknowledged that the use of "followup" markers was not consistent among operators or crews but that its use was improving.

The inspectors questioned senior operators regarding conservatism in arriving at an emergency action level classification. Most senior operators expressed a belief that over-classifying was a conservative approach when there was uncertainty about some aspect of plant conditions or performance. Most senior operators admitted to a lack of understanding of the potentially negative impacts of over-classifying at the Site Area and General Emergency action levels.

c. Conclusions

The inspectors concluded that the cognitive level at which many questions were tested was lowered because some operators recognized examination questions as a result of having studied the question bank.

The inspectors concluded that there was good support among operators for the "followup" and "timeout" concepts.

The inspectors concluded that senior operators would likely over-classify an emergency action level situation if they were uncertain of some plant condition or behavior that was part of the threshold for the next higher classification. Further, senior operators did not fully appreciate the potentially negative impacts of over-classifying an event.

O5 Operator Training and Qualification

O5.1 Biennial Requalification Examination Development and Quality

a. Inspection Scope (71001)

Using the guidelines of Inspection Procedure 71001, "Licensed Operator Requalification Program Evaluation," the inspectors reviewed the written and operating examinations prepared by the licensee for the biennial requalfication examinations. The inspectors also discussed various aspects of examination development and security with members of the licensee's training staff.

b. Observations and Findings

The inspectors noted that the written examinations were appropriately balanced with respect to systems, procedures, and administrative areas. The questions were generally well written. Most tested at the application cognitive level. However, as noted in Section O4.2, the actual cognitive level tested was somewhat diluted by operators studying the examination bank and being able to recognize questions.

The instructions to the written examination developer stated that no more than 25 percent of examination questions should be repeated from one week to the next. However, the "Licensed Operator Requalification Training/Examination Guideline," AI 30B-006, stated that the week to week reuse of questions in the written examination should not exceed more than 20 percent. The inspectors asked the supervising instructor for requalification about the discrepancy. The supervising instructor stated that this was his oversight when he prepared the instructions. Additionally, the inspectors asked for clarification of the wording in the guidelines regarding reuse of questions on non-consecutive weeks. The supervising instructor stated that the wording of the guidelines was intended to impose the limitation only on consecutive weeks and that there was no limit on repeat questions in non-consecutive weeks. He further added that he would not intentionally exercise the full scope of the provision. The inspectors reviewed the exams for weeks one through three and determined that reuse of questions in consecutive weeks did not exceed 20 percent and that the maximum repetition without consideration for consecutive weeks was 25 percent.

AI 30B-006 stated that individuals should not have questions repeated on the requalification examination that had appeared in any quizzes that they had taken in the previous six months. The inspectors' review of the written examinations for weeks one through three determined that all three requalification written exams repeated from three to four questions that had appeared on quizzes within the last six months. The supervising instructor stated that the failure to meet this guideline was not detected during the licensee's examination review and that, again, this was an oversight. The supervising instructor revised the week-three examination to eliminate the discrepancy. However, since the discrepancy was not identified until just before administration of the week-two written examination, the licensee elected to administer the week-two examination as originally approved.

The written examinations for weeks one and two placed a significant emphasis (15 percent) on reactor coolant pump and pump seal knowledge. When asked why a significant portion of these examinations focused on reactor coolant pumps and seals, the supervising instructor stated that there was no particular intent to emphasize reactor coolant pumps and that it was just coincidence that many questions had appeared on the examination. He pointed out that they all evaluated different knowledge.

The inspectors discussed examination material security with the supervising instructor. He stated that only people with full knowledge of all parts of the examination were put on a security agreement with constraints similar to those specified in NUREG-1021, "Licensed Operator Examiner Standards." Therefore, individuals with full knowledge of only one part of the examination (written, simulator, or job performance measures) were permitted to continue the instruction of operators. The supervising instructor stated that a small staffing level of instructors for operations training (5 for requalification and 8 for initial) was the reason that all individuals with specific knowledge of any portion of the examination could not be constrained from instructing operators until after the examinations had been administered. The only compensation mentioned by the supervising instructor was that individuals knowledgeable of the scenarios were required to use a limited bank of scenarios if they ran the simulator for crew warmups. Otherwise, the licensee relied on the conscientiousness and professionalism of the instructors to prevent the inadvertent compromise of the examination.

The inspectors asked about the physical security arrangements for examination material. The supervising instructor stated that individuals involved in development of any part of the examination stored the material in locked office/work-cubical cabinets. The inspectors also noted that during examination administration, the licensee was careful to monitor operators during their examination week to prevent possible compromise.

The inspectors discussed the maintenance of the examination bank with the supervising instructor. He provided information which indicated that the written examination question bank contained about 900 questions of which about 35 were new or significantly modified. He stated that no new or significantly modified questions had been specifically prepared for the biennial examinations. New questions were added to the bank being validated in a weekly quiz before being considered for use on the biennial exam. While he stated that nearly all questions in the bank were reviewed annually for technical accuracy, there were no specific goals regarding new or substantially modified question. The supervising instructor prepared instructions to the training instructors requiring that five new questions be written for each quiz developed during the next two year cycle.

The simulator scenarios had multiple instrument and component failures both preceding and following the major transient. The malfunctions built on each other to provide the operators with complex challenges when the major transient occurred. Each scenario set required the use of multiple emergency operating procedures including the functional recovery procedures. Each scenario had two or more crew critical tasks which were used as the principal measures of crew performance. The critical tasks were linked to objective measures of plant conditions or operator actions to determine successful completion.

After reviewing the practice scenarios performed by the crew being evaluated in week three of the requalification examinations, the supervising instructor for requalification decided to use the backup scenario since the planned scenario was too similar to one that had been run during the practice sessions. The supervisor explained further that all planned scenario sets were reviewed the week before their administration to preclude crews from getting scenarios too similar to any they observed during practice sessions immediately preceding their examination week.

The job performance measure packages evaluated operators on a diversity of systems and tasks. The job performance measures contained evaluator cues for all actions to permit the task to be evaluated under either static or dynamic conditions. The task initiating cues were concise and clear without unique information that might compromise the intent of the job performance measure. The job performance measures for emergency action level classification were designed to permit the senior operator to observe a dynamic sequence of events on the simulator for about 15 minutes before making an emergency action level classification. This reduced the amount of evaluator cuing required and gave the senior operator a fuller picture of operational events leading up to the point of classification.

c. Conclusions

The inspectors concluded that the licensee accepted a higher risk of unintentional compromise by permitting instructors with specific knowledge of major portions of the examination to continue leading classroom and simulator training. However, the inspectors detected no evidence actual compromise or degradation of examination validity.

The inspectors concluded that, overall, all portions of the examinations were well constructed, properly focused and appropriately challenging. However, a number of oversights in conforming to examination development guidelines indicated a need for greater attention to detail.

The inspectors concluded that presenting senior operators with an abbreviated dynamic scenario enhanced examination validity by providing a more realistic setting for evaluating emergency action level classification abilities.

O5.2 Examination Administration

The inspectors observed the administration of each phase of the examinations. The evaluators gave comprehensive examination instructions similar to those in the 600 series sections of NUREG-1021. The operators were escorted at all times between simulator scenarios, during job performance measure evaluations, and between portions of the written examination to prevent possible compromise of the examinations. However, the examination schedule resulted in minimal waiting time that required the operators to be confined to a particular room. Additionally, the room in which operators were sequestered between portions of the examination was furnished with refreshments and comfortable furniture. The inspectors concluded that the examinations were well scheduled and administered to maximize evaluation while minimizing operator stress.

O5.3 Evaluator Performance and Results

a. Inspection Scope (71001)

The inspectors observed the performance of the facility evaluators during all phases of examination administration and evaluation debriefs of the dynamic simulator examination. The inspectors reviewed the completed job performance measures and the grading of the written examination.

b. Observations and Findings

The inspectors attended the post simulator examination debriefs held by the licensee's evaluators for each of the scenario sets. The debriefs were comprehensive and candid with detailed discussions by each evaluator on relevant subjects. The evaluators reached consensus in all cases for the grading elements. The evaluators determined that the performance of crews "C" and "F" was satisfactory.

During the second scenario for crew "C," the shift supervisor made an emergency action level classification of Site Area Emergency based on a pressurizer safety valve stuck open and an "unexplained decrease" in containment pressure. Containment pressure peaked just below two pounds per square inch and began to decrease. The shift supervisor and shift engineer concluded that there was not a corresponding decrease in containment temperature, indicating a breach in containment. The remainder of the crew expressed that the behavior of containment temperature and pressure were consistent with known events and did not indicate a loss of containment integrity. However, the shift supervisor held to his initial assessment and classified the condition as a Site Area Emergency. This classification was one higher than was warranted by actual plant conditions. Following the scenario, the evaluator for the shift supervisor and shift engineer questioned their emergency action level classification decision without having obtained backup indications such as radiation monitors in the auxiliary building or an outside inspection of the containment building for evidence of a breach. During the evaluators' discussions of the scenario, the operations manager remarked that the shift supervisor had made a conservative classification by going one step higher than was necessary. The inspectors commented to the evaluators that increasing the severity of a classification that was not clearly warranted was not necessarily conservative. Both the operations manager and evaluators agreed with the inspectors comment. The evaluators separated the emergency preparedness performance of the shift supervisor from the overall crew evaluation and concluded that crew performance was satisfactory. In followup, the training staff and operations management decided to address the deficiency exhibited by the shift supervisor with increased emphasis through the "crew partner" process. The "crew partner" process assigns a training instructor to two crews each. The instructor acts as both a mentor and training liaison for the crew and individual operators.

The inspectors observed the evaluation of several operators during conduct of job performance measurements in the simulator and in the equipment spaces of the plant. The inspectors observed instances of inconsistency in cuing for the operators. In the simulator, the inspectors observed three different methods for cuing the operators during task performance:

- Operators received cues regarding conditions and performance outside the control room by contacting the simulator booth operator via the normal means of remote communication.

- Operators received all cues regarding conditions and performance outside the control room directly from the evaluator. The operator would only have to express an intent to contact someone outside the control room for the evaluator to provide the necessary cue.

- Operators received all cues regarding conditions and performance outside the control room directly from the evaluator, but only after the operator located and identified the communication devices that would be used in the plant.

The evaluators did not inform the operators of the cuing method that the evaluators intended to use as a part of the initial brief of that portion of the examination. The operators discovered the method of cuing that the evaluator intended to use only when the operator attempted to make his first communication outside the control room while performing a task. This resulted in a momentary interruption while the evaluator clarified how the operator should seek cues for actions and conditions outside the control room. The inspectors commented on the inconsistency of cuing methods used in the simulator. The supervising instructor stated that the method of cuing was left to the discretion of the evaluator. However, he acknowledged the potential negative impact on the operators caused by the disruption during the examination and by having different evaluators.

During the performance of a surveillance task to start and fast load an emergency diesel generator, the operator took more than the allowed 60 seconds to fully load the emergency diesel generator after shutting the output breaker. The evaluator, acting as a second operator, timed the interval from breaker closure until the emergency diesel generator was fully loaded. The evaluator timed the action at 1 minute and 12 seconds; however, he told the operator that the elapsed time was only 58 seconds. The evaluator explained to the inspector observing him that the simulator response time for loading an emergency diesel generator was slower than in the plant and that was why he provided the operator with a quicker load time. The inspector conveyed this information to the supervising instructor who stated that he was not aware of a simulator performance deficiency in this area and that operators had been able to load a diesel in the simulator in the past within the prescribed time. The inspector subsequently independently timed the performance of another operator on the same task and observed that the operator was able to meet the time requirements of the surveillance in the simulator. The principal difference in the performance of the two operators was that the second operator did not interrupt loading the emergency diesel generator after closing the output breaker to ensure that the diesel picked up minimum load at the moment the output breaker shut.

The operations training superintendent reported that the evaluator observed by the inspector had been told by another evaluator to ignore actual diesel generator loading time and cue the operator with a time less than one minute. The other evaluator had seen the simulator behavior on the first performance of the task and knew that it was much slower than in the plant. However, the initial evaluator did not seek supervisory approval for his action and did not ensure that all other evaluators received the same information.

The inspectors interviewed operators and reviewed recent actual surveillance data on emergency diesel generator NE02 and determined that the actual emergency diesel generator NE02 could be manually fully loaded in as little as 18 seconds. The training staff reported that during validation of the task on the simulator, the fastest time that could be achieved was 55 seconds. However, since this met the Technical Specification and surveillance requirement, no further effort was made to compare the simulator response to actual plant response.

The licensee reported that the model for the emergency diesel generators had been upgraded in recent weeks but that the certification testing process had not considered actual plant performance. The inspector reviewed documentation of the certification and validation of the diesel generator model, the licensee's procedural requirements and the industry standard (ANSI/ANS-3.5-1985, "Nuclear Power Plant Simulators for use in Operator Training") to which the licensee was committed. The inspector determined that the licensee did not satisfy the ANSI/ANS-3.5-1985 Section 5 requirements to include actual plant performance in the simulator design data for the emergency diesel generator (5.1) and then compare the simulator performance test of the emergency diesel generator model to the appropriate simulator design data (5.4.1). The inspectors interviewed operators regarding performance differences between the simulator and the plant. The operators did not report any additional simulator performance issues. The inspectors determined that certification of the Wolf Creek simulator was not immediately affected by this specific matter, however, the issue similar to information reported in an NRC letter to the licensee dated August 15, 1996. That letter discussed simulator discrepancies that potentially affected certification.

After confirming that the simulator behavior did not match that of the plant, the training staff changed a constant in the program for the emergency diesel generator calculation that controlled loading rate so that simulator performance more closely matched that of the actual plant. The staff further stated an intent to initiate a performance improvement request to investigate why the certification and validation process failed to consider actual plant performance in the first place. In the week following the inspection, the licensee provided the inspectors with a facsimile preliminary copy of the performance improvement request.

Training supervision met with the evaluators to discuss the error made regarding the independent action on the part of an evaluator to change the evaluation standard while the examination was in progress. Training supervision re-emphasized the requirement to bring such issues to supervisory attention and use a formal process to determine a course of action. After reviewing the performance of the evaluators, operators, and the simulator, the licensee determined that the job performance measure remained valid for evaluation purposes and did not eliminate or replace the job performance measure for the specific examination during week three. The inspectors agreed with the licensee's decision.

The inspectors reviewed the marked-up job performance measure evaluation forms completed by the licensee evaluators. The evaluators consistently recorded operator performance that deviated from expectations or procedural requirements regardless of whether the performance related to a critical element. The evaluators determined that all operators examined in weeks two and three passed the job performance measure portion of the requalification examination. The inspectors agreed with the licensee's determination.

The inspectors observed the administration of the static simulator portion of the written examination. The crew was given the scenario turnover information and then allowed to review the panel indications for five minutes before the examination officially started. The examination packages given to each operator were assembled in the same order; however, operators avoided clustering at the same controls or instruments. The proctor monitored the operators from the simulator booth which afforded a clear view of the individuals except when they were at the cabinet and desk area immediately below the booth observation windows. Only one operator spent any time in that area and that was very brief.

The inspectors reviewed the operators' responses on the written examination and the licensee's grading of the examination. As previously noted, there were no generic knowledge weakness, and the inspectors' grading agreed with that of the licensee.

c. Conclusions

The inspectors concluded that the evaluators made the appropriate pass/fail determinations for all crews and individual operators. All operators and crews passed all portions of the examinations in weeks two and three. The evaluators did a particularly good job of separating shift supervisor emergency preparedness performance from overall crew performance.

The inspectors concluded that there is a general misunderstanding within the operations organization regarding conservatism in making emergency action level classifications.

The inspectors concluded that evaluator performance was generally good even with the minor disruptions to the examination flow due to the diverse cuing methods used. However, the evaluator performance regarding cuing on the emergency diesel generator task did not meet training management expectations. The licensee's immediate response to the evaluator performance was appropriate.

The inspectors concluded that the licensee's failure to apply the requirements of Section 5 of ANSI/ANS-3.5-1985 to the testing and validation of the upgraded emergency diesel generator model represented a weakness in the licensee's simulator certification program. The inspectors further concluded that the licensee's simulator certification program warranted additional licensee review to assure that commitments were being met. The licensee's immediate response to correct the simulator model was appropriate.

O5.4 Remediation Program

a. Inspection Scope (71001)

The inspectors reviewed the documentation related to the consecutive failure of one crew in the dynamic scenario examination administered during the 1995 requalification annual examination and interviewed training and operations personnel involved.

b. Observations

One crew was determined to be unsatisfactory during the annual operational examination based on a created critical task. The critical task was an unnecessary reactor trip and safety injection due to misdiagnosing a dropped rod as a loss-of-coolant-accident. The evaluators analyzed the crew response, reviewed student background information, determined the root cause of the failure and recommended a multi-part remediation program. The remediation program consisted of crew self-critique of the failed scenario, table-top discussion sessions of various plant transients with parameter trending and analysis, and several simulator scenarios.

The crew was determined to be unsatisfactory during the accelerated requalification training examination scenario (retest) based on failure to perform a created critical task. The crew failed to prevent a safety injection following restoration of instrument air.

This second consecutive failure required the determination of individual and crew suitability to resume licensed duties. The review is the responsibility of the supervisor operator training, as prescribed in the licensee's administrative procedure ADM 06-224, "Licensed Operator Requalification Training Program," Revision 12.

The supervisor operator training documented a detailed evaluation of the individuals and the crew and recommended retest for both. The recommendations were reviewed by licensee management and approved. A detailed and extensive remedial training program was outlined, documented and administered. All individuals and the crew satisfactorily completed the retest.

c. Conclusions

The inspectors concluded that the licensee's remedial training program was effective, with detailed evaluations of both individual and crew performance used for development of the recommended accelerated requalification training.

O8 Miscellaneous Operations Issues

O8.1 (Closed) Inspection Followup Item 50-482/9603-14: Reactor engineering advice on termination of emergency boration. The licensee determined that a miscommunication had occurred between reactor engineering and operations on January 30, 1996. The licensee stressed the need for proper communication discipline with the reactor engineering staff and required reactor engineers to participate in a simulator scenario with shift crews. The scenario was designed to create a stressful fast-paced environment to demonstrate the importance of complete and accurate communication. The inspectors concluded that the licensees actions correctly addressed the performance deficiencies.

O8.2 (Closed) Inspection Followup Item 50-482/9603-05: Evaluation of the essential service water pump operability determination and additional training on frazil icing. The licensee's response included a design change to the essential service water system, development of a new procedure to specifically focus on frazil icing, and training on prevention, detection and response to frazil ice conditions. The licensee developed Procedure SYS EF-205 ESW, "Circ Water Cold Weather Operations," specifically to address the potential for frazil ice formation in the circulating water bays. The inspectors reviewed the procedure and monitored a training session on plant winterization. The training emphasized the conditions that produce frazil ice, how to detect it and how to prevent frazil ice formation and buildup. The session was attended by both operations and engineering personnel. The inspectors concluded that the procedure and training appropriately addressed the potential for frazil ice formation and proper preventive and corrective measures.

The operability determination concern has been incorporated into the licensee's broader response regarding engineering discipline. The licensee's corrective actions will be implemented as part of the response to Violation I.A of Enforcement Action 96-124. The licensee's response in this area will no longer be tracked as a part of IFI 50-482/9603-05.

O8.3 Violation EA 96-124 02013 (Closed): Failure to follow alarm response procedure. The inspector verified the corrective actions described in the licensee's response letter, dated July 31, 1996, to be reasonable and complete. No similar problems were identified.

O8.4 Violation EA 96-124 05014 (Closed): Essential control room procedures were missing or incorrectly filed. The inspector verified the corrective actions described in the licensee's response letter, dated July 31, 1996, to be reasonable and complete. No similar problems were identified.

O8.5 Violation EA 96-124 06014 (Closed): Failure to cooldown the plant within the time limits specified in technical specification action statement 3.7.2.b. The inspector verified the corrective actions described in the Licensee's response letter, dated July 31, 1996, to be reasonable and complete. No similar problems were identified.

IV. Engineering

E2 REVIEW OF THE UPDATED FINAL SAFETY ANALYSIS REPORT COMMITMENTS

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the Updated Final Safety Analysis Report descriptions. While performing the inspection discussed in this report, the inspector reviewed the applicable portions of the Updated Final Safety Analysis Report that related to the areas inspected. The inspectors verified that the Updated Final Safety Analysis Report section for licensed operator requalification training was consistent with the observed plant practices and procedures.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on October 4, 1996. The licensee acknowledged the findings and did not identify any information as proprietary.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Fehr, Manager, Training
T. Damashek, Supervisor, Regulatory Compliance
R. Hubbard, Superintendent, Operations
T. Morrill, Manager, Regulator Services
C. Younie, Manager, Operations
G. Boyer, Director, Site Support
B. McKinney, Plant Manager
S. Austin, Quality Evaluations Engineer
G. Smith, Licensed Supervising Instructor
R. Guyer, Superintendent, Operations Training
D. Dees, Supervisor, Operations Training
R. Meister, Senior Engineering Specialist/Regulatory Compliance

NRC

F. Ringwald, Senior Resident Inspector
J. Dixon-Herrity, Resident Inspector

INSPECTION PROCEDURES USED

71001	Licensed Operator Requalification Program Evaluation
71715	Sustained Control Room and Plant Observation
92901	Followup - Plant Operations

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-482/9603-05	IFI	Evaluation of the essential service water pump operability determination and additional training on frazil icing.
50-482/9603-14	IFI	Reactor engineering advice on termination on emergency boration.
50-482/EA 96-124 02013	VIO	Failure to follow alarm response procedure.
50-482/EA 96-124 05014	VIO	Essential control room procedures were missing or incorrectly filed.
50-482/EA 96-124 06014	VIO	Failure to cooldown the plant within the time limits specified in technical specification action statement 3.7.2.b.

Discussed

None

ATTACHMENT 2

LIST OF DOCUMENTS REVIEWED

AI 30B-006, "Licensed Operator Requalification Training/Examination Guideline," Revision 0
ANSI/ANS-3.5-1985, "Nuclear Power Plant Simulators for use in Operator Training"
SYS EF-205 ESW, "Circ Water Cold Weather Operations," Revision 0
AI 30C-001, "Simulator Certification," Revision 1
AI 30C-002, "Simulator Modifications," Revision 1
ADM 06-224, "Licensed Operator Requalification Training Program," Revision 12
Wolf Creek Simulator Modification Package 94-054
Wolf Creek Simulator Modification Package 96-088
1996 Biennial Licensed Operator Requalification Examinations and Evaluation Results (For examination cycle weeks 1-3)
Licensed Operator Requalification Quizzes (For the period March - September, 1996)
1995 Annual Licensed Operator Requalification Operating Examination summaries
Sample Plan for the 1996 Biennial Licensed Operator Requalification Examinations
1996 Biennial Licensed Requalification Training Plan
1995 and 1996 Licensed Operator Remediation Examinations
STS EC-100B, "Spent Fuel Pool Cooling Pump "B" Inservice Pump Test," Revision 12
STN EC-100B, "Spent Fuel Pool Cooling Pump "B" Reference Pump Curve Determination," Revision 0
Design Change Package 06349
Lesson Plan LR 10 108 47, "Plant Winterization," Revision 5
SY 14 089 00, "Essential Service Water," Revision 2 (Training system description)
LR 44 096 42, "Simulator Transient Response Training," Revision 0
Closure Package for Violation EA 96-124 02013
Closure Package for Violation EA 96-124 05014
Closure Package for Violation EA 96-124 06014
Closure Package for Inspection Followup Item 9603-05
Closure Package for Inspection Followup Item 9603-14

ATTACHMENT 3

SIMULATION FACILITY REPORT

Facility Licensee: Wolf Creek Nuclear Operating Corporation

Facility Docket: 50-482

Operating Examinations Administered at: Wolf Creek Generating Station

Operating Examinations Administered on: September 24 through October 2, 1996

These observations constitute inspection findings; however they are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility, other than to provide information which may be used in future evaluations. Additional details are provided in Section O5.3 of the inspection report 50-482/96-19.

As a result of the performance of a surveillance task to start and manually fast load an emergency diesel generator, the inspectors determined that the simulator response to manual loading of the emergency diesel generator was significantly slower than the actual plant response. In the simulator, it took about 55 seconds to fully load the emergency diesel generator with the operator continuously holding the governor control in the raise position. Surveillance records and interviews with operators determined that the actual emergency diesel generator could be fully loaded in as few as 18 seconds.

The impact on the examination was that operators routinely took more than the minimum 60 seconds permitted by the surveillance task. As a result the operators had to determine if the results were due to operator performance or an emergency diesel generator deficiency. Because the condition was somewhat ambiguous, there was a strong potential for the operators to interpret their performance on the task as unsatisfactory. That perception could have affected performance on subsequent tasks.

The simulator deficiency had a negative training aspect because operators could quickly overload the actual emergency diesel generator if they operated the plant controls in the same manner as the simulator controls.

The deficiency represented a weakness in the licensee's certification process because the testing and validation of that part of the simulator model was compared to a technical specification requirement rather than actual plant performance data as required by ANSI/ANS-3.5-1985 Section 5.

The inspectors did not observe any additional simulator performance deficiencies.