APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report No. 50-482/92-11

Operating License No. NPF-42

Docket No. 50-482

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)
P.O. Box 411
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: WCGS, Coffey County, Burlington, Kansas

Inspection Conducted: May 11 through May 15, 1992

Inspector: J. E. Whittemore, Reactor Inspector, Operational Programs Section
Division of Reactor Safety

Approved: _____ 6/1/92
T. F. Stetka, Chief, Operational Programs Section Date
Division of Reactor Safety

Inspection Summary

Inspection Conducted May 11-15, 1992 (Report 50-482/92-11)

Areas Inspected: Routine, announced inspection of the development and implementation of the systematic approach to training (SAT) based program for training the technical staff and managers. In addition, the licensed operator training (requalification) program was reviewed to determine the status of planned corrective actions.

Results: Within the scope of the inspection, no violations or deviations were identified.

In the area of technical staff and manager training, the inspection revealed that the licensee had not been thorough in the development of the fundamental elements required for the systematic approach to training. Training objectives implementation was weak and objectives were not well linked with the testing element of the program. The licensee had not performed program self assessment beyond student feedback of classroom presentations and an analysis of examination responses. The most significant finding of the inspection was the licensee's failure to precisely identify the positions, functions, or individuals that would participate in the training program.

The inspection did not identify any adverse findings within the licensed operator training program.

The following inspection followup item was identified:

(482/9211-01): Review the new technical staff and manager training program to assure that the licensee has clearly defined positions, functions, or individuals who are required to participate in the program (paragraph 2.3.4).

DETAILS

1. PERSONS CONTACTED

WCNOC Personnel

*B. Withers, WCNOC President and CEO
-T. Anselmi, Licensing Engineer
*R. Birk, Accreditation Analyst
 D. Fehr, Manager, Operations Training
*J. Gilmore, Supervisor, Operations Training
*G. Gimple, Supervising Instructor
*K. Hughes, Supervisor, Training Development
 W. Lincoln, Trainer
*B. McKinney, Manager, Training
 M. Mitchell, Licensed Instructor
*B. Norton, Manager, Technical Support
*D. Parks, Supervisor, Corporate Training
*K. Petersen, Senior Training Engineer
*E. Peterson, Supervisor QA Audits
*G. Riles, Education Coordinator
 G. Smith, Supervising Instructor
 S. Sublette, Development Specialist
*J. Weeks, Manager, Operations
*S. Wideman, Supervisor, Licensing
*M. Williams, Instructor
*J. Zell, Supervisor, Design Basis

NRC Personnel

*G. Pick, Senior Resident Inspector

*Denotes those personnel attending the exit meeting.

2. TRAINING AND QUALIFICATION EFFECTIVENESS (41500)

The licensee's training activities were inspected using NRC Inspection Procedure 41500, "Training and Qualification Effectiveness", and applicable portions of the guidance in NUREG-1220, "Training Review Criteria and Procedures." In evaluating the licensee's training program, emphasis was directed toward the program for training the technical staff and managers. The following observations and findings for the technical staff and manager training program are focused around the five generally recognized fundamental elements of the systematic approach to training concept alluded to in Nuclear Regulatory Commission Policy Statement PS-PR-24, "Training and Qualification of Nuclear Power Plant Personnel," amended November 18, 1988.

2.1 Technical Staff and Manager Job/Task Analysis

The inspector reviewed the licensee's development and maintenance of the task list or matrix for the technical staff supervisory and training program. This matrix resided in a document referred to as WCNOC-13, "Professional/ Supervisory Training Matrix," Revision 11, and was controlled by the training manager. The inspector determined that a procedure for controlling revision to the matrix had been created and correctly implemented.

The purpose of the matrix was to identify the technical and supervisory training that was to be administered to specific licensee personnel. The horizontal axis of the matrix identified 12 classroom technical and supervisory sessions that were to be administered to facility personnel. The vertical axis listed employee positions that were required to participate in the program either to some degree or totally. There were approximately 235 positions on the vertical axis. Of the 12 required training sessions, only 6 could be construed as training for the technical staff and included: As Low As Reasonably Achievable (ALARA), Organization and Administration, Pressurized Water Systems Overview, QA Program Introduction, Introduction to Operations, and Codes, Standards, and Regulations. The remaining 6 required sessions were non-technical and covered either supervisory, general, or training required in other training programs. These sessions were considered to be outside the scope of this inspection and were not reviewed. Examples of this type of training was the requirement for all personnel granted unescorted site access to be trained in employee behavior reliability and, training in the areas of equal employment opportunity (EEO), basics of supervision, and industrial safety.

The inspector reviewed the industry guidance for the acceptable content of the technical staff and manager training programs. In a comparison of the guidance to the licensee's program, the inspector determined that the licensee had developed a program with sufficient scope and content.

2.2 Development of Training Program Learning Objectives

The inspector reviewed learning objectives that had been developed by the licensee to support the technical staff and manager training program. These objectives were found in lesson plans that had been developed for program initial training or continuing training, previously administered written examinations, and the computerized training program written item examination bank. The objectives reviewed by the inspector appeared to capture an appropriate level of detail needed to support the training of technical staff personnel. The objectives did not focus on memorization of facts, but did require that the student be able to supply reasons, bases, or conceptual data for factual information that would be given. However, in reviewing lesson plans, the inspector noted that relatively few objectives were listed for the

amount of material administered. In some cases, the objectives were incomplete and did not support important parts of the presentation. For example, the most recent continuing training lesson plan provided information on the ALARA program, but none of the listed objectives were related to this portion of the presentation.

The inspector determined that those learning objectives that were developed were adequate to provide for the appropriate level of training for the technical staff. There was also clear linkage between the task elements (matrix) and the listed learning objectives. However, examples were noted where learning objectives did not support all parts of a presentation. The potential exists that the licensee was not developing a sufficient number of objectives to encompass all the knowledge required of technical staff personnel.

2.3 Training Program Design and Implementation

2.3.1 Program Description and Requirements

The technical staff and manager training program was designed in accordance with WCNOC generic procedures which dictated the design of all licensee training programs. The program had been implemented in accordance with Procedure KGP-1851, "Professional and Supervisory Training Program," Revision 3. Licensee personnel stated that this procedure had been created to implement industry guidance in the development of an accredited technical staff and manager training program.

In addition to the initial training required by the training matrix, Attachment I to the procedure required that technical staff personnel be given continuing training in the areas of ALARA, significant events, plant modifications, and changes to codes, standards, and regulations. The inspector reviewed the most recent continuing training lesson plan and examination.

The inspector determined that the topical areas addressed in this training adequately met the requirements of the procedure as recent plant and industry events, major Wolf Creek design changes and modifications, and ALARA status were addressed in the document.

2.3.2 Training Records

The inspector reviewed five individuals' computerized training records and requested that the licensee retrieve specific archived training attendance records and specific documentation regarding waivers of training that had been granted since 1985. From a review of these records, the inspector determined that technical staff personnel were receiving initial and continuing training in accordance with program requirements.

Procedure KGP-1851 contained specific criteria for a waiver of training that was based on previous experience or position. For example, a QA engineer could have training for codes, standards, and regulations waived, or a member of the

Plant Safety Review Committee could receive a waiver for pressurized water reactor (PWR) systems training.

Further review revealed that some training waivers allowed in the 1985-1987 timeframe were not granted in accordance with the procedure, however, the sampled records indicated that all training waivers allowed since 1988 had met the criteria specified in the procedure.

2.3.3 Implementation of Fundamental Elements

The inspection revealed a disruption in the implementation of the systematic approach to training that related to the implementation of learning objectives. The objectives that were developed appeared to meet the generally accepted standards for objective development, and were linked back to the training analysis phase of development. However, as stated in Section 2.2 of this report, lesson plan objectives were few in number and did not completely match up to the material administered.

The inspector reviewed three recently administered program lesson plans and the written examinations that were given to test the student's knowledge of the training administered. The test questions generated to support the objectives frequently did not match up with the objectives. Typically, an objective stated: Know the purpose for the recently completed modification to remove the RTD Bypass Manifolds from the reactor coolant system. The examination question to support the objective was worded in such a fashion to require the student to describe the actual modification. The inspector noted that lesson plans typically contained information that would enable the student to answer the question, even when the stated objective did not require the particular knowledge sought by the question. This question/objective mismatch appeared frequently within the examinations reviewed. In most cases, the question went beyond the complexity or level of knowledge required to fulfill the objective, but this was not always the case. Therefore, there appeared to be a discontinuity between the objectives developed for the lesson plans and the objective that was satisfied by the test question. The systematic approach to training requires direct and accurate linkage from the analytical phase through objective development, and training implementation to the testing phase. The inspector discussed this weakness with licensee personnel and emphasized an apparent lack of attention to detail in the determination of the specific objectives to be addressed. Licensee personnel acknowledged the inspector's concern.

2.3.4 Training Program Participants

At the beginning of the inspection, the inspector requested the licensee to provide a list of the onsite technical staff. The list that was provided contained 256 names of employees, some of whom were identified as accountants, information specialists, estimators, security investigators, buyers, and cost specialists. In addition, the list contained the names of several operations and training employees required to have a Reactor or Senior Reactor Operator license to perform their duties. The inspector questioned licensee personnel

regarding the scope of the listing of onsite technical staff and the training requirements. Some of the listed positions were not "technical" in nature and the licensed personnel were also required to participate in the accredited licensed operator training (requalification) program.

The inspector reviewed the original version of Procedure KGP-1851, which had been approved in September of 1985 and noted that it defined a technical program curriculum similar to that which was required by the current revision. There was a difference in the area of supervisory or other training that was conducted by the licensee's human resources staff and not considered within the scope of this inspection. Another difference between the original and current program was the definition of affected personnel. The original procedure specified that exempt employees in specific organizations whose duties did not include administrative, clerical, accounting, or security should participate in the "Professional and Supervisory Staff Training Program." The current procedure revision stated that all exempt personnel are to participate in this program.

The inspector reviewed the industry guidance that was used by the licensee to establish the initial program for training technical staff personnel. This guidance urged as an initial step, the identification of personnel, functions, or positions that comprise the facility onsite technical staff.

At the time of the inspection, the licensee was developing a new technical staff training program to be in compliance with new, recently issued industry guidance. The licensee had not yet identified the functions, positions, or individuals that would be subject to the training provided by this program.

As the result of this review, the inspector determined that the licensee had not identified the specific onsite technical staff in order to establish those eligible for training. To followup the licensee's actions in this regard, this issue is identified as an Inspection Followup Item 482/9211-01: Review the new technical staff and manager training program to assure that the licensee has clearly identified positions, functions, or individuals who are required to participate in the program.

2.4 Trainee Performance Evaluation

The inspector reviewed test items that had been developed in support of the licensee's technical staff and manager program. The observed trend was to use a format of multiple-choice questions with four distracters. There were some items with five distracters and a small number of questions were in the true/false format. Most of the items reviewed were considered to have the generally accepted attributes required for a valid test item. The most significant observation in this area was addressed in Section 2.3.3 of this report which discussed the mismatch between learning objectives and test items.

The licensee had constructed a computerized examination question bank in support of the technical staff and manager training program. The bank resided in a PC based system with search and assembly capabilities, and was contained on floppy disks. The bank contained approximately 450 test items that had been entered into the bank after the questions had been developed and administered on approved examinations. Discussions with training department personnel revealed that there were no written procedures for the development or administration of the bank. Also, training management and supervision were unsure whether the bank would continue to be developed or used.

The inspector determined that the testing phase of the technical staff and manager training program was adequate to meet the program needs and requirements. In addition to the weakness discussed in paragraph 2.3.3, the implementation of computer bank control procedures could significantly enhance program performance and consistency.

2.5 Training Program Self-Assessment

Through personnel interviews, the inspector determined that two methods of program self assessment were ongoing:

- Students were given critique sheets to provide feedback on training they had received.

- Instructors performed an analysis of a student's response to each question on examinations in order to assess their presentation and the validity of the examination questions.

In addition to the above, occasionally instructor presentations would be evaluated by supervisory or training development personnel. The inspector noted that the program had not been evaluated or audited by management, QA, or any other company organization or individual.

2.6 Conclusions

The licensee's program for training of technical staff personnel was determined to be providing adequate initial and continuing training. The inspector determined that technical staff personnel performing safety-related duties were being adequately trained under the program. A weakness was identified in the implementation of learning objectives and the linkage between the training and testing phases through the objectives, as described in paragraphs 2.2 and 2.3.3. Another program weakness was the licensee's failure to identify the technical staff by function, position, or individual, noted in paragraph 2.3.4. The inspector noted that the licensee had not performed a self-assessment that could have identified these program weaknesses.

3. STATUS OF LICENSED OPERATOR TRAINING PROGRAM

3.1 Background

The inspector assessed the current condition of the licensed operator requalification program. This program had been previously evaluated as unsatisfactory when the NRC conducted requalification examinations during the period October 23 through November 2, 1990, which resulted in a significant number of examination failures.

Subsequent to the unsatisfactory program evaluation, the licensee performed an assessment to determine the reason for the high examination failure rate. The licensee stated that the root cause for the unsatisfactory examination performance was failure to ensure that adequate human resources were available and appropriately applied to fully support the licensed operator requalification training program. As a result of this assessment, the licensee stated an intention to take the following actions:

- Augment training staffing;
- Undertake crew retraining;
- Increase simulator training;
- Re-initiate training week quizzes and evaluations. (This practice had been stopped prior to the NRC examination);
- Perform crew performance monitoring;
- Initiate management assessment of the licensed operator training program;
- Develop training staffing guidelines;
- Initiate a stress management course for licensed operators;
- Develop a program for instructor development; and
- Verify the performance and completion of the stated corrective action.

A performance-based training inspection was performed in January 1991 (NRC Inspection Report No. 50-482/91-03) to evaluate the licensee's own assessment of problems with the licensed operator training program. This inspection revealed that there had been disruptions in all elements of the systematic approach to the training process as it was applied to the program. The inspectors noted that the disruption was most likely due to the lack of

resources that had been identified by the licensee as the root cause of the unsatisfactory program evaluation. The licensee's intention to increase the amount of simulator training was the only corrective action which had been completed at the conclusion of this inspection.

A followup inspection was performed in August 1991 to assess the licensee's implementation of corrective actions (NRC Inspection Report No. 50-482/91-18). This inspection revealed that the licensee had undertaken the following additional and more complex corrective actions:

- The licensee had devoted full time resources to the development of a plant specific Knowledge and Abilities (K/A) Catalog. This document would provide the task analysis which would serve as the basis for systematic approach to training for initial and continuing training of licensed operators.

- Six full-time contractors had been added to the training staff to augment the depleted training staff. These positions were assigned to develop training material.

- Training technology personnel were brought into the training and material development review process. This group was also assigned responsibility for developing and evaluating training instructors.

- A policy was initiated to require effective communication between the managers of operations and training.

- Plans were being made to provide assessment by shift supervisors, the operations manager, the training manager and, when possible, the QA organization.

- Procedures were being developed to identify licensed operators who exhibited poor or marginal performance either during training or on shift. Corrective action would be tailored to the situation once the problem was identified.

- The training organization was being reorganized to improve efficiency and reduce the workload for program supervision.

At the conclusion of the August 1991 inspection, the inspector determined that most of the initiatives that were begun after the examination failure were either complete or well underway toward completion.

3.2 Current Program Status

During this inspection, the inspector determined that all of the licensee's original initiatives, except the initiation of management assessment, had been completed. In the interim since the last inspection (NRC Inspection Report No. 50-482/91-18), the licensee has undergone a second NRC administered

requalification examination. The pass/fail results improved and the NRC determined that the program was satisfactory.

During this inspection, the inspector interviewed personnel and reviewed records to assess the current status of the program. The efforts to implement the second set of corrective actions were continuing. Full-time resources were still being applied to the development of the K/A catalog, and this effort was about 75 percent complete. A slowdown had occurred due to lack of operations personnel to perform validation of the task analysis. This resulted because of a recent extended plant outage and due to subjecting personnel qualified to perform the validation to increased training and evaluation.

Aside from adding six contractor positions, the training organization had been reorganized to add an additional supervised work group that was responsible for examination development. Additionally, three new training department staff positions have been created. These positions did not have responsibilities in the affected program area but had the potential to lessen the workload of those working in the program area. Personnel interviewed by the inspector stated that these changes along with the currently stable work force had increased and improved collective staff work output.

Several observations indicated improved communications between the operations and training staffs and managers. Starting the week of May 11, 1992, an operations supervisor had been assigned to spend 50 percent of his time working in the training area. The supervisor's training area responsibilities included providing programmatic assessment to the operations and training managers. The operations manager was heavily involved in the simulator performance evaluation that occurred during the training week for a crew. Aside from providing input to simulator scenario and evaluation process validity, he would routinely provide evaluation assistance to the training instructors and supervisors. Typically, training personnel would evaluate the performance of critical tasks associated with the scenario while the training manager would provide evaluation of the crew and individuals in the various competency areas.

The training department had instituted a policy of setting aside two hours per training week to perform training in any area desired by the operations department. The operations manager would decide the subject area and the training department would develop the lesson plan, subject to operations approval. During the current cycle, specialized training had been presented on the clearance (system tag-out) process, background, and development for general operating procedures, and procedural adherence and operability evaluations. The inspector noted the quality of the lesson plans and student handouts for this training to be good.

After the completion of a training week, the shift supervisor of the crew which had just completed the training was required to meet with training department

supervision and management to provide feedback on the training just received. These meetings were attended by operations management when possible. Management and supervisory personnel stated that this practice had proved beneficial in identifying incorrect training material and errant instructors.

During the inspection reported in NRC Inspection Report No. 50-482/91-03, the NRC identified weaknesses in the development of training material, especially classroom lesson plans and student handouts. As a result of this finding, the licensee decided to involve the training development group in the material development phase of the licensed operator requalification program. This group, within the Wolf Creek Training Department, is staffed with training technology expertise. As stated previously, the inspector judged the small sample of new material reviewed to be of good quality.

During the month of October 1991, the WCNOC QA organization performed an audit of the training programs for nuclear station operator, initial operator licensing, and instructor qualification. This audit issued a violation against the initial operator licensing training program for in-use lesson materials found to be deficient in development, content, format, and revision. The audit team also found that training materials from the licensed operator requalification program were being substituted for initial licensing program material by initial operator licensing program instructors. Apparently, the initial operator licensing program instructors perceived the requalification material to be of better quality than the material in their own program. The audit team had no concerns about the quality of the requalification material. They identified the substitution activity as being outside the guidance of a letter of instruction that controlled training material. The inspector noted that the training material used in the licensed operator requalification program had improved. However, the inspector also noted that similar material that was being used in the initial operator licensing program was of lesser quality.

The licensee had developed and implemented new initiatives to improve the conduct and content of the operating crew training week. Each training week required a review of specific systems, specific procedures, plant and industry events, and specialized training determined by operations. For each cycle, the training department would develop a package of training material for the course being taught. At the start of each training week, each operator would be given a notebook containing the course material for that week. The inspector noted the following while reviewing the handout material:

- The package contained the schedule for the week that would be strictly adhered to.

- Each package contained a questionnaire specific to the material that had been administered. Operations managers and supervisors strongly encouraged operators to respond to the questionnaire and identify individual concerns about the training that they had received.

- There were handouts for each scheduled lecture which the operator could review ahead of time.

- The package contained system drawings and diagrams that were larger and clearer than normal reduced size prints.

- The recently completed individual plant examination (probability risk assessment study) results had been integrated into the lesson plans and student handouts for sessions on emergency operating procedures bases. This material contained information on how operator intervention and mitigation affected risk. There were tentative plans to expand this effort into training on the abnormal operating procedures.

The inspector concluded that this new approach of providing improved training material in advance could be effective in improving the training provided to the licensed operators.

The licensee had initiated another activity to improve the performance of operators in the form of a mid-term evaluation. Midway through the current annual program, the licensee had administered a complete requalification examination to all licensed operators. Licensee training personnel stated the purpose of this effort was to capture and analyze data about individual performance in order to identify individual or programmatic problems. There were tentative plans to use this data and analysis in an operator performance trending program. A unique feature of this effort required 100 percent remediation of all individuals. Licensee training personnel stated that as a result of the mid-term evaluations they had identified individuals or groups of individuals with performance problems, and plans were underway to initiate corrective action.

3.3 Conclusions

The licensee had improved the capability to assess and identify problems within the licensed operator requalification program. Assessment of the effectiveness of corrective action implemented after problems are identified is ongoing. There is some indication that the initial operator licensing program is experiencing training material development problems similar to those that were identified in the requalification program.

4. EXIT MEETING

The inspector conducted an exit meeting with the personnel listed in paragraph 1 on May 15, 1992. The inspector discussed the inspection scope and related findings. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspector during this inspection.