WOLF CREEK
NUCLEAR OPERATING CORPORATION

Neil S. "Buzz" Carns
Chairman, President and
Chief Executive Officer

October 10, 1996

WM 96-0112

U. S. Nuclear Regulatory Commission
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Washington, D. C. 20555

Reference: 1) Letter WO 95-0178 dated December 13, 1995, from O. L. Maynard, WCNOC, to the NRC
2) NRC Letter dated August 20, 1996, from J. C. Stone, NRC, to N. S. Carns, WCNOC

Subject: Docket No. 50-482: Response to Request for Additional Information Regarding Electrical Power Systems - D.C. Power Sources and Onsite Power Distribution

Gentlemen:

In Reference 1, Wolf Creek Nuclear Operation Corporation (WCNOC) requested an amendment to the Wolf Creek Generating Station (WCGS) Technical Specifications, to add a third battery charger in each train of the Class 1E portion of the D.C. power system. In Reference 2, the Nuclear Regulatory Commission requested additional information needed for review of the request. WCNOC's proposed response to the request for additional information was discussed with Mr. J. C. Stone, NRC Project Manager, on September 11, 1996. The requested information is provided in the attachment.

If you have any questions or need additional information concerning this matter, please contact me at (316) 364-8831, extension 4100, or Mr. Terry S. Morrill, at extension 8707.

Very truly yours,

Neil S. Carns

NSC/jad

170033

cc: L. J. Callan (NRC), w/a
W. D. Johnson (NRC), w/a
J. F. Ringwald (NRC), w/a
J. C. Stone (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Neil S. Carns, of lawful age, being first duly sworn upon oath says that he is President and Chief Executive Officer of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the content thereof; that he has executed that same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Neil S. Carns
Neil S. Carns
President and
Chief Executive Officer

SUBSCRIBED and sworn to before me this 10th day of October, 1996.

Carolyn E. Long
Notary Public

CAROLYN E. LONG
Notary Public State of Kansas
My Appt. Expires 1-5-99

Expiration Date 1-5-99

Response to Request for Additional Information

In a letter dated August 20, 1996, the NRC requested additional information needed to review the December 13, 1995, request for an amendment to the Wolf Creek Generating Station (WCGS) Technical Specifications. The requested amendment concerns the proposed addition of a third battery charger (swing charger) to each train of the Class 1E 125V D.C. power system. The specific questions from the NRC letter, and Wolf Creek Nuclear Operating Corporation's (WCNOC) responses to each question, are as follows:

Question #1:

"Please explain how this modification meets the requirements of IEEE-308-1974, 'IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations.' Your response should include but not be limited to the following sections of IEEE-308:

a. Section 5.3.1(4), Common Power Supplies. This section allows common power supplies for two or more load groups, provided the consequences of the loss of the common power supply has been evaluated and are acceptable. Explain how this section is met and include a discussion of the consequences of the loss of the common power supply to the load groups under design basis conditions.

b. Section 5.3.4(4), Battery Charger Supply Independence. This section requires the battery charger to have a supply that is independent of other battery chargers. Explain how this section is met with the two chargers connected to the same supply."

Response to Question #1:

The Class 1E, 125 Volt DC system at WCGS consists of two separate redundant load groups with two 125 Volt DC battery chargers in each group. Each load group is powered from an independent, Class 1E, 4160 Volt AC bus (See Figure 1). Each 4160 Volt AC bus provides power to two Class 1E, 480 Volt AC buses. One Class 1E, 125 Volt DC battery charger is powered from each of the Class 1E, 480 Volt AC buses. One Class 1E, 125 Volt DC distribution panel is supplied by each charger.

The proposed swing charger modification will add one spare battery charger to each redundant load group. In the "A" group, the spare charger will be powered from the Class 1E, 480 Volt AC bus, NG01. In the "B" group, the spare charger will be powered from the Class 1E, 480 Volt AC bus, NG04. Output from the spare charger can be connected via transfer switches to either of the two 125 Volt DC distribution panels within the load group. This allows the spare battery charger to be substituted for either of the preferred chargers within the load group.

Under one connection configuration, 480 Volt AC power from one bus will be provided to both 125 Volt DC battery chargers within the same load group. The loss of the 480 Volt AC bus would result in the loss of both chargers within

that load group while in that connection configuration. The redundant load group would be unaffected. This design meets the requirements of paragraphs 5.3.1(4) and 5.3.4(4) of IEEE-308-1974, since the two redundant load groups do not share a common power supply.

Question #2:

"Please explain the controls and protective devices that prohibit the connection of the swing charger to the non-Class 1E bus for all modes of operation at Wolf Creek. Explain the conditions under which the charger would be connected to the non-Class 1E bus."

Response to Question #2:

An AC transfer switch is provided in each redundant load group to allow each spare battery charger to be powered from either a Class 1E or non-Class 1E 480 Volt AC bus. There are three control switches located on the panel face of each AC transfer switch. One is a hand switch which operates the Class 1E circuit breaker to connect the transfer switch to the Class 1E 480 Volt AC bus. The second is a keylock switch which operates the non-Class 1E circuit breaker to connect the transfer switch to the non-Class 1E 480 Volt AC bus. The third is a hand switch which connects the spare battery charger to either the Class 1E or non-Class 1E 480 Volt AC power at the transfer switch.

In order to prevent Class 1E to non-Class 1E separation conflicts, only one power source can be energized at a time. The breaker close circuits are interlocked through isolation relays, located in each AC transfer switch, so that the open breaker cannot be closed unless the other breaker is opened. Each keylock switch has a unique key code to prevent the key for one load group from inadvertently being used to operate the non-Class 1E breaker for the second load group.

Indicator lights on the door of each AC transfer switch show whether the spare charger is connected to the Class 1E or non-Class 1E 480 Volt AC power. No annunciation is provided in the Control Room to show when the non-Class 1E AC power source is selected for a spare charger.

The key for the keylock switch will be administratively controlled by the Control Room to ensure that the non-Class 1E breaker is closed only during load group outages. This will allow the batteries to be charged while Class 1E portions of the AC power system or DC subsystem are isolated for maintenance. The administrative controls will prevent a spare charger, connected to the non-Class 1E 480 Volt AC power, from being used to perform a Class 1E function.

Question #3:

"Please provide a discussion of surveillance procedures to be used to ensure the swing battery charger is capable of meeting the requirements of the technical specifications and IEEE-308. The information sought is what tests are being run to assure the charger is ready to be used as the primary source for maintaining and recharging the batteries. What surveillances would be done daily, quarterly, every 18 months and every 60 months on each of the chargers?"

Response to Question #3:

The swing battery chargers will be subjected to the same testing and preventative maintenance procedures as the preferred chargers. When a swing battery charger is connected into service in place of a preferred charger, the output voltage and current will be checked at least once every 24 hours. In addition, the battery charger surveillances required by Technical Specification Sections 4.8.2.1.a and 4.8.2.2. will be performed at 7 day intervals. Surveillances of Onsite Electrical Power Distribution Systems, including in-service battery chargers, required by Technical Specification Sections 4.8.3.1 and 4.8.3.2, will be performed at least once every 7 days. The battery charger load test required by Technical Specification Section 4.8.2.1.c will be performed at 18 month intervals. Each battery charger will be cleaned and inspected, and the electrolytic capacitors and alarm relays will be tested, every 18 months.

IEEE-308 does not require quarterly or 60-month surveillance testing on chargers, and WCNOC does not currently perform any quarterly or 60-month battery charger surveillance tests.

Question #4:

"FSAR, Section 8.3.2.1.2. states that the capacity of each Class 1E battery charger is based on the largest combined demand of all the steady state loads and the charging capacity to restore the battery from the design minimum charge state (one duty cycle) to the fully charged state within 12 hours (irrespective of the status of the plant during which these demands occur). How will this criteria be met with the new chargers? Will there be direct tests performed to assure that each battery charger is capable of meeting this requirement?"

Response to Question #4:

The 12 hour charging requirement discussed in Updated Safety Analysis Report (USAR) Section 8.3.2.1.2 is a design requirement for the preferred Class 1E battery chargers. The swing battery chargers to be installed are of the same design, and thus have the same capacity and capabilities, as the preferred battery chargers. Therefore, the swing battery chargers will meet the 12 hour charging requirement discussed in the USAR.

Preoperational load and voltage drop tests will be performed on each swing battery charger circuit between the applicable Class 1E 480 Volt AC bus and the applicable Class 1E 125 Volt DC bus. These tests will verify that the

switches and chargers will carry the required loads without overheating, and that no excessive voltage drops will occur. Since the swing batter chargers are of the same design as the preferred chargers and will be functionally tested following installation to verify proper operation, WCNOC does not plan any additional testing of the swing chargers to verify they will meet the 12 hour charging requirement.

Question #5:

"Please explain how physical and electrical separation will be maintained with the 'swing charger' installed."

Response to question #5:

Preferred battery chargers NK21, NK22, NK23 and NK24 are located in Switchboard Rooms 3408, 3410, 3414 and 3404, respectively. Swing battery chargers NK25 and NK26 will be located in ESF Switchgear Rooms 3301 and 3302, respectively. Conduits and cables to the chargers will be installed in accordance with the separation criteria as defined by the WCNOC commitment to Regulatory Guide 1.75 (IEEE 384-1974) as stated in USAR Chapters 3 and 8.

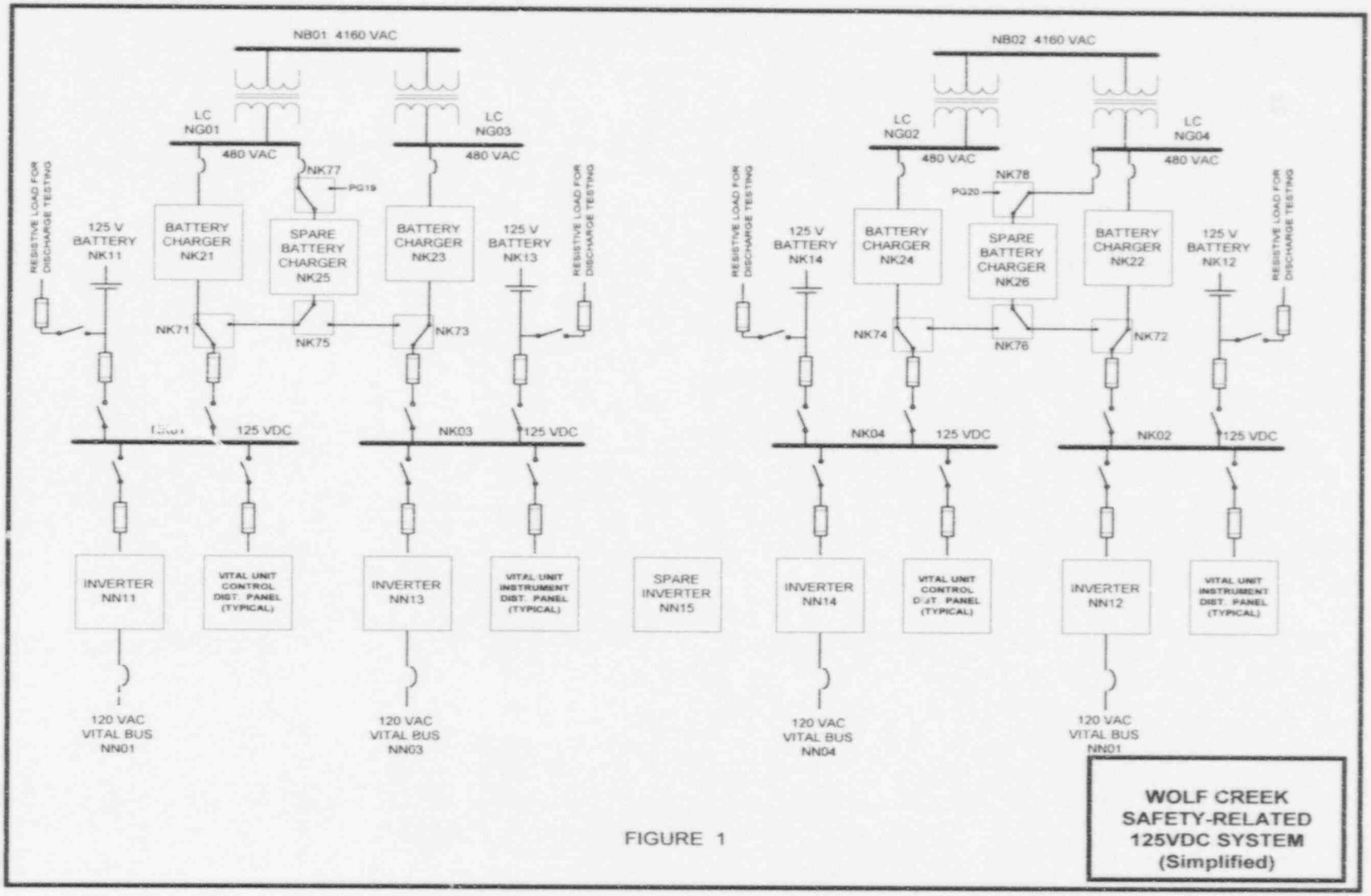
NB01 4160 VAC
NB02 4160 VAC
LC NG01
LC NG03
LC NG02
LC NG04
480 VAC
NK77
PG19
NK78
PG20
RESISTIVE LOAD FOR DISCHARGE TESTING
125 V BATTERY NK11
BATTERY CHARGER NK21
SPARE BATTERY CHARGER NK25
BATTERY CHARGER NK23
125 V BATTERY NK13
125 V BATTERY NK14
BATTERY CHARGER NK24
SPARE BATTERY CHARGER NK26
BATTERY CHARGER NK22
125 V BATTERY NK12
NK71
NK75
NK73
NK74
NK76
NK72
NK01
125 VDC
NK03
NK04
NK02
INVERTER NN11
VITAL UNIT CONTROL DIST. PANEL (TYPICAL)
INVERTER NN13
VITAL UNIT INSTRUMENT DIST. PANEL (TYPICAL)
SPARE INVERTER NN15
INVERTER NN14
VITAL UNIT CONTROL DIST. PANEL (TYPICAL)
INVERTER NN12
VITAL UNIT INSTRUMENT DIST. PANEL (TYPICAL)
120 VAC VITAL BUS NN01
120 VAC VITAL BUS NN03
120 VAC VITAL BUS NN04
120 VAC VITAL BUS NN01
WOLF CREEK SAFETY-RELATED 125VDC SYSTEM (Simplified)

FIGURE 1