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JOSEPH A. TIERNAN  
VICE PRESIDENT  
NUCLEAR ENERGY

June 16, 1988

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318  
Request for Amendment

- REFERENCES:
- (a) Letter from Mr. S. A. McNeil (NRC) to Mr. J. A. Tiernan (BG&E), dated November 3, 1987, Twenty-Four Month Cycle Technical Specification Amendment for Calvert Cliffs Nuclear Power Plants Units 1 and 2
  - (b) Letter from Mr. S. A. McNeil (NRC) to Mr. J. A. Tiernan (BG&E), dated February 9, 1987, Safety Evaluation of the Inadequate Core Cooling System for Calvert Cliffs Units 1 and 2
  - (c) Letter from Mr. C. H. Poindexter (BG&E) to Mr. E. J. Butcher (NRC), dated June 19, 1985, Confirmation of Regulatory Guide 1.97 Implementation Schedule
  - (d) Letter from Mr. J. A. Tiernan (BG&E) to NRC Document Control Desk, dated January 20, 1987, Request for Amendment

Gentlemen:

The Baltimore Gas and Electric Company hereby requests an Amendment to its Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Unit Nos. 1 & 2, respectively, with the submittal of the proposed changes to the Technical Specifications.

CHANGE NO. 1 (BG&E FCR 88-63)

Change pages 3/4 1-10 of the Unit 1 and Unit 2 Technical Specifications as shown on the marked-up pages attached to this transmittal.

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## DISCUSSION

The NRC recently approved numerous Technical Specification changes (Reference a) allowing selected equipment surveillances to be performed during refueling intervals. With the refueling cycle change from 18 to 24 months, these Technical Specifications allow the surveillances to be performed at  $24 \pm 25\%$  months. This is a change over our current refueling definition of 18 months. Therefore, to support the refueling cycle change, a definition of refueling interval needs to be added to Table 1.2 of the Technical Specifications.

This administrative change would add the term "REFUELING INTERVAL" to Table 1.2 and define it to be 24 months. The addition of a new term is preferable to changing the current "R" definition from 18 to 24 months. There are a large number of Technical Specifications which use the "R" designation which have not been approved for the extended cycle. The term "REFUELING INTERVAL" is unique to the recently approved 24-month Technical Specification changes.

## DETERMINATION OF SIGNIFICANT HAZARDS

The change proposed in this request is an administrative change to define the term "REFUELING INTERVAL." The Commission has provided guidance for determining whether a proposed amendment to an operating license for a facility involves a significant hazards consideration and has provided examples of amendments that are not likely to involve a significant hazards consideration (51 FR 7751). Example (i) is as follows: (i) A purely administrative change to Technical Specifications: for example, a change to achieve consistency throughout the Technical Specifications, correction of an error or a change in nomenclature. The proposed amendment is similar to example (i) since it involves definition of a term which has already been approved by a previous license amendment (Reference a).

1. The probability of occurrence or the consequences of previously evaluated accidents are not affected by this change since no change in operating philosophy or operation of existing plant equipment is involved.
2. The possibility of a new or different kind of accident from any accident previously evaluated is not created since no plant modifications are proposed by this change.
3. This change does not reduce the margin of safety since the effect of the change has been approved in a previous license amendment. The previous license amendment (Reference a), addressed the margin of safety associated with a 24-month fuel cycle and found it to be acceptable. This is a purely administrative change which clarifies the meaning of the term "REFUELING INTERVAL" for which any safety issues were resolved in the recently approved license amendment.

CHANGE NO. 2 (BG&E FCR 88-62)

Change pages 3/4 8-10 of the Unit 1 and Unit 2 Technical Specifications as shown on the marked-up pages attached to this transmittal.

DISCUSSION

This proposal would change the battery load profiles in the surveillance for the 125-volt DC Station Batteries and Reserve Battery, as a result of the increased load of the newly installed plant computer. The plant computers are being replaced because of revised regulatory requirements.

The original scope of the plant computer project was to use the existing computer inverters to power the new computers and Data Acquisition Systems (DAS). Since that time, larger processing units and additional disc drives have been required to meet system demands. Because the existing inverters cannot handle the increased load, they are being replaced with larger units. Therefore, we are replacing the 15 KVA computer inverters and associated cable and disconnect switches with 25 KVA models. Due to regulatory commitments, the plant computers are required to be in operation by July 1, 1988. We are requesting approval of this change to our Technical Specifications on or before July 1, 1988.

The battery loadings will increase because of the larger computer and inverter. The new dummy load profile for batteries 12 and 22 is:

First minute  $\geq$  317 Amperes  
Next 1 (2nd) minute  $\geq$  295 Amperes  
Next 117 (3rd-119th) minutes  $\geq$  311 Amperes  
Next 1 (120th) minute  $\geq$  341 Amperes

The new dummy load profile for the Reserve Battery is:

First minute  $\geq$  827 Amperes  
Next 1 (2nd) minute  $\geq$  461 Amperes  
Next 117 (3rd-119th) minutes  $\geq$  311 Amperes  
Next 1 (120th) minute  $\geq$  341 Amperes

Four intervals instead of the current two are being proposed because of refinements in the load calculation.

A review of the emergency loads supplied by 125-volt DC Batteries 12 and 22 for the design load cycle (two-hour discharge caused by a LOCI on Unit 1 and simultaneous undervoltage on Units 1 and 2) has also been conducted. The updated design load cycle is determined to be greater than the simulated or "dummy" loads currently used for 125-volt Batteries 12 and 22 during the Battery Service Test performed every 18 months. A safety analysis has been completed which verifies the 125-volt DC Batteries 12 and 22 have ample capacity to supply power for the updated design load cycle. The batteries have sufficient capacity for this increased two-hour duty cycle even with one cell

out-of-service. The capacity for the new duty cycle for Batteries 12 and 22 is 129%. The capacity for the Reserve Battery is 105%. When Calvert Cliffs was originally licensed, Batteries 12 and 22 were rated at 1350 Amp-Hours. Between 1982 and 1986, these batteries were upgraded to a rating of 1950 Amp-Hours. The Reserve Battery was added in 1979 with a rating of 1500 Amp-Hours.

To meet plant commitments, the installation of the new plant computer for Unit 2 is in progress. However, inverter loading will be administratively limited to keep DC input to acceptable levels until this proposed change to the Technical Specifications is approved to ensure compliance with the existing Surveillance Requirements.

#### DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

##### Justification:

The computer inverters are normally powered from batteries 12 and 22. During maintenance or emergencies, they can also be powered from the Reserve Battery. Since the new inverters represent an increased load on the batteries and associated systems, the following areas have been reviewed to insure safety margins are maintained:

- o Battery capacity
- o Battery charger capacity
- o Emergency diesel generator capacity
- o Cable size and length for allowable voltage drop
- o Fuse selection for proper clearing of electrical faults
- o HVAC capacity in the cable spreading room
- o Cable spreading room floor load

This review has determined adequate capacity exists for all design basis events.

The new installation will meet all required design criteria and the additional load has been analyzed and determined acceptable. The change in battery load is not significant in comparison to the battery capacity. The proposed change to the surveillance program in the Technical Specifications would continue to assure the capability of the 125-volt DC Batteries to provide the designed emergency power. This change would make the surveillance more stringent and, therefore, the probability or consequences of an accident previously evaluated would not be increased.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

Justification:

The existing design function and the operation of the plant computer and DAS will remain unchanged. All FSAR design criteria will be met. The station batteries will be able to provide the necessary power for two hours after a loss of AC power. The design of the inverter system is essentially unchanged. This is not a change to the surveillance test. The test procedure will only be changed to require a new and more stringent discharge capacity. Therefore, no new or different accidents will be created. A sketch of the modification both before and after is attached.

- (iii) involve a significant reduction in a margin of safety.

Justification:

The 15 KVA computer inverters are being replaced with 25 KVA models. This is necessary to handle the additional load required by the new plant computer and DAS. This additional load will require a greater discharge from batteries 12, 22 and possibly the Reserve Battery in case of a loss of AC power. However, the No. 12 and 22 Battery capacity for the new duty cycle is 129% of what is required. The Reserve Battery capacity for the new duty cycle is 105% of the required. A significant amount of reserve capacity beyond what is required is still available.

The new duty cycle for batteries 12, 22, and the reserve will meet the anticipated breaker operations required during an accident on one unit and a simultaneous loss of offsite power on both units with a load consisting primarily of emergency Control Room lighting, vital bus inverters and DC-operated controls and instruments. This assumes a single failure of an onsite AC source. With the new inverters the batteries will provide ample power for two hours of operation following a loss of AC power.

The safety function of the batteries will not be impaired. The revised load cycle test represents a more rigorous surveillance that increases the confidence that the 125 VDC vital batteries will perform as required. The proposed change creates a more stringent Surveillance Requirement. This proposed change does not conflict with the requirements and assumptions of 10 CFR 50 Appendix A, Criterion 17, or Technical Specification Bases 3/4.8. This change would actually make the surveillance more stringent and, therefore, the margin of safety will not be reduced.

CHANGE NO. 3 (BG&E FCR 88-63)

Change pages 3/4 3-41, 42 of the Unit 1 and Unit 2 Technical Specifications as shown on the marked-up pages attached to this transmittal.

BACKGROUND

The Subcooled Margin Monitor, the Heated Junction Thermocouple, and the Core Exit Thermocouple (CET) comprise the Inadequate Core Cooling (ICC) instrumentation required by Item II.F.2 of NUREG-0737. The function of the ICC instrumentation is to enhance the ability of the Reactor Operator to diagnose the approach to, and recovery from, ICC. Additionally, they aid in tracking reactor coolant inventory. These instruments are to be included in the Technical Specifications at the request of Generic Letter 83-37. These are not required to be OPERABLE by the FSAR accident analysis or to bring the plant to HOT STANDBY or COLD SHUTDOWN.

As a result of the Three Mile Island Unit 2 incident, the NRC has specifically identified the CETs as a primary component to be monitored along with other plant parameters as part of the ICC instrumentation. The function of the CETs has, therefore, been upgraded and expanded to a safety-related status for use as a diagnostic aid during fast transients, natural circulation or primary loop isolation scenarios.

The ICC CET requirements are stipulated in NUREG-0737, Item II.F.2, including Attachment 1 and Regulatory Guide 1.97. As noted in the NUREG-0737 requirements, reference is made to primary and backup CET systems. The primary system is defined as the non-safety related Main Plant Computer based system in conjunction with the Safety Parameter Display System. The CET system modifications which were performed meet the requirements for the safety-related CET backup system. This ensures that the CET data remains available to the Main Plant Computer. The CET system design has been previously submitted by BG&E and approved by the NRC (Reference b).

DISCUSSION

As requested in Generic Letter 83-37, Technical Specifications have been submitted for the Subcooled Margin Monitor and the Heated Junction Thermocouple. This submittal provides the Operability and Surveillance Requirements for the CET. These requirements are based on the fact that the CETs comprise only one part of the ICC instrumentation. The ICC function is designed to be met with less than all three systems OPERABLE and the substitution of non-safety related equipment or alternate means of determining ICC. As mentioned above, this ICC system, including the CETs, does not perform any safety-related functions and is not credited in the FSAR accident analyses. Its only function is to provide information on the adequacy of core cooling.

Generic Letter 83-37 provided typical Technical Specifications which the NRC would find acceptable. The Generic Letter did not preclude alternative requirements and was not meant to be used as a basis for finding different existing ACTION STATEMENTS unacceptable. Calvert Cliffs Technical Specifications were previously issued and found acceptable recognizing only the minimum channels OPERABLE for the accident

instrumentation and with a 30-day requirement to restore an inoperable channel. We propose to maintain these requirements for the CETs in order to maintain consistency with this and other accident instrumentation of equal or greater importance.

A footnote was added to the operability requirement for the interim period before all CETs are upgraded with qualified connectors. This footnote states that an unqualified connector may be used to replace a failed, qualified connector until all CETs have qualified connectors. We had previously identified to the NRC (Reference c) that the replacement schedule for Incore Instrumentation strings, which include one CET and four rhodium self-powered neutron detectors (SPNDs), is set by the failure or depletion of the SPNDs, or other situations that render a string unusable for nuclear monitoring. We also committed to provide for at least four qualified CETs per core quadrant by the end of the Unit 1 cycle 10 refueling outage. At that time, the system for both units is considered OPERABLE. The qualified connectors were installed on 26 CETs during the Unit 2 Cycle 8 refueling outage, thus meeting the operability requirements outlined in Reference (c). Twenty-three qualified connectors are scheduled to be installed during the Unit 1 Cycle 10 refueling outage, which allows Unit 1 to also meet the operability requirements.

Surveillance Requirements are also being added to the Technical Specifications to address the CET system. These Surveillance Requirements are the same as those for the other accident instrumentation. Monthly channel checks would be performed and the channel calibrations would be done on an 18-month cycle. A footnote is added to the calibration requirement for the CET system. This footnote states the calibration will exempt the CET but includes all electronic components. The CET shall be calibrated prior to installation in the reactor core. Due to the design and construction of thermocouples, their calibration is inappropriate. For CETs, calibration is further complicated by their radiological inaccessibility. In addition, the instrument "drift" associated with thermocouples is relatively small and would not impede the ability to detect ICC. Frequent monitoring of CETs would identify suspect thermocouples which would be further investigated by maintenance groups. Any future changes to this schedule will most likely be addressed as part of a change to Table 4.3-10, for all post-accident instrumentation.

#### DETERMINATION OF SIGNIFICANT HAZARDS

The Commission has provided guidance for determining whether a proposed amendment to an operating license for a facility involves a significant hazards consideration and has provided examples of amendments that are not likely to involve a significant hazards consideration (51 FR 7751). Example (ii) is as follows: (ii) a change that constitutes an additional limitation, restriction, or control not presently included in the Technical Specifications; for example, a more stringent Surveillance Requirement. The proposed amendment is similar to example (ii) since it involved addition of an accident instrumentation system not previously included in the Technical Specifications.

1. The probability of occurrence of the consequences of previously evaluated accidents are not affected by this change since the change creates more restrictive Operational and Surveillance Requirements for a system whose design has been previously approved by the NRC (Reference b).

2. The possibility of a new or different kind of accident from any accident previously evaluated is not created by this change, since the change adds more requirements to the Technical Specifications for the operation and surveillance associated with the accident instrumentation. Additionally, this instrumentation is merely an upgrade of the existing equipment and does not introduce a change to the current plant operational philosophy or equipment assumed to operate in the plant safety analysis.
3. This change does not reduce the margin of safety since the change is placing additional restrictions on the operation and surveillance of the CET system. The CET system has been previously approved by the NRC (Reference b). This instrumentation has the same operability and Surveillance Requirements as the other accident instrumentation in order to maintain consistency between instrumentation of equal importance.

The application for amendment involves proposed changes that are encompassed by the criteria or an example which involves no significant hazard considerations.

#### CHANGE NO. 4 (BG&E FCR 88-71)

Change page 3/4 6-10 of the Unit 1 and Unit 2 Technical Specifications as shown on the marked-up pages attached to this transmittal.

#### DISCUSSION

This change adds the exclusion of valves that are locked, sealed, or otherwise secured in position to the Surveillance Requirement to verify the flow path of the Containment Spray System. These type valves are already excluded in the flow path verification Surveillance Requirements of the Emergency Core Cooling System, Component Cooling Water System, Service Water System, and Salt Water System. This change makes all of these Technical Specifications consistent in their consideration of such valves. Standard Technical Specifications for Westinghouse, General Electric, and Babcock Wilcox designs have this exclusion in their similar containment spray Surveillance Requirements.

#### DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated;

This change is administrative and does not affect those accidents evaluated in the Updated Final Safety Analysis Report (FSAR). The requirement to verify locked, sealed, or otherwise secured in position

valves is not necessary because the chance that they will be taken out of this condition inadvertently is very small and if they are deliberately taken out of this condition the Surveillance Requirement becomes applicable and they will be checked.

- or (ii) create the possibility of a new or different type of accident from any accident previously evaluated;

No new or different kinds of accident from those previously evaluated in the Updated FSAR are created by this change. No equipment changes or changes in operating philosophy are involved.

- or (iii) involve a significant reduction in a margin of safety.

Valves affected by this change are locked, sealed, or otherwise secured in position. Although this change will remove the requirement that they be verified, the very fact that they are locked, sealed, or otherwise secured in position makes this verification requirement unnecessary. The probability of inadvertent operation of these valves is nearly non-existent, and if any of these valves is deliberately taken out of its locked, sealed or otherwise secured condition, the Surveillance Requirement will apply and the valve will require checking if not put back into its locked, sealed, or otherwise secured condition.

**CHANGE NO. 5** (BG&E FCR 86-208, Supplement 1)

Change pages 3/4 7-60 of the Unit 1 and Unit 2 Technical Specifications as shown on the marked-up pages attached to this transmittal.

**DISCUSSION**

Reference (d) requested an amendment to Surveillance Requirement 4.7.11.1.2.c.1 which partially demonstrates the operability of the fire pumps diesel engine. Our NRC Project Manager requested a resubmittal with additional supporting information. The following discussion provides that information.

The current Technical Specification requires us "at least once per 18 months, during shutdown," to demonstrate the operability of the fire pump diesel engine by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service, and
2. Verifying the diesel starts from ambient conditions on the auto-start signal and operates for  $\geq 20$  minutes while loaded with the fire pump.

We propose to delete the requirement to do this surveillance testing "during shutdown." These tests could and should be performed during **MODE 1** operation. Due to an administrative oversight on our part, we recently recognized that we cannot literally meet that requirement without a dual plant outage. In addition, we believe that safety would be enhanced by removing the fire pump from service during **MODE 1** operation rather than during a maintenance-intensive outage. Furthermore, requiring a plant shutdown at an 18-month frequency would conflict with our 24-month fuel cycle. A dual plant outage is rarely planned. For these reasons, we feel the current requirement is impractical and should be changed as proposed.

### Justification

The fire main distribution system at Calvert Cliffs is common to both Units 1 and 2. Fire fighting water is stored in two 300,000 gallon pretreated water storage tanks. The pretreated water tanks supply the fire pump suction through piping (insulated and heat-traced) that runs along the ground from the tanks to the fire pump house. The piping enters the fire pump house where it supplies water through a common header to the suction of two identical fire pumps. One of these 2500 gpm pumps is electrically driven, the other driven by a diesel engine. The fire pumps discharge into a common discharge header.

Piped in parallel with the diesel-driven and electrically-driven pumps is the main pressurizer pump, commonly referred to as the "jockey" pump. The "jockey" pump automatically starts and stops as necessary to maintain system static pressure between 115 and 125 psig. The electrically-driven fire pump, followed by the diesel-driven pump, automatically starts on decreasing fire system pressure. The diesel and electric pumps normally do not operate. System pressure is maintained by the cycling of the "jockey" pump to make up for system leakage.

Additionally, the fire main distribution system has the capability to place back-up fire pumps on the system to establish the necessary redundancy during periods of extended maintenance on any of the primary fire equipment. The two back-up pumps, one electrically driven and one diesel driven, are each rated at 1500 gpm. They are both placed in-service when any of the primary pumps are taken out-of-service. Administrative controls ensure that preventive maintenance is not simultaneously performed on both the primary and back-up pumps. The flow from one back-up pump can meet the design flow requirements.

As can be seen from our common fire main distribution, literal compliance with Surveillance Requirement 4.7.11.1.2.c would require a dual plant outage. We believe that the words "during shutdown" were inadvertently included in our original submittal for Fire Protection Technical Specifications.

From a safety standpoint, performance of the Surveillance Requirement during plant operation (**MODE 1**) would be more logical than during shutdown. In an outage, a significant amount of preventive and corrective maintenance is being performed. A great deal of electrical work, electronic testing, welding, etc. goes on. These type of activities increase the likelihood of a fire being started. During **MODE 1** operation, maintenance activities are minimized. We suggest that the surveillances be performed at a time when the probability of a fire is lowest so that a maximum number of fire pumps can be available.

### DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Justification:

The proposal to modify Technical Specification Surveillance Requirement 4.7.11.1.2.c affects only the diesel-driven fire pump. An electrically driven fire pump is not affected and will still be available along with two back-up pumps. The surveillances will be performed during plant operation when the likelihood of a fire is reduced. Due to the nature of outage maintenance activities, the probability of a fire is greater during shutdown. The frequency of the surveillance will not be changed, only the required plant condition. Hence, the probability or consequence of previously evaluated accidents would not be significantly increased.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

Justification:

This proposed change does not create the possibility of any new or different accidents as no plant modifications or changes in system operation or surveillance testing, other than plant **MODE**, shall be made.

- (iii) involve a significant reduction in a margin of safety.

Justification

Changing the required plant condition or **MODE** of operation for these surveillances does not involve a reduction in any margin of safety. The likelihood of a plant fire during unit operation is much smaller than during outage work periods. Thus, by permitting the surveillance activities during plant operation rather than a plant shutdown, a margin of safety will not be reduced.

### SAFETY COMMITTEE REVIEW

These proposed changes to the Technical Specifications and our determination of significant hazards have been reviewed by our Plant Operations and Off-Site Safety Review Committees, and they have concluded that implementation of these changes will not result in an undue risk to the health and safety of the public.

**FEE DETERMINATION**

Pursuant to 10 CFR 170.21, we are including BG&E Check No. 1232043 in the amount of \$150.00 to the NRC to cover the application fee for this request.

Very truly yours,

*J. A. Tiernan*

STATE OF MARYLAND :

County of Calvert :

TO WIT:

I hereby certify that on the 16th day of June, 1988, before me, the subscriber, a Notary Public of the State of Maryland in and for Calvert County, personally appeared Joseph A. Tiernan, being duly sworn, and states that he is Vice President of the Baltimore Gas and Electric Company, a corporation of the State of Maryland; that he provides the foregoing response for the purposes therein set forth; that the statements made are true and correct to the best of his knowledge, information, and belief; and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal:

Donna L. McCready  
Notary Public

My Commission Expires:

July 1, 1990  
Date

JAT/SRC/DLS/JMO/PSF/dlm

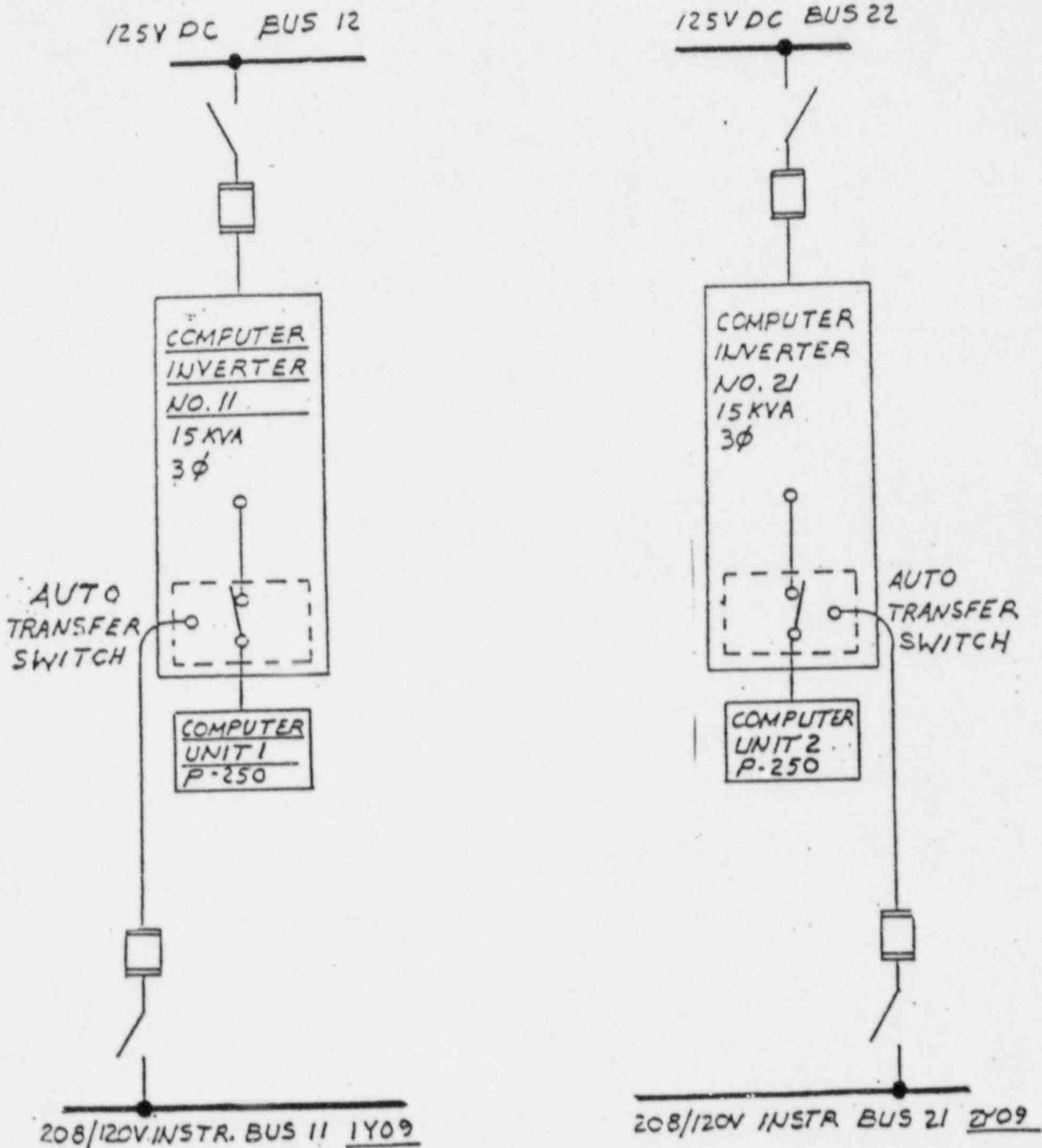
Attachments

cc: D. A. Brune, Esquire  
J. E. Silberg, Esquire  
R. A. Capra, NRC  
S. A. McNeil, NRC  
W. T. Russell, NRC  
D. C. Trimble, NRC  
T. Magette, DNR

ATTACHMENT (1)

Plant Computer Inverter Replacement

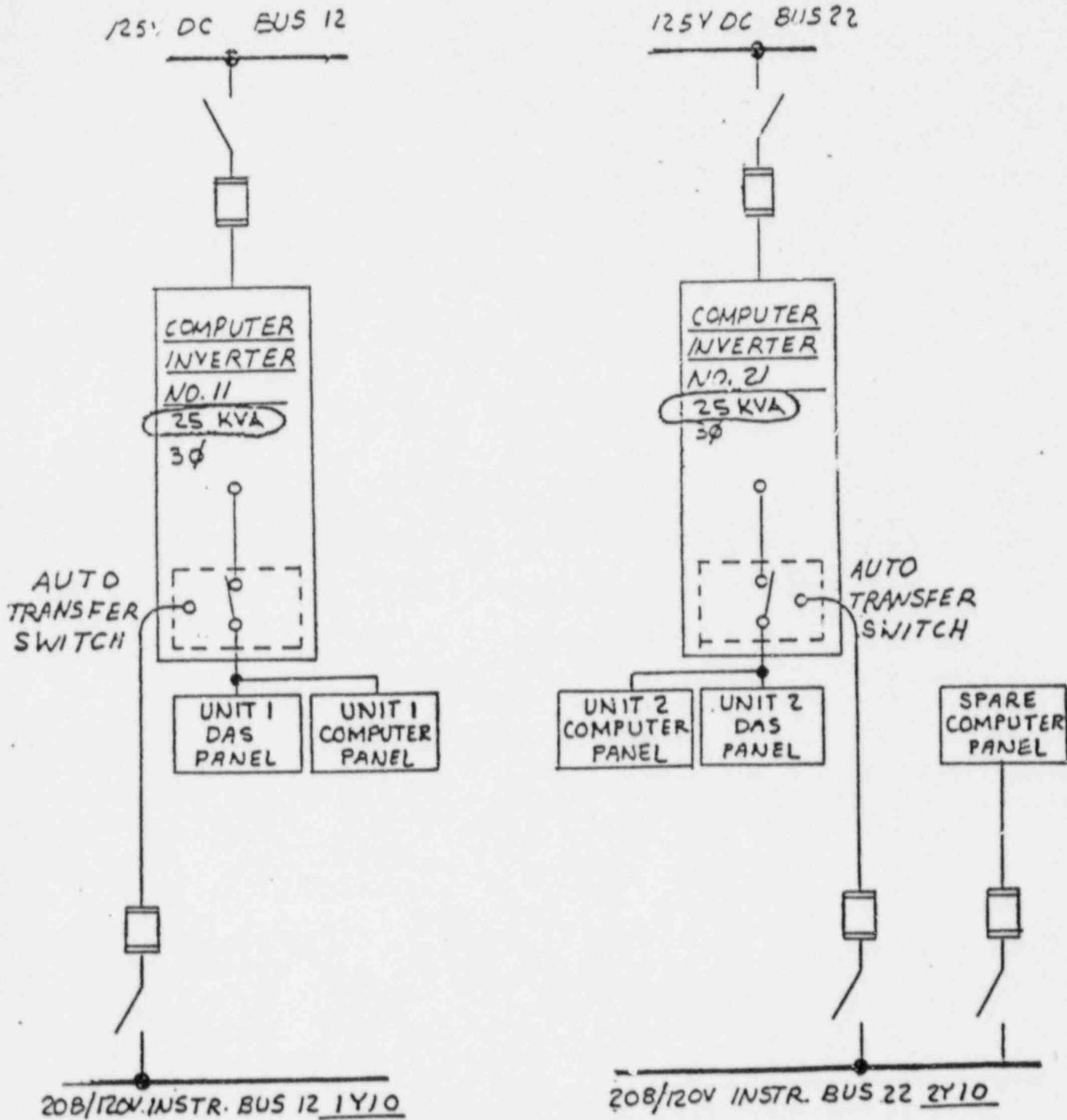
SLD VITAL 120V A.C. & 125V D.C.  
EMERGENCY 250V D.C.  
FSAR FIG. NO. 8-5



BEFORE

ATTACHMENT (1)

Plant Computer Inverter Replacement



AFTER