ATTACHMENT 3

PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS
3.8.1.2, 3.8.1.3, 3.8.2.2, 3.8.3.2 , 3.9.12 AND BASES

ELECTRICAL POWER SYSTEMS

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the Onsite Class 1E Distribution System, and

b. Two[1] standby diesel generators each with a separate fuel tank containing a minimum volume of 60,500 gallons of fuel.

APPLICABILITY: MODE 5 and Mode 6 with water level in the refueling cavity < 23 ft above the reactor pressure vessel flange.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, operations with a potential for draining the reactor vessel or crane operation with loads over the spent fuel pool. Immediately initiate actions to restore the inoperable A.C. electrical power source to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specification 4.8.1.1.2a.3), and 4.8.1.1.3.

4.8.1.2.1 The alternate onsite emergency power source shall be demonstrated functional by:

a. Within 4 hours of taking credit for the onsite emergency power source as a standby diesel generator, verify it starts and achieves steady state voltage (±10%) and frequency (±2%) in 5 minutes.

b. Within 4 hours of taking credit for the onsite emergency power source as a standby diesel generator and every 8 hours thereafter, verify the emergency power source is capable of being aligned to the required ESF bus by performing a breaker alignment check.

[1] An alternate onsite emergency power source, capable of supplying power for one train of shutdown cooling may be substituted for one of the required diesels for 14 [2] consecutive days (SR 4.8.1.2.1 is the only requirement applicable).

[2] 21 consecutive days for 1RE05 and 2RE04 Refueling Outages only.

ELECTRICAL POWER SYSTEMS

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.3 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the Onsite Class 1E Distribution System, and

b. One standby diesel generator with a separate fuel tank containing a minimum volume of 60,500 gallons of fuel.

APPLICABILITY: MODE 6 with water level in the refueling cavity $\geq$ 23 ft above the reactor pressure vessel flange.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, operations with a potential for draining the reactor vessel or crane operation with loads over the spent fuel pool. Immediately initiate actions to restore the inoperable A.C. electrical power source to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.1.3 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specification 4.8.1.1.2a.3), and 4.8.1.1.3.

ELECTRICAL POWER SYSTEMS

D.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8 3.2, "Onsite Power Distribution - Shutdown." ~~As a minimum, Channel I 125 volt Battery Bank E1A11(Unit 1), E2A11 (Unit 2), and Channel IV 125 volt battery bank E1C11 (Unit 1), E2C11 (Unit 2), and their two associated chargers shall be OPERABLE.~~

APPLICABILITY: MODES 5 and 6.

ACTION:

With one or more required DC electrical power subsystems inoperable, immediately declare affected required feature(s) inoperable OR ~~, the required battery banks and/or charger(s) inoperable,~~ immediately initiate action to suspend operations with a potential for draining the reactor vessel, suspend all operations involving CORE ALTERATIONS, positive reactivity changes, or movement of irradiated fuel; initiate corrective action to restore the required DC electrical power subsystems ~~battery banks and/or chargers~~ to OPERABLE status as soon as possible~~, and within 8 hours, depressurize and vent the Reactor Coolant System through a 2.0 square inch vent~~.

SURVEILLANCE REQUIREMENT

4.8.2.2 The ~~above~~ required ~~125 volt battery banks and chargers~~ DC sources shall be demonstrated OPERABLE in accordance with Specification 4.8.2.1.

ELECTRICAL POWER SYSTEMS

ONSITE POWER DISTRIBUTION

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.3.2 The necessary portion of AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.
~~As a minimum, the following electrical busses shall be energized in the specified manner:~~

~~a. Train A and Train C of A.C. ESF busses E1A and E1C (Unit 1), E2A and E2C (Unit 2), each consisting of one 4160-volt ESF bus and two 480 volt A.C. ESF load centers.~~

~~b. Four 120 volt A.C. vital distribution panels consisting of DP001 DP1201 DP002 and DP1204 energized from their associated inverter connected to its respective D.C. bus E1A11 and E1C11 (Unit 1), E2A11 and E2C11 (Unit 2), and~~

c. ~~Channel I and Channel IV 125-volt D.C. busses energized from their associated battery banks E1A11 and E1C11 (Unit 1), E2A11 and E2C11 (Unit 2).~~

APPLICABILITY MODES 5 and 6.

ACTION:

With one or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable, immediately declare associated supported required feature(s) inoperable OR ~~any of the above required~~ electrical ~~busses not energized in the required manner~~, immediately initiate action to suspend operations with a potential for draining the reactor vessel, suspend all operations involving CORE ALTERATIONS, positive reactivity changes, ~~or~~ movement of irradiated fuel, and immediately initiate corrective action to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status and declare associated required residual heat removal subsystem(s) inoperable and not in operation. ~~energize the required electrical busses in the specified manner as soon as possible, and within 8 hours, depressurize and vent the RCS through at least a 2.0 square inch vent.~~

SURVEILLANCE REQUIREMENT

4.8.3.2 ~~The specified busses shall be determined energized in the required manner at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses.~~ Verify correct breaker alignment and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems at least once per 7 days.

REFUELING OPERATIONS

3/4.9.12 FUEL HANDLING BUILDING EXHAUST AIR SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 The FHB Exhaust Air System [1] comprised of the following components shall be OPERABLE:

a. Two ~~independent~~ exhaust air filter trains,

b. Two of Three ~~independent~~ exhaust booster fans,

c. Two of Three ~~independent~~ main exhaust fans, and

d. Associated dampers.

APPLICABILITY: Whenever irradiated fuel is in the spent fuel pool.

ACTION:

a. With less than the above FHB Exhaust Air System components OPERABLE but with at least one FHB exhaust air filter train, ~~two~~ one FHB exhaust booster fan, ~~two~~ one FHB main exhaust fan, and associated dampers OPERABLE, fuel movement within the spent fuel pool or crane operation with loads over the spent fuel pool may proceed provided the OPERABLE FHB Exhaust Air System components are capable of being powered from an OPERABLE emergency power source and are in operation and discharging through at least one train of HEPA filters and charcoal absorbers.

b. With no FHB exhaust air filter train~~, or less than two FHB exhaust booster fan, or less than two FHB main exhaust fan and associated dampers~~ OPERABLE, suspend all operations involving movement of fuel within the spent fuel pool or crane operation with loads over the spent fuel pool ~~until at least one FHB exhaust air filter train, two FHB exhaust booster fan, two main exhaust fan, and associated dampers are restored to OPERABLE status.~~

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required FHB Exhaust Air Systems shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal absorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating with ~~two of the three~~ the operable exhaust booster fans and ~~two of the three~~ the operable main exhaust fans operating to maintain adequate air flow rate;

[1] At least one FHB exhaust air filter train, one FHB exhaust booster fan, and one FHB main exhaust fan are capable of being powered from an OPERABLE onsite emergency power source.

3/4.8 ELECTRICAL POWER SYSTEMS - BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION - BASES

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for: (1) the safe shutdown of the facility, and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix A to 10 CFR Part 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least two redundant sets of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss-of-offsite power and single failure of the other onsite A.C. source. The A.C. and D.C. source allowable out-of service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one standby diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE standby diesel generators as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss-of-offsite power event will not result in a complete loss of safety function of critical systems during the period one of the standby diesel generators is inoperable. The term, verify, as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the Surveillance Requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that: (1) the facility can be maintained in the shutdown or refueling conditions for extended time periods, and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The alternate onsite emergency power source will be capable of being loaded with, but not limited to, one train of the following equipment: RHR, ECW, CCW, associated instrumentation, Control Room Makeup and Cleanup Filtration System and a 150 ton EAB Chiller. This alternate onsite emergency power source will be capable of being started and loaded in sufficient time to prevent the reactor coolant temperature from exceeding design limits.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," Revision 2, December 1979; 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977; and ASTM 0975-81, ASTM D1552-79, ASTM D2622-82, ASTM D4294-83, and ASTM D2276-78. The standby diesel generators auxiliary systems are designed to circulate warm oil and water through the diesel while the diesel is not running, to preclude cold ambient starts. For the purposes of surveillance testing, ambient conditions are considered to be the hot prelube condition.

REFUELING OPERATIONS

BASES

3/4.9.10 and 3/4.9.11 WATER LEVEL - REFUELING CAVITY AND STORAGE POOLS

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

3/4.9.12 FUEL HANDLING BUILDING EXHAUST AIR SYSTEM

The limitations on the Fuel Handling Building Exhaust Air System ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal absorber prior to discharge to the atmosphere. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the absorbers and HEPA filters. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing. This Specification has been modified by a note that states, at least on FHB exhaust air filter train, one FHB exhaust booster fan, and one FHB main exhaust fan are capable of being powered from an Onsite emergency power source. This note ensures that required FHB exhaust train components will have a emergency power source available, even if the limiting conditions for operation can be satisfied. Examples of onsite emergency power sources that satisfy this requirement are: In all MODES/CONDITIONS, (a) OPERABLE ESF diesel generator for the associated required components; IN MODES/CONDITIONS below MODE 4,(b) OPERABLE ESF diesel generator capable of supplying the required components via cross tied trains, allowing one diesel generator to supply all required components. (c) An approved Non-safety related diesel generator, capable of supplying the required filter train loads in conjunction with an ESF diesel.

3/4.9.13 SPENT FUEL POOL MINIMUM BORON CONCENTRATION

The restrictions on the boron concentration of the spent fuel pool ensures that the rack K_{eff} is maintained less than or equal to 0.95 in the event that one or more fuel assemblies are improperly loaded in the spent fuel pool storage racks (with respect to Specification 5.6.). Since the presence of boron is ensured, the rack K_{eff} will be maintained less than or equal to 0.95 in the event of improper loading of fuel assemblies. This boron concentration is more than adequate to ensure the K_{eff} limit of 0.95, specified in Specification 5.6.1.1.a, will not be violated under the following scenarios:

(1) in Region 1, any misloading of Category 1, 2, 3, and 4 assemblies; or,

(2) in Region 2, the misloading of one Category 1 assembly into the center of a fully loaded checkerboard area also containing Category 1 assemblies; or,

(3) the misloading of a Category 1 assembly in a Region 1 rack adjacent to a Category 1 assembly in a Region 2 rack.

This boron concentration limit is the value necessary to ensure that the 0.95 K_{eff} limit for rack criticality will not be violated in the event of a Category 1 assembly dropped in the gap between the pool wall and a Region 2 rack module.

ATTACHMENT 4

ENGINEERING TEST GUIDELINES FOR VENDOR SITE TESTING

Engineering Test Guidelines for the Vendor Site Testing of the Alternate Diesel Generator Unit (NDG)

These guidelines were developed for testing the referenced machine and should be considered typical of the testing to be performed for application of the Alternate Diesel Generator (NDG)

Reference

Specification for Temporary Diesel Generator Unit
Wabash MDG-4 Instruction Manual

I. Specification Requirements

A. Capable of starting and running continuously without the aid of an outside power source.

B. Capable of starting and carrying rated load (both continuous and percent, respectively, of nominal at any given load verload) with ambient air temperatures between 8° F and 105° F.

C. Capable of operating in parallel with an existing 13.8 KVAC, 3-phase power source.

D. Capable of continuous operation at 2000 KW and short term operation at 2200kw.

E. Capable of being started in 15 seconds to rated speed and voltage, and achieving steady state operation within 2 minutes.

G. Capable of starting and accelerating to rated speed the loads listed below in the required sequence without exceeding the voltage and frequency dips and recovery times as follows:

- Load Block 1 - 564 KW
- Load Block 2 - 579 KW
- Load Block 3 - 635 KW
- Load Block 4 - 222 KW

Total - 2000 KW

1. Output voltage and frequency dip shall not exceed 20 percent and 5 percent of rated, respectively.

2. Outage voltage and frequency shall recover to within 10 percent and 2 percent, respectively, of rated in less than 2 seconds.

II. Test Setup

A. Instrumentation
Installed instrumentation will be used when possible.

B. Calibration
All instrumentation used will be within its calibration cycle. Calibration requirements are those as defined by Wabash.

C. Test Environment
Ambient environmental conditions will be recorded.

III. Starting Test

A. Demonstrate ability to start and reached rated voltage and frequency, at least 15 minutes after disconnection from outside AC power source.

B. Demonstrate capability to reach rated speed, voltage and frequency within 15 seconds.

C. Demonstrate the ability to perform five starts and loading to 1000 kw for one hour with no failures.

IV. Load Acceptance Test

A. Demonstrate ability to accept the load blocks 1 thru 4 as defined without exceeding a voltage dip of 20 percent or a frequency dip of 5 percent.

B. Demonstrate the ability to recover voltage and frequency to within 10 percent and 2 percent, respectively, of rated in less than 2 seconds.

C. Demonstrate the ability to accept the largest motor load as reasonable available without exceeding 20 percent of nominal generator terminal voltage and shall recover to 90 percent within 2 seconds.

V. Rated Load Test

A. Demonstrate ability to load to rated loading of 2000 kw until operating parameters are equalized and hold for one hour without exceeding normal operating parameters of both engine and generator.

B. Demonstrate ability to load to rated short time loading and hold for the design time without exceeding normal operating parameters

VI. Load Rejection Test

A. Demonstrate ability to reject full design load without an engine trip.

B. Demonstrate ability to reject reasonable motor loads without exceeding 20 percent of nominal generator terminal voltage and recover to 90 percent within 2 seconds.

VII. Subsystem Tests

A. Keep Warm system

Demonstrate ability to maintain diesel within standby operating parameters.

B. Controls

1. Demonstrate ability to smoothly control voltage and frequency.
2. Demonstrate ability to quickly shut down the diesel in case of an emergency.

C. Trips and Alarms

Demonstrate all trips and alarms are functional.

VIII. Documentation

A. Provide for review the following test records.

1. Normal operating logs taken during load testing.
2. A Pre test and Post test oil sample.
3. Fuel consumption at rated load.

B. Provide for review the following maintenance records.

1. Diesel operating records since last overhaul.
2. Operating time since last overhaul.
3. Lubrication records.

Alternate Diesel Generator Load Blocks

The Alternate Diesel Generator load blocks were originally provided in the Engineering Test Guidelines for the Vendor Site Testing and totaled 2000 KW. The total loading for the Alternate Diesel Generator is shown in Attachment 5 of this letter and is 1926 KW. The difference in the values of 74 KW is due to the different purposes of the two loading tables.

The load blocks from the Engineering Test guidelines were developed as a guide to specify the minimum block load required during Vendor Site testing and conservatively increased the first load block by 74 KW beyond that actually shown in Attachment 5. The testing performed at the vendor's site used block KW loads which equaled or exceeded the values listed in the Engineering Test guidelines.

The Load blocks listed on the Engineering Test Guidelines are the same as those which would be used when the Alternate Diesel Generator is required. Table 1 provides a breakdown of the Load Blocks. Load Block 1 essentially contains all 480 VAC Load Center and Motor Control Center miscellaneous motor and non-motor loads connected to the existing step down transformers. Load Block 1 also includes transformer and cable losses. The remainder of the load Blocks consist of the large pump motors required to support Residual Heat Removal (RHR) operation with the last block loading the RHR pump motor. As these loads are manually loaded by the operator, there can be some variation in loads for each block depending on the Unit Shift Supervisor's requirements.

Table 1
Alternate Diesel Generator Load Blocks

Load Block Number	Load in KW	Description of Load
Block 1	564 KW	Essentially all 480 VAC Load Center and Motor Control Center miscellaneous motor and non-motor (battery charger, electric heaters, etc.)loads connected to existing step down transformers. This value also includes transformer and cable losses. This block also includes Control Room Ventilation equipment (e.g. EAB ESS chiller (150 Ton) and CR fans) (See Note 1)
Block 2	579 KW	Essential Cooling Water (ECW) pump
Block 3	635 KW	Component Cooling Water (CCW) pump
Block 4	222 KW	Residual Heat Removal (RHR) pump
Total	2000 KW	

Note 1: Because of the diversity of the loading in Block 1, the remainder of the Alternate Diesel Generator capacity (74KW) has been considered as part of this load block.

ATTACHMENT 5

ALTERNATE ONSITE EMERGENCY POWER SOURCE LOAD LIST

Alternate Onsite Emergency Power Source Load List

The alternate onsite emergency power source is to be a temporary, non safety related, non-seismically qualified diesel generator (NDG). The NDG will be used as a substitute for a Standby Diesel Generator to power a limited set of loads when offsite power is lost.

The primary scenario for which this unit is required establishes its minimum size. The essential functions to be supported are core cooling. On this basis, the Residual Heat Removal System and its support systems must be powered.

The selection of components to be powered from the NDG shall be at the discretion of the Unit Shift Supervisor. A set of loads to address the minimum shutdown cooling function is provided in Tables A, B and C. In addition to an RHR Pump (per train), the loads include support systems as follows:

- Essential Cooling Water (ECW) Pump and miscellaneous ECW loads - cools Component Cooling Water
- Component Cooling Water (CCW) Pump - cools RHR
- EAB Chiller, Chilled Water Pump and Control Room Fans - cools the Control Room
- Containment Cubicle Exhaust Fan - cools the RHR Pump area
- Battery Charger - powers various DC controls and inverters for needed instrumentation
- Power Distribution Transformers - power miscellaneous AC controls

Manual load management by plant operators can be performed as conditions warrant.

Table A, B and C headings are as follows:

- LOAD NAME - self explanatory and listed by bus, load center or MCC.
- BRKR. - the circuit breaker location on the bus, load center or MCC.
- KW LOAD - the worst case loading (Modes 1 through 4 accidents/events) from Calculation EC-5002, Rev. 4, "Auxiliary Power System Load Study" and applicable change notices.
- NOTES - are listed on the page following Table C.

Upon a Loss of Offsite Power, the NDG will be manually started at the local control panel. The energization of the Engineered Safety Features bus will be performed with the bus unloaded. Once the Engineered Safety Features bus has been energized, loads will be manually connected to the bus.

The NDG is designed for connection to and loading from a dead bus only. In this respect the NDG will operate in the isochronous mode. The recovery of an ESF bus to the normal offsite source, the emergency transformer, or to an SDG will also be a dead bus recovery. The new switchgear Bus 122 will not have the capability to synchronize across any of its breakers.

TABLE A
Train A Required Loads

LOAD NAME	BRKR.	KW LOAD	NOTES
4.16 KV BUS E1A			
CCW PMP	11	634.89	
ECW PMP	7	578.55	
480 V LOAD CENTER E1A1			
EAB CHILLER (150 Ton)	3E	215.00	
480 V LOAD CENTER E1A2			
RHR PMP	4C	222.12	
480 V MCC E1A1			
BATT CHGR A1	C1R	45.00	1,2
PWR DISTR PNL XFMR 170	T3L	5.24	3
CR MAKE-UP FAN	P1	4.55	
CR CLEAN-UP FAN	M1	13.16	
CHILLED WTR PMP	M3	40.20	
480 V MCC E1A2			
PWR DISTR PNL XFMR 270	A4L	8.22	3
CCW PMP CUB FANS	B2	3.92	
CR MIN AIR FAN	S2	20.71	
480 V MCC E1A3			
PWR DISTR PNL XFMR 370	E2L	0.19	3
ECW SCR WASH PMP	B1	8.07	
ECW STRAINER	A2	2.87	
ECW TRAVEL SCREEN	F2	1.45	
ECW BLDG VENT FAN	A1	6.58	
ECW BLDG VENT FAN	B2	6.58	
480 V MCC E1A4			
PWR DISTR PNL XFMR 470	J2R	9.52	
ESS CHILLER RM AHU	D3	2.91	
CRE AHU	K3	31.15	
BATT RM EXH FAN	B3	3.87	
CTMT CUB EXH FAN	E1L	4.10	
SUBTOTAL - LOADS		1,869.45	
ESTIMATED LOSES (3%)		56.08	4
TOTAL NDG LOADS		1,925.53	

TABLE B
Train B Required Loads

LOAD NAME	BRKR.	KW LOAD	NOTES
4.16 KV BUS E1B			
CCW PMP	11	634.89	
ECW PMP	7	578.55	
480 V LOAD CENTER E1B1			
EAB CHILLER (150 Ton)	3F	215.00	
480 V LOAD CENTER E1B2			
RHR PMP	2B	222.12	
480 V MCC E1B1			
BATT CHGR B1	Q2K	45.00	1,2
PWR DISTR PNL XFMR 170	Q1L	4.25	3
CR MAKE-UP FAN	K3	4.55	
CR CLEAN-UP FAN	V3	13.16	
CHILLED WTR PMP	L2	40.20	
480 V MCC E1B2			
PWR DISTR PNL XFMR 270	A2I	9.31	3
CCW PMP CUB FANS	B1	7.92	
480 V MCC E1B3			
PWR DISTR PNL XFMR 370	C3L	0.19	3
ECW SCR WASH PMP	B1	8.67	
ECW STRAINER	A2	2.87	
ECW TRAVEL SCREEN	E2	1.45	
ECW BLDG VENT FAN	AJ	6.58	
ECW BLDG VENT FAN	A3	6.58	
480 V MCC E1B4			
PWR DISTR PNL XFMR 470	B2L	9.86	3
ESS CHILLER RM AHU	A2	2.91	
CRE AHU	K2	31.15	
BATT RM EXH FAN	C4	3.87	
CTMT CUB EXH FAN	B1	4.10	
CR RTN AIR FAN	F3	20.71	
SUBTOTAL - LOADS		1,869.89	
ESTIMATED LOSES (3%)		56.10	4
TOTAL NDG LOADS		1,925.99	

TABLE C
Train C Required Loads

LOAD NAME	BRKR	KW LOAD	NOTES
4.16 KV BUS E1C			
CCW PMP	11	634.89	
ECW PMP	7	578.55	
480 V LOAD CENTER E1C1			
RHR PMP	3D	222.12	
480 V LOAD CENTER E1C2			
EAB CHILLER (150 Ton)	4A	215.00	
480 V MCC E1C1			
BATT CHGR C1	Q2R	45.00	1,2
PWR DISTR PNL XFMR 170	H3	4.25	3
CR MAKE-UP FAN	M2	4.55	
CHILLED WTR PMP	K3	40.20	
480 V MCC E1C2			
PWR DISTR PNL XFMR 270	A4L	9.21	3
CCW PMP CUB FANS	B2	3.92	
480 V MCC E1C3			
PWR DISTR PNL XFMR 370	C3L	0.19	3
ECW SCR WASH PMP	B1	8.67	
ECW STRAINER	A2	2.87	
ECW TRAVEL SCREEN	D2	1.45	
ECW BLDG VENT FAN	A1	6.58	
ECW BLDG VENT FAN	C1	6.58	
480 V MCC E1C4			
PWR DISTR PNL XFMR 470	D1L	9.89	3
ESS CHILLER RM AHU	H3	2.91	
CRE AHU	K2	31.15	
CR RTN AIR FAN	K1	20.71	
CR CLEAN-UP FAN	H2	13.16	
BATT RM EXH FAN	C1	3.87	
CTMT CUB EXH FAN	C3L	4.10	
SUBTOTAL - LOADS		1,869.82	
ESTIMATED LOSES (3%)		56.09	4
TOTAL NDG LOADS		1,925.91	

NOTES FOR TABLES A, B, C

1 Inverter load is included in the battery charger load. Therefore, the AC input to the inverter and voltage regulating transformer are shown as zero. The feeder breakers to these loads will not be tripped

2 Total DC loading per channel is equivalent to no more than one battery charger. Therefore, only one charger load is shown per train (Channel II or D is not required for Train A).

3 Load on these transformers was computed based on the connected load shown on one line drawings.

4 Estimated loses are 3% of SUBTOTAL - LOADS and include transformers, cables, control components and all other electrical loses.

ATTACHMENT 6

ENGINEERING TEST GUIDELINES FOR ONSITE TESTING

POST INSTALLATION SITE TEST GUIDELINES FOR THE ALTERNATE DIESEL GENERATOR UNIT (NDG)

These guidelines were developed for testing the referenced machine and should be considered typical of the testing to be performed for application of the Alternate Diesel Generator (NDG)

References:

- Specification for the Temporary Diesel Generator
- Wabash MDG-4 Instruction Manual

I. Initial Conditions:

A. NDG installed

B. Electrical interconnections (power, protective relay, instrument, and control) properly connected.

C. All NDG support systems (starting batteries, fuel oil, cooling water, keep warm system) lined up to support engine starting and loading.

II. Prerequisites

A. Functional loop-checks on switchgear 12Z protective relaying completed.

B. Schematic verification for power cables, grounding connections, control and instrumentation cables completed.

C. Meggar checks to ground on NDG generator stator windings and connecting cables completed.

D. Fuel oil, cooling, and lube oil levels verified adequate to support engine starting and loading.

E. Resistive load bank and associated step down transformer installed.

F. All automatic protective trip devices supplied with the NDG are verified to be reset.

G. All vendor site testing is complete.

H. Permission to conduct test has been obtained from the Shift Supervisor.

III. Test Guidelines

A. Initial diesel start:

- Initiate a start signal, and verify that the NDG starts and attains rated voltage and frequency
- Demonstrate ability to smoothly control voltage and frequency
- Verify proper phase rotation with respect to the 1K bus.

B. Operate diesel generator unloaded for 5 minutes. Monitor and record engine and generator operating parameters.

C. Close the NDG output breaker and demonstrate the ability to load to 1900 to 2100 KW at a power factor between 0.9 and 1.0 (using a resistive load bank) until engine and generator operating parameters are stabilized.

D. Maintain diesel load at 1900 to 2100 KW at a power factor between 0.9 and 1.0 (using a resistive load bank) for at least 2 hours.

- Monitor and record engine and generator operating parameters.
- Check accessible electrical connections with thermography after approximately 1.5 hours.

E. Unload the NDG and open the output breaker.

- Allow the diesel to run unloaded for at least 2 minutes. Monitor and record engine and generator operating parameters.

F. Shutdown the NDG.

G. Walkdown the NDG and verify no protective relay operations, abnormal leaks, or other unusual indications.

H. Starting system tests (unloaded):

- Demonstrate the ability of the NDG to start and reach rated and voltage and frequency at least 15 minutes after being disconnected from the outside AC power source.

- Demonstrate the capability of the NDG to reach rated voltage and frequency within 15 seconds from the initiation of the start signal

I. Demonstrate the ability of the keep warm system to maintain the NDG within standby parameters.

ATTACHMENT 7

ENGINEERED SAFETY FEATURES BUS CROSS-CONNECT DESCRIPTION

ENGINEERED SAFETY FEATURES BUS CROSS-CONNECT DESCRIPTION

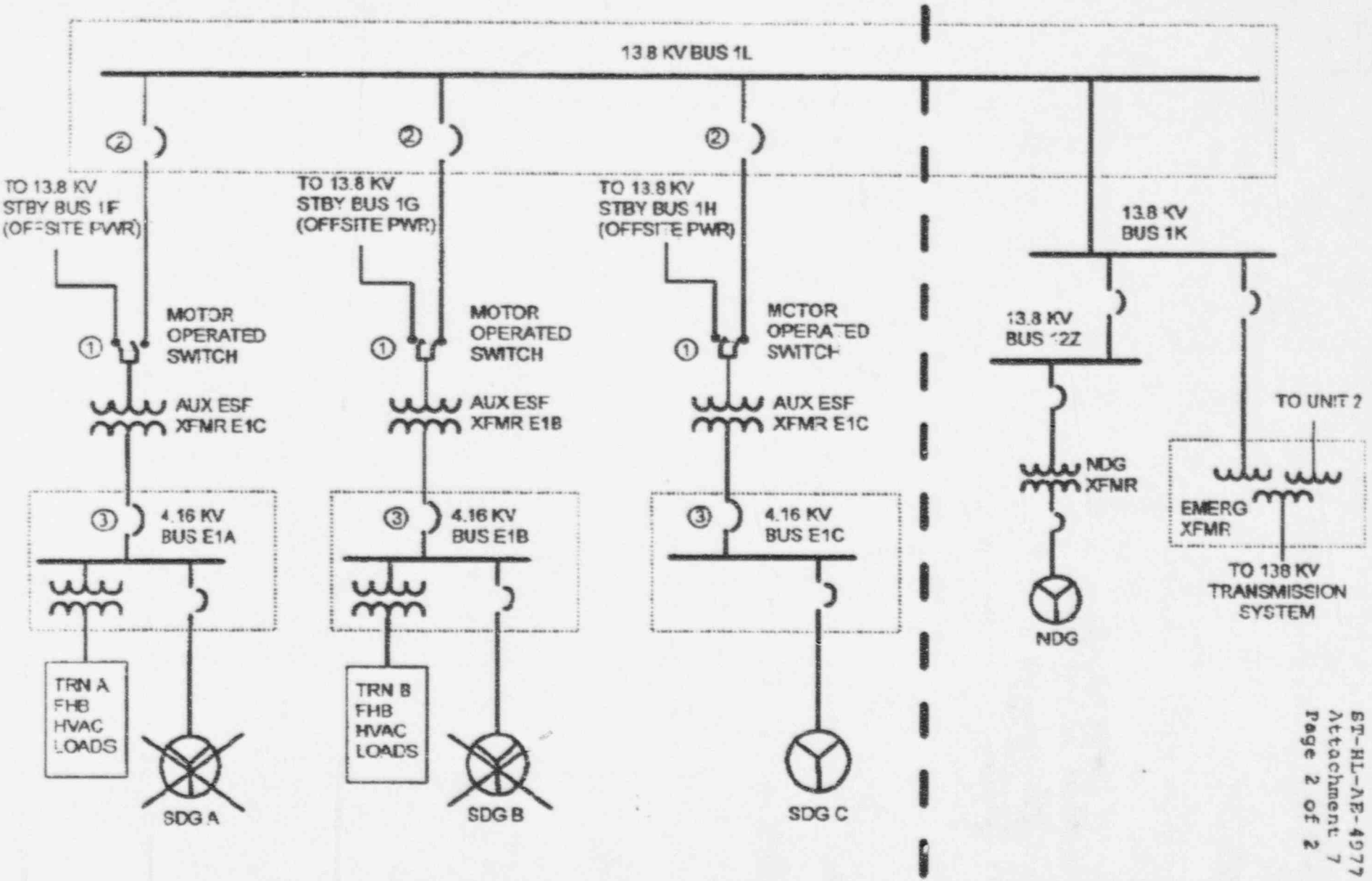
The following describes the steps required to connect one South Texas Project Engineered Safety Features train to another Engineered Safety Features train, via Emergency Bus 1L, any two Auxiliary Engineered Safety Features Transformers, and the associated motor operated switches. This cross-connect scheme would be utilized to provide Standby Diesel Generator-backed power to the Fuel Handling Building HVAC heaters (114 kW per train) should no other preferred offsite power source or SDG-backed source be available. This description summarizes required actions following the postulated loss of AC power to Engineered Safety Features Buses A and B. The initial conditions for this scenario include: (1) SDG A and B are out of service; (2) SDG C is in the standby mode; (3) the NDG is available for service; and (4) Class 1E buses are supplied from offsite power. A loss of offsite power then occurs, followed by a fuel handling accident, the successful start of SDG C, and the successful loading of SDG C.

The specific steps required to cross-connect two Engineered Safety Features buses are detailed in Addendum 12 of STP procedure 0POP04-AE-0001, "Loss of Any 13.8 kV or 4.16 kV Bus". This description, augmented by the attached single line diagram, summarizes the steps for cross-connecting Engineered Safety Features Bus C to Engineered Safety Features Bus B. The cross-connect sequence includes opening the Engineered Safety Features Transformer E1B and E1C Motor Operated Switches (MOS) [#1] from the preferred offsite power source; closing the E1B and E1C MOS units [#1] to the Emergency Bus 1L source; closing the Emergency Bus 1L feeder breakers [#2] to Engineered Safety Features Buses B and C; and closing the Engineered Safety Features Bus B and C normal supply breaker [#3] to each 4.16 kV Engineered Safety Features Bus. Engineered Safety Features Bus B is then energized from the output of SDG C. The FHB HVAC loads may then be manually actuated and energized by SDG C. The NDG may be used to energize either the required safety-related loads (e.g., ECW, CCW, RHR), or the FHB HVAC heaters, in the unlikely event that all three SDGs and/or the Engineered Safety Features Bus cross-connect are unavailable.

This cross-connect scheme was utilized in the docketed South Texas Project position for Station Blackout, as described in the attachment to letter ST-HL-AE-3729 dated April 12, 1989. The NRC reviewed the cross connect scheme, and found it to be acceptable, as documented in Section 2.3.2 of the NRC Safety Evaluation Report for Station Blackout in letter ST-AE HL 92805, dated July 17, 1991.

ESF TRAIN CROSS-CONNECT FROM BUS E1C TO EITHER BUS E1A OR E1B

BUS ALIGNMENT SHOWN FROM E1C TO E1B



ST-HL-AE-4977
Attachment 7
Page 2 of 2

ATTACHMENT 8

REVISED PAGE 6 OF 14 FROM HOUSTON LIGHTING & POWER LETTER ST-HL-AE-4959

TABLE 1-2

IMPACT OF PROPOSED POWER SUPPLY TECHNICAL SPECIFICATION CHANGES ON TWO-TRAIN OR TWO-CHANNEL SAFETY RELATED EQUIPMENT REQUIRED IN MODES 5 AND 6
(Page 6 of 14)

Containment Ventilation Isolation Valves	Current Technical Specification (3.9.9) Requires valves and control channels for each ventilation penetration operable or penetrations must be isolated to continue core alterations or fuel movement, or core alterations and fuel movement must be suspended. Proposed Technical Specification 3.8 Assessment The Normal Containment Ventilation Isolation (CVI) valves are motor operated and one will be required to be closed if Train A and B electrical distribution are not operable. The Supplementary Containment Ventilat on penetrations each have one air operated valve and do not require A.C. power to close. In a loss of all A.C. power, the Instrument Air compressors would be lost and thus the valves would go closed on a loss of air. Operability of CVI actuation logic is not dependent on SDG operability. Channel I (Train A) or III (Train B) power systems (batteries, inverters and chargers) must be operable for the CVI actuation logic system to be considered operable. Consequences of an Accident Isolation system is placed in safe configuration (lines must be isolated or suspend core alterations and fuel movement) prior to the potential for accident occurrence, or accident is prevented by suspension of activities that could lead to an accident. Therefore, there is no change in the consequences of and the potential for accident.
Fuel Handling Building Radiation Monitors	Current Technical Specification (3.3.2) Requires both channels operable, or operation of HVAC system in filtered exhaust mode to move fuel, or suspension of fuel movement. Proposed Technical Specification 3.8 Assessment Operability not dependent on SDG operability. Both current and proposed Technical Specifications 3.8 require Channels I (Train A) & IV (Train C) power system operable. Consequences of an Accident Monitors are battery backed. HVAC system is placed in safe configuration (operate in filtered exhaust mode to move fuel over fuel pool) or fuel movement over fuel pool is suspended prior to accident occurrence. Therefore, there is no change in the consequences of an accident.