ATTACHMENT B-1
Proposed Changes to Technical Specifications for
Byron Station Units 1 and 2

MARKED-UP PAGE FOR PROPOSED CHANGES

REVISED TS PAGE

Page 3.8.5-1

REVISED TS BASES PAGE (INFORMATION ONLY)

Page B 3.8.5-2

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 The following shall be OPERABLE with at least one unit crosstie breaker per division open:

a. One DC electrical power subsystem capable of supplying one division of the onsite Class 1E DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution System - Shutdown"; and

with at least one unit crosstie breaker open

b. One source of DC electrical power, other than that required by LCO 3.8.5.a, capable of supplying the remaining onsite Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10.

---NOTE---
One division may be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable battery charger.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

---NOTE---
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable for reasons other than Condition B.	A.1 Declare affected required feature(s) inoperable. OR	Immediately

(continued)

BASES

LCO

The DC electrical power subsystems with:

a. at least one subsystem consisting of its associated battery and battery charger;

b. when the redundant division of the Class 1E DC electrical power distribution subsystem is required by LCO 3.8.10, the other subsystem consisting of either a battery or a charger or crosstied to the opposite unit; and

c. the corresponding control equipment, and interconnecting cabling within the division(s)

and at least one of the associated crosstie breakers open to maintain independence between units

are required to be OPERABLE to support the required division(s) of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown." This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents). Furthermore, at least one unit crosstie breaker per division is required to be open to maintain independence between the units.

LCO 3.8.5 is modified by a Note which allows one division to be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable charger. No load restrictions are placed on the bus loading, when the one division is crosstied.

LCO 3.8.5.b allows the option to use a battery, a charger, or the crossties to the opposite unit's associated DC bus to maintain power to the redundant Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10. This provision accommodates the required maintenance and/or testing of the shutdown unit's DC electrical power distribution subsystem(s) and continues to maintain the required redundant equipment OPERABLE.

ATTACHMENT B-2
Proposed Changes to Technical Specifications for
Braidwood Station Units 1 and 2

MARKED-UP PAGES FOR PROPOSED CHANGES

REVISED TS PAGE

Page 3.8.5-1

REVISED TS BASES PAGE (INFORMATION ONLY)

Page B 3.8.5-2

MARKED-UP PAGES FOR PROPOSED ADMINISTRATIVE CHANGES

REVISED TS PAGE

Page 3.8.4-2
Page 3.8.4-3
Page 3.8.4-4
Page 3.8.4-5
Page 3.8.4-6
Page 3.8.5-3
Page 3.8.6-4
Page 3.8.9-2

REVISED TS BASES PAGE (INFORMATION ONLY)

Page B 3.8.4-2
Page B 3.8.4-3
Page B 3.8.4-7
Page B 3.8.4-8
Page B 3.8.4-9
Page B 3.8.4-10
Page B 3.8.4-15
Page B 3.8.4-16
Page B 3.8.5-5
Page B 3.8.6-5
Page B 3.8.6-6
Page B 3.8.6-7
Page B 3.8.9-7
Page B 3.8.9-9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem with an inoperable source, while opposite unit is in MODE 5, 6, or defueled.	C.1 --------NOTE-------- Only required when opposite unit has an inoperable battery. ---------- Verify opposite-unit DC bus load ≥ 100 amps for AT&T (≤ 200 amps for C&D).	Once per 12 hours
	AND	
	C.2 Open at least one crosstie breaker between the crosstied divisions.	7 days
D. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem when replacing Unit 2 AT&T batteries while opposite unit is in MODE 1, 2, 3, or 4.	D.1 Open at least one crosstie breaker between the crosstied divisions.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One DC electrical power subsystem inoperable for reasons other than Condition A, B, C or D.	D.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
	OR	
	D.2 NOTE Only applicable when replacing Unit 2 AT&T batteries.	
	Restore DC electrical power subsystem to OPERABLE status.	10 days
E. Required Action and Associated Completion Time not met.	E.1 Be in MODE 3.	6 hours
	AND	
	E.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ~~≥ 130.5 V for AT&T~~ ≥ 127.6 V ~~for C&D~~ on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections, ≤ 1.5E-4 ohm for inter-rack connections, ≤ 1.5E-4 ohm for inter-tier connections, and ≤ 1.5E-4 ohm for terminal connections.	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	18 months
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	18 months
SR 3.8.4.5	Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections, ≤ 1.5E-4 ohm for inter-rack connections, ≤ 1.5E-4 ohm for inter-tier connections, and ≤ 1.5E-4 ohm for terminal connections.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.4.6	Verify each battery charger supplies a load equal to the manufacturer's rating for ≥ 8 hours.	18 months
SR 3.8.4.7	----------NOTES---------- 1. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4 ~~except during replacement of the A1&1 batteries~~. ----------	
	Verify battery capacity is adequate to supply, and maintain OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4 ~~except during replacement of the AT&I batteries~~. --- Verify battery capacity is ~~≥ 95% for AT&I~~ ≥ 80% ~~for C&D~~ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached 85% of the expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 The following shall be OPERABLE with at least one unit crosstie breaker per division open.

a. One DC electrical power subsystem capable of supplying one division of the onsite Class 1E DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution System - Shutdown"; and

with at least one unit crosstie breaker open

b. One source of DC electrical power, other than that required by LCO 3.8.5.a, capable of supplying the remaining onsite Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10.

---NOTE---
One division may be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable battery charger.

APPLICABILITY: MODES 5 and 6.
During movement of irradiated fuel assemblies.

ACTIONS

---NOTE---
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable for reasons other than Condition B.	A.1 Declare affected required feature(s) inoperable. OR	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem with an inoperable source, while opposite unit is in MODE 5, 6, or defueled.	B.1 ---------NOTE-------- Only required when opposite unit has an inoperable battery. ---------- Verify opposite-unit DC bus load is ≤ 100 amps for AT&T (≤ 200 amps for C&D).	Once per 12 hours
	AND	
	B.2 Open at least one crosstie breaker between the crosstied divisions.	7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.5.1 ----------NOTE---------- The following SRs are not required to be performed: SR 3.8.4.6, SR 3.8.4.7, and SR 3.8.4.8. ---------- For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1, SR 3.8.4.2, SR 3.8.4.3, SR 3.8.4.4, SR 3.8.4.5, SR 3.8.4.6, SR 3.8.4.7, SR 3.8.4.8.	In accordance with applicable SRs

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.18 V (AT&T) ≥ 2.13 V (C&D)	≥ 2.18 V[b] (AT&T) ≥ 2.13 V[b] (C&D)	> 2.14 V (AT&T) > 2.07 V (C&D)
Specific Gravity[c][d]	≥ 1.285 (AT&T) ≥ 1.200 (C&D)	≥ 1.280 (AT&T) ≥ 1.195 (C&D) AND Average of all connected cells ≥ 1.290 (AT&T) ≥ 1.205 (C&D)	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ 1.280 (AT&T) ≥ 1.195 (C&D)

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.

(b) Corrected for average electrolyte temperature.

(c) Corrected for electrolyte temperature and level for AT&T. Corrected for electrolyte temperature only for C&D. Level correction is not required, however, when battery charging is ≤ 2 amps for AT&T, ≤ 3 amps for C&D when on float charge.

(d) A battery charging current of ≤ 2 amps for AT&T, ≤ 3 amps for C&D when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
B. One AC instrument bus electrical power distribution subsystem inoperable.	B.1 Restore AC instrument bus electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
C. One DC electrical power distribution subsystem inoperable.	C.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
	OR C.2 ---------NOTE--------- Only applicable when replacing Unit 2 AT&T batteries. ----------	
	Restore DC electrical power distribution subsystem to OPERABLE status.	10 days

(continued)

BASES

BACKGROUND (continued)

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

Each battery was sized based upon supplying the design duty cycle in the event of a loss of offsite AC power concurrent with a Loss Of Coolant Accident (LOCA) and a single failure of a Diesel Generator (DG). Each battery has a nominal rating of (1760 ampere-hours for AT&T 2320 ampere-hours for C&D) at the 8 hour discharge rate to an end voltage of 1.75 volts per cell, and was sized based upon continuously carrying the various estimated loads. The batteries were sized in accordance with IEEE-485-1983 (Ref. 5).

Each 125 VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystem to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems, such as batteries, battery chargers, or distribution panels. While it is possible to interconnect the Unit 1 and Unit 2 DC electrical power subsystems, they normally remain disconnected, except when a DC source must be taken out of service for the purposes of maintenance and/or testing, or in the event of a failure of a DC source.

BASES

BACKGROUND (continued)

The crosstie between 125 VDC ESF buses 111 and 211 and the crosstie between 125 VDC ESF buses 112 and 212 are each provided with two normally locked open, manually operated circuit breakers. No interlocks are provided since the interconnected buses are not redundant. However, if one battery is inoperable, procedural and administrative controls are used to limit the connected load to [100 amps for A/T] [200 amps for C&D] based on not exceeding the OPERABLE battery capacity. These controls ensure that combinations of maintenance and test operations will not preclude the system capabilities to supply power to the ESF DC loads. The provisions of administratively controlled, manually actuated, interconnections between the non-redundant Class 1E DC buses increases the overall reliability and availability of the DC systems for each unit in that it provides a means for manually providing power to a DC bus at a time when it would otherwise have to be out-of-service (e.g., to perform a battery discharge test during an outage, to replace a damaged cell, etc.). Crosstie breaker closed alarms are also provided to alert the operator when the units are crosstied.

Each Division 11 (21) and Division 12 (22) DC electrical power subsystem battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to its fully charged state within 24 hours while supplying normal steady state loads discussed in the UFSAR, Chapter 8 (Ref. 4).

BASES

ACTIONS (continued)

C.1 and C.2

Condition C addresses an operating unit's DC bus that is crosstied to the opposite unit's associated DC bus, which has an inoperable source (i.e., battery or battery charger), when the opposite unit is shutdown. This provision is included to accommodate maintenance and/or testing of the shutdown unit's DC subsystems.

With the shutdown unit's battery inoperable, the operating unit will be required to supply all loads on the shutdown unit's crosstied bus should an event occur on the shutdown unit. Therefore, Required Action C.1 specifies that the possible loading on the shutdown unit's DC bus be verified to be ~~≤ 100 amps for AT&T~~ (≤ 200 amps ~~for C&D~~) once per 12 hours. Limiting the load to ~~100 amps for AT&T~~ (200 amps ~~for C&D~~) ensures that the operating unit's DC subsystem will not be overloaded in the event of a concurrent event on the operating unit. Required Action C.1 is modified by a Note only requiring Required Action C.1 when the opposite unit has an inoperable battery.

Required Action C.2 requires the associated crosstie breaker to be opened within 7 days and ensures that measures are being taken to restore the inoperable battery or battery charger and reestablish independence of the DC subsystems.

BASES

ACTIONS (continued)

D.1

Condition D is only applicable when replacing the Unit 2 AT&T batteries (i.e., old batteries) with the C&D batteries (i.e., new batteries). In order to replace the AT&T batteries, temporary batteries will be connected to the DC bus after the old batteries are disconnected. The temporary batteries will be connected to the DC bus through the same breaker used to connect the old batteries. In order to prevent de-energizing the DC bus while connecting the temporary batteries, the Unit 2 DC bus will be crosstied to Unit 1. Once the existing charger and the temporary batteries are connected to the DC bus, at least one crosstie breaker will be opened. The 8 hour Completion Time allows sufficient time to safely disconnect the old batteries and reconnect the temporary batteries and existing charger to the Unit 2 DC bus. The 8 hour Completion Time also allows sufficient time to safely disconnect the temporary batteries and reconnect the new batteries and existing charger to the Unit 2 DC bus. This Completion Time is acceptable based on compensatory measures to open the DC crosstie breaker during adverse conditions.

E.1 and E.2

Condition D represents one division with a loss of ability to completely respond to an event, and a potential loss of ability for the DC division to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system division.

BASES

ACTIONS (continued)

If one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery or one DC division crosstied to the opposite-unit DC division that does not have an inoperable battery charger), the remaining DC electrical power subsystem has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure would, however, result in the complete loss of the remaining 125 VDC electrical power subsystems with attendant loss of ESF functions, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 8) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

Required Action E.2 is only applicable when replacing the Unit 2 AT&T batteries (i.e., old batteries) with the C&D batteries (i.e., new batteries). In order to replace the AT&T batteries, temporary batteries will be connected to the DC bus after the old batteries are disconnected. The temporary batteries will be the AT&T batteries previously removed on Unit 1. Therefore, the temporary batteries will fulfill the same safety related requirements as the old batteries, and the DC electrical power subsystem will be in accordance with current design basis. However, due to not being seismically mounted, the DC electrical power subsystem will be inoperable during the period when the temporary batteries are installed. The 10 day Completion Time allows sufficient time to safely perform the activities associated with replacing the AT&T batteries with the C&D batteries. The 10 day Completion Time is based on the redundant capabilities afforded by the OPERABLE DC electrical power subsystem and the low probability of an event occurring during this period.

BASES

ACTIONS (continued)

E E

~~B~~.1 and ~~B~~.2

If the inoperable DC electrical power subsystem cannot be restored to OPERABLE status, or the crosstie breaker(s) cannot be opened, within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 8).

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the connected loads and the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. The 7 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 9).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.8

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is described in the Bases for SR 3.8.4.7. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.8, however, only the modified performance discharge test may be used to satisfy SR 3.8.4.8 while satisfying the requirements of SR 3.8.4.7 at the same time.

AT&T Batteries: AT&T battery manufacturer's data indicates that the capacity of the battery actually increases over its service life. The NRC has concurred that the battery meets acceptable operating criteria if it can be shown that battery capacity for the AT&T batteries is at least 95% of the manufacturer's rating when subjected to a performance discharge test every 60 months.

C&D Batteries: The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 9) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 5% for A1&T 10% for C&D relative to its capacity on the previous performance test or when it is ≥ 5% for A1&T 10% for C&D below the manufacturer's rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 9).

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-1978.
4. UFSAR, Section 8.3.2.1.
5. IEEE-485-1983, June 1983.
6. UFSAR, Chapter 6.
7. UFSAR, Chapter 15.
8. Regulatory Guide 1.93, December 1974.
9. IEEE-450-1995.
10. Regulatory Guide 1.32, February 1977.
11. Regulatory Guide 1.129, December 1974.

BASES

LCO

The DC electrical power subsystems with:

a. at least one subsystem consisting of its associated battery and battery chargers;

b. when the redundant division of the Class 1E DC electrical power distribution subsystem is required by LCO 3.8.10, the other subsystem consisting of either a battery or a charger, or crosstied to the opposite unit; and

c. the corresponding control equipment, and interconnecting cabling within the division(s)

and at least one of the associated crosstie breakers open to maintain independence between the units

are required to be OPERABLE to support the required division(s) of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems – Shutdown." This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents). Furthermore, at least one unit crosstie breaker per division is required to be open to maintain independence between the units.

LCO 3.8.5 is modified by a Note which allows one division to be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable charger. No load restrictions are placed on the bus loading, when the one division is crosstied.

LCO 3.8.5.b allows the option to use a battery, a charger, or the crossties to the opposite unit's associated DC bus to maintain power to the redundant Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10. This provision accommodates the required maintenance and/or testing of the shutdown unit's DC electrical power distribution subsystem(s) and continues to maintain the required redundant equipment OPERABLE.

BASES

ACTIONS (continued)

B.1 and B.2

Condition B addresses a shutdown unit's DC bus that is crosstied to the opposite unit's associated DC bus, which has an inoperable source, when the opposite unit is also shutdown. This provision is included to accommodate maintenance and/or testing of the opposite unit's DC subsystems.

With the opposite unit's battery inoperable, the unit-specific DC subsystem will be required to supply all loads on the opposite unit's crosstied bus should an event occur on the opposite unit. Therefore, Required Action B.1 specifies that the possible loading on the opposite unit's DC bus be verified to be ~~≤ 100 amps for AT&T~~ ≤ 200 amps ~~for C&D~~ once per 12 hours. Limiting the load to ~~100 amps for AT&T~~ / 200 amps ~~for C&D~~, ensures that the unit-specific DC subsystem will not be overloaded in the event of a concurrent event on the unit. Required Action B.1 is modified by a Note requiring Required Action B.1 when the opposite unit has an inoperable battery.

Required Action B.2 requires the associated crosstie breaker to be opened within 7 days ensures that measures are being taken to reestablish independence of the DC subsystems.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires application of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.8. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

The SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Table 3.8.6-1

This table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperatures and charge effects. In addition to this allowance, footnote (a) to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided it is not overflowing. These limits ensure that the plates suffer no pnysical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.18 V for AT&T ≥ 2.13 V for C&D per cell. This value is based on the recommendations of IEEE-450 (Ref. 3), which states that prolonged operation of cells < 2.18 V for AT&T < 2.13 V for C&D can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is ≥ 1.285 for AT&T ≥ 1.200 for C&D (0.015 below the manufacturer fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77°F (25°C).

BASES

SURVEILLANCE REQUIREMENTS (continued)

The specific gravity readings are corrected for actual electrolyte temperature and level for AT&T (for actual electrolyte temperature for C&D). For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F.

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. Footnote (b) to Table 3.8.6-1 requires the float voltage correction for average electrolyte temperature. The Category B limit specified for specific gravity for each connected cell is ≥ 1.280 for AT&T) ≥ 1.195 for C&D) (0.020 below the manufacturer fully charged, nominal specific gravity) with the average of all connected cells ≥ 1.290 for AT&T) > 1.205 for C&D) (0.010 below the manufacturer fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that the effects of a highly charged or newly installed cell will not mask overall degradation of the battery.

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Category C limits specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limits for float voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of ~~2.14 V for AT&T~~ 2.07 V ~~for C&D~~, or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit of average specific gravity ~~≥ 1.280 for AT&T~~ ≥ 1.195 ~~for C&D~~ is based on manufacturer recommendations (0.020 below the manufacturer recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery.

The footnotes to Table 3.8.6-1 are applicable to Category A, B, and C specific gravity. Footnote (c) to Table 3.8.6-1 requires the above mentioned correction for electrolyte level and temperature for AT&T (for electrolyte temperature for C&D), with the exception that level correction (for AT&T) is not required when battery charging current is < 2 amps on float charge. This current provides, in general, an indication of overall (AT&T) battery condition.

Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charger current is an acceptable alternative to specific gravity measurement for determining the state of charge. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (d) to Table 3.8.6-1 allows the float charge current to be used as an alternate to specific gravity for up to 7 days following a battery recharge. Within 7 days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than 7 days.

BASES

ACTIONS (continued)

The second Completion Time for Required Action B.1 establishes a limit on the maximum allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the instrument bus distribution system. At this time, an AC bus could again become inoperable, and instrument bus distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

C.1 ~~and C.2~~

With one DC bus inoperable, the remaining DC electrical power distribution subsystem is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the DC bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

BASES

ACTIONS (continued)

The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC bus could again become inoperable, and DC distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

Required Action C.2 is only applicable when replacing the Unit 2 AT&T batteries (i.e., old batteries) with the C&D batteries (i.e., new batteries). In order to replace the AT&T batteries, temporary batteries will be connected to the DC bus after the old batteries are disconnected. The temporary batteries will be the AT&T batteries previously removed on Unit 1. Therefore, the temporary batteries will fulfill the same safety related requirements as the old batteries, and the DC electrical power subsystem will be in accordance with current design basis. However, due to not being seismically mounted, the DC electrical power subsystem will be inoperable during the period when the temporary batteries are installed. The 10 day Completion Time allows sufficient time to safely perform the activities associated with replacing the AT&T batteries with the C&D batteries. The 10 day Completion Time is based on the redundant capabilities afforded by the OPERABLE DC electrical power subsystem and the low probability of an event occurring during this period.

ATTACHMENT B-3
Proposed Changes to Technical Specifications for
Byron Station Units 1 and 2

INCORPORATED PROPOSED CHANGES, TYPED PAGE

REVISED TS PAGE

Page 3.8.5-1

REVISED TS BASES PAGE (INFORMATION ONLY)

Page B 3.8.5-2

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 The following shall be OPERABLE:

a. One DC electrical power subsystem capable of supplying one division of the onsite Class 1E DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution System - Shutdown," with at least one unit crosstie breaker open; and

b. One source of DC electrical power, other than that required by LCO 3.8.5.a, capable of supplying the remaining onsite Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10.

---NOTE---
One division may be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable battery charger.

APPLICABILITY: MODES 5 and 6.
During movement of irradiated fuel assemblies.

ACTIONS

---NOTE---
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable for reasons other than Condition B.	A.1 Declare affected required feature(s) inoperable. OR	Immediately (continued)

BASES

LCO

The DC electrical power subsystems with:

a. at least one subsystem consisting of its associated battery and battery charger and at least one of the associated crosstie breakers open to maintain independence between the units;

b. when the redundant division of the Class 1E DC electrical power distribution subsystem is required by LCO 3.8.10, the other subsystem consisting of a battery, a charger, or crosstied to the opposite unit; and

c. the corresponding control equipment, and interconnecting cabling within the division(s)

are required to be OPERABLE to support the required division(s) of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown." This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

LCO 3.8.5.b allows the option to use a battery, a charger, or the crossties to the opposite unit's associated DC bus to maintain power to the redundant Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10. This provision accommodates the required maintenance and/or testing of the shutdown unit's DC electrical power distribution subsystem(s) and continues to maintain the required redundant equipment OPERABLE.

LCO 3.8.5 is modified by a Note which allows one division to be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable charger. No load restrictions are placed on the bus loading, when the one division is crosstied.

ATTACHMENT B-4
Proposed Changes to Technical Specifications for
Braidwood Station Units 1 and 2

INCORPORATED PROPOSED CHANGES, TYPED PAGES

REVISED TS PAGE

Page 3.8.5-1

REVISED TS BASES PAGE (INFORMATION ONLY)

Page B 3.8.5-2

INCORPORATED PROPOSED ADMINISTRATIVE CHANGES, TYPED PAGES

REVISED TS PAGES

Page 3.8.4-2
Page 3.8.4-3
Page 3.8.4-4
Page 3.8.4-5
Page 3.8.5-3
Page 3.8.6-4
Page 3.8.9-2
Page 3.8.9-3

REVISED TS BASES PAGES (INFORMATION ONLY)

Page B 3.8.4-2
Page B 3.8.4-3
Page B 3.8.4-7
Page B 3.8.4-8
Page B 3.8.4-9
Page B 3.8.4-10
Page B 3.8.4-11
Page B 3.8.4-12
Page B 3.8.4-13
Page B 3.8.4-14
Page B 3.8.5-5
Page B 3.8.6-5
Page B 3.8.6-6
Page B 3.8.6-7
Page B 3.8.9-7
Page B 3.8.9-9
Page B 3.8.9-10

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem with an inoperable source, while opposite unit is in MODE 5, 6, or defueled.	C.1	---------NOTE-------- Only required when opposite unit has an inoperable battery. ----------	
		Verify opposite-unit DC bus load ≤ 200 amps.	Once per 12 hours
	AND		
	C.2	Open at least one crosstie breaker between the crosstied divisions.	7 days
D. One DC electrical power subsystem inoperable for reasons other than Condition A, B, or C.	D.1	Restore DC electrical power subsystem to OPERABLE status.	2 hours
E. Required Action and Associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 127.6 V on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections, ≤ 1.5E-4 ohm for inter-rack connections, ≤ 1.5E-4 ohm for inter-tier connections, and ≤ 1.5E-4 ohm for terminal connections.	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	18 months
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	18 months
SR 3.8.4.5	Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections, ≤ 1.5E-4 ohm for inter-rack connections, ≤ 1.5E-4 ohm for inter-tier connections, and ≤ 1.5E-4 ohm for terminal connections.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.4.6	Verify each battery charger supplies a load equal to the manufacturer's rating for ≥ 8 hours.	18 months
SR 3.8.4.7	----------NOTES---------- 1. The modified performance discharge test in SR 3.8.4 8 may be performed in lieu of the service test in SR 3.8.4.7. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ---------- Verify battery capacity is adequate to supply, and maintain OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ----------	
	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached 85% of the expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources – Shutdown

LCO 3.8.5 The following shall be OPERABLE:

a. One DC electrical power subsystem capable of supplying one division of the onsite Class 1E DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution System – Shutdown," with at least one unit crosstie breaker open; and

b. One source of DC electrical power, other than that required by LCO 3.8.5.a, capable of supplying the remaining onsite Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10.

---NOTE---
One division may be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable battery charger.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

---NOTE---
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable for reasons other than Condition B.	A.1 Declare affected required feature(s) inoperable. OR	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem with an inoperable source, while opposite unit is in MODE 5, 6, or defueled.	B.1 --------NOTE-------- Only required when opposite unit has an inoperable battery. ---------- Verify opposite-unit DC bus load is ≤ 200 amps.	Once per 12 hours
	AND	
	B.2 Open at least one crosstie breaker between the crosstied divisions.	7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	----------NOTE---------- The following SRs are not required to be performed: SR 3.8.4.6, SR 3.8.4.7, and SR 3.8.4.8. ----------	
	For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1, SR 3.8.4.2, SR 3.8.4.3, SR 3.8.4.4, SR 3.8.4.5, SR 3.8.4.6, SR 3.8.4.7, SR 3.8.4.8.	In accordance with applicable SRs

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V[b]	> 2.07 V
Specific Gravity[c][d]	≥ 1.200	≥ 1.195 AND Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ 1.195

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.
(b) Corrected for average electrolyte temperature.
(c) Corrected for electrolyte temperature.
(d) A battery charging current of < 3 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1	Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
B. One AC instrument bus electrical power distribution subsystem inoperable.	B.1	Restore AC instrument bus electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
C. One DC electrical power distribution subsystem inoperable.	C.1	Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two electrical power distribution subsystems inoperable that result in a loss of safety function.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to AC, DC, and AC instrument bus electrical power distribution subsystems.	7 days

BASES

BACKGROUND (continued)

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

Each battery was sized based upon supplying the design duty cycle in the event of a loss of offsite AC power concurrent with a Loss Of Coolant Accident (LOCA) and a single failure of a Diesel Generator (DG). Each battery has a nominal rating of 2320 ampere-hours at the 8 hour discharge rate to an end voltage of 1.75 volts per cell, and was sized based upon continuously carrying the various estimated loads. The batteries were sized in accordance with IEEE-485-1983 (Ref. 5).

Each 125 VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystem to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems, such as batteries, battery chargers, or distribution panels. While it is possible to interconnect the Unit 1 and Unit 2 DC electrical power subsystems, they normally remain disconnected, except when a DC source must be taken out of service for the purposes of maintenance and/or testing, or in the event of a failure of a DC source.

BASES

BACKGROUND (continued)

The crosstie between 125 VDC ESF buses 111 and 211 and the crosstie between 125 VDC ESF buses 112 and 212 are each provided with two normally locked open, manually operated circuit breakers. No interlocks are provided since the interconnected buses are not redundant. However, if one battery is inoperable, procedural and administrative controls are used to limit the connected load to 200 amps based on not exceeding the OPERABLE battery capacity. These controls ensure that combinations of maintenance and test operations will not preclude the system capabilities to supply power to the ESF DC loads. The provisions of administratively controlled, manually actuated, interconnections between the non-redundant Class 1E DC buses increases the overall reliability and availability of the DC systems for each unit in that it provides a means for manually providing power to a DC bus at a time when it would otherwise have to be out-of-service (e.g., to perform a battery discharge test during an outage, to replace a damaged cell, etc.). Crosstie breaker closed alarms are also provided to alert the operator when the units are crosstied.

Each Division 11 (21) and Division 12 (22) DC electrical power subsystem battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to its fully charged state within 24 hours while supplying normal steady state loads discussed in the UFSAR, Chapter 8 (Ref. 4).

BASES

ACTIONS (continued)

C.1 and C.2

Condition C addresses an operating unit's DC bus that is crosstied to the opposite unit's associated DC bus, which has an inoperable source (i.e., battery or battery charger), when the opposite unit is shutdown. This provision is included to accommodate maintenance and/or testing of the shutdown unit's DC subsystems.

With the shutdown unit's battery inoperable, the operating unit will be required to supply all loads on the shutdown unit's crosstied bus should an event occur on the shutdown unit. Therefore, Required Action C.1 specifies that the possible loading on the shutdown unit's DC bus be verified to be ≤ 200 amps once per 12 hours. Limiting the load to 200 amps, ensures that the operating unit's DC subsystem will not be overloaded in the event of a concurrent event on the operating unit. Required Action C.1 is modified by a Note only requiring Required Action C.1 when the opposite unit has an inoperable battery.

Required Action C.2 requires the associated crosstie breaker to be opened within 7 days and ensures that measures are being taken to restore the inoperable battery or battery charger and reestablish independence of the DC subsystems.

BASES

ACTIONS (continued)

D.1

Condition D represents one division with a loss of ability to completely respond to an event, and a potential loss of ability for the DC division to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system division.

If one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery or one DC division crosstied to the opposite-unit DC division that does not have an inoperable battery charger), the remaining DC electrical power subsystem has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure would, however, result in the complete loss of the remaining 125 VDC electrical power subsystems with attendant loss of ESF functions, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 8) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

E.1 and E.2

If the inoperable DC electrical power subsystem cannot be restored to OPERABLE status, or the crosstie breaker(s) cannot be opened, within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 8).

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the connected loads and the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. The 7 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 9).

SR 3.8.4.2

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each intercell, interrack, intertier, and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

The limits established for this SR must not be above the ceiling value established by the manufacturer.

Connection resistance is obtained by subtracting the normal resistance of the interrack (cross room rack) connector or the intertier (bi-level rack) connector from the measured intercell (cell-to-cell) connection resistance.

The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

SR 3.8.4.4 and SR 3.8.4.5

Visual inspection and resistance measurements of intercell, interrack, intertier, and terminal connections provide an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anticorrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection. The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR provided visible corrosion is removed during performance of SR 3.8.4.4.

The connection resistance limits for SR 3.8.4.5 shall not be above the ceiling value established by the manufacturer.

Connection resistance is obtained by subtracting the normal resistance of the interrack (cross room rack) connector or the intertier (bi-level rack) connector from the measured intercell (cell-to-cell) connection resistance.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.6

This SR requires that each battery charger be capable of supplying 400 amps and 125 V for ≥ 8 hours. These requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 10), the battery charger output capacity is required to be based on the largest combined demands of the various steady state loads and the charging demands to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 18 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

This Surveillance is required to be performed during MODES 5 and 6 since it would require the DC electrical power subsystem to be inoperable during performance of the test.

SR 3.8.4.7

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

The Surveillance Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 10) and Regulatory Guide 1.129 (Ref. 11), which state that the battery service test should be performed during refueling operations or at some other outage, with intervals between tests, not to exceed 18 months.

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The modified performance discharge test is a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelop the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

A modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test and the test discharge rate must envelop the duty cycle of the service test if the modified performance discharge test is performed in lieu of a service test.

The reason for Note 2 is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.8

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is described in the Bases for SR 3.8.4.7. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.8, however, only the modified performance discharge test may be used to satisfy SR 3.8.4.8 while satisfying the requirements of SR 3.8.4.7 at the same time.

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 9) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is > 10% below the manufacturer's rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 9).

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-1978.
4. UFSAR, Section 8.3.2.1.
5. IEEE-485-1983, June 1983.
6. UFSAR, Chapter 6.
7. UFSAR, Chapter 15.
8. Regulatory Guide 1.93, December 1974.
9. IEEE-450-1995.
10. Regulatory Guide 1.32, February 1977.
11. Regulatory Guide 1.129, December 1974.

BASES

LCO

The DC electrical power subsystems with:

a. at least one subsystem consisting of its associated battery and battery charger and at least one of the associated crosstie breakers open to maintain independence between the units;

b. when the redundant division of the Class 1E DC electrical power distribution subsystem is required by LCO 3.8.10, the other subsystem consisting of a battery, a charger, or crosstied to the opposite unit; and

c. the corresponding control equipment, and interconnecting cabling within the division(s)

are required to be OPERABLE to support the required division(s) of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown." This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

LCO 3.8.5.b allows the option to use a battery, a charger, or the crossties to the opposite unit's associated DC bus to maintain power to the redundant Class 1E DC electrical power distribution subsystem(s) when required by LCO 3.8.10. This provision accommodates the required maintenance and/or testing of the shutdown unit's DC electrical power distribution subsystem(s) and continues to maintain the required redundant equipment OPERABLE.

LCO 3.8.5 is modified by a Note which allows one division to be crosstied to the opposite unit, when the opposite unit is in MODE 1, 2, 3, or 4 with an inoperable charger. No load restrictions are placed on the bus loading, when the one division is crosstied.

BASES

ACTIONS (continued)

B.1 and B.2

Condition B addresses a shutdown unit's DC bus that is crosstied to the opposite unit's associated DC bus, which has an inoperable source, when the opposite unit is also shutdown. This provision is included to accommodate maintenance and/or testing of the opposite unit's DC subsystems.

With the opposite unit's battery inoperable, the unit-specific DC subsystem will be required to supply all loads on the opposite unit's crosstied bus should an event occur on the opposite unit. Therefore, Required Action B.1 specifies that the possible loading on the opposite unit's DC bus be verified to be ≤ 200 amps once per 12 hours. Limiting the load to 200 amps, ensures that the unit-specific DC subsystem will not be overloaded in the event of a concurrent event on the unit. Required Action B.1 is modified by a Note requiring Required Action B.1 when the opposite unit has an inoperable battery.

Required Action B.2 requires the associated crosstie breaker to be opened within 7 days ensures that measures are being taken to reestablish independence of the DC subsystems.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires application of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.8. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Table 3.8.6-1

This table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperatures and charge effects. In addition to this allowance, footnote (a) to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided it is not overflowing. These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on the recommendations of IEEE-450 (Ref. 3), which states that prolonged operation of cells < 2.13 V can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is ≥ 1.200 (0.015 below the manufacturer fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77°F (25°C).

BASES

SURVEILLANCE REQUIREMENTS (continued)

The specific gravity readings are corrected for actual electrolyte temperature. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F.

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. Footnote (b) to Table 3.8.6-1 requires the float voltage correction for average electrolyte temperature. The Category B limit specified for specific gravity for each connected cell is $\geq$ 1.195 (0.020 below the manufacturer fully charged, nominal specific gravity) with the average of all connected cells $>$ 1.205 (0.010 below the manufacturer fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that the effects of a highly charged or newly installed cell will not mask overall degradation of the battery.

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Category C limits specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limits for float voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit of average specific gravity ≥ 1.195 is based on manufacturer recommendations (0.020 below the manufacturer recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery.

The footnotes to Table 3.8.6-1 are applicable to Category A, B, and C specific gravity. Footnote (c) to Table 3.8.6-1 requires the above mentioned correction for electrolyte temperature.

Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charger current is an acceptable alternative to specific gravity measurement for determining the state of charge. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (d) to Table 3.8.6-1 allows the float charge current to be used as an alternate to specific gravity for up to 7 days following a battery recharge. Within 7 days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than 7 days.

BASES

ACTIONS (continued)

The second Completion Time for Required Action B.1 establishes a limit on the maximum allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the instrument bus distribution system. At this time, an AC bus could again become inoperable, and instrument bus distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

C.1

With one DC bus inoperable, the remaining DC electrical power distribution subsystem is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the DC bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

BASES

ACTIONS (continued)

The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC bus could again become inoperable, and DC distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1

With two electrical power distribution subsystems inoperable that result in a loss of safety function, adequate core cooling, containment OPERABILITY and other vital functions for DBA mitigation would be compromised, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

This Surveillance verifies that the required AC, DC, and AC instrument bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC instrument bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

3. Regulatory Guide 1.93, December 1974.

ATTACHMENT C
Proposed Changes to Technical Specifications for
Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2

INFORMATION SUPPORTING A FINDING OF
NO SIGNIFICANT HAZARDS CONSIDERATION

According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

ComEd proposes to amend Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-37, NPF-66 , NPF-72 and NPF-77 for Byron Station and Braidwood Station. The proposed amendment corrects an oversight that occurred in Limiting Condition for Operation (LCO) 3.8.5 "DC Sources - Shutdown," during the implementation of the Improved Standard TS. This change removes the requirement from LCO 3.8.5 item b to have at least one cross-tie breaker open. The cross-tie breaker requirement will apply only to LCO 3.8.5 item a. This change clarifies that the source of DC electrical power required by LCO 3.8.5 item b for a Unit in Mode 5, Mode 6 or during the movement of irradiated fuel assemblies, may be cross-tied to the opposite Unit when required by LCO 3.8.10, "Distribution Systems - Shutdown." An administrative change to the Braidwood Station TS is also included to delete references to AT&T batteries in LCO 3.8.4, "DC Sources - Operating," LCO 3.8.5, "DC Sources - Shutdown," LCO 3.8.6, "Battery Cell Parameters," and LCO 3.8.9, "Distribution Systems - Operating," and to delete reference to the AOT extension granted under TS Amendment Number 99 since all AT&T batteries have been replaced with Charter Power Systems, Inc. (C&D) batteries.

Information supporting the determination that the criteria set forth in 10 CFR 50.92 are met for this amendment request is provided below.

1. **Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change will allow one DC bus on a shutdown unit to be supplied via the DC bus cross-tie to the opposite unit. The other DC bus on the shutdown unit will at all times be required to be fully operable, supplied by the associated battery and charger, and the associated cross-ties open. The DC electrical system is not considered an initiator of any accident previously evaluated, and therefore the probability of a previously analyzed accident is unchanged.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, the availability and successful functioning of the equipment assumed to operated in response to the analyzed event, and the setpoints at which these actions are initiated. Sufficient equipment remains available to mitigate the consequences of previously analyzed events. The Updated Final Safety Analysis Report (UFSAR) section 8.3.2.1.1 clearly allows operation with the DC cross-tie closed on one DC bus between a unit that is operating and a unit that is shutdown, or between two shutdown units, in the manner proposed by this amendment. The TS in effect prior to the implementation of the improved TS also allowed operation in the manner proposed by this amendment. If DC buses are cross-tied due to an inoperable DC source on a shutdown unit, both the previous TS and the change proposed by this amendment limit the time in this condition to seven days, and if the inoperable source is a battery, the current on the cross-tie is limited to 200 amps. These actions protect both the operating unit, and the shutdown unit. If a shutdown unit's DC bus is cross-tied to an operating unit's DC bus due to an inoperable charger on the operating unit, both the previous TS and the change proposed by this amendment limit the time in this condition to 24 hours. The limitations imposed by both the previous TS and the change proposed by this amendment ensure that operation in this configuration is within the design bases of the plant. Thus the consequences of accidents previously analyzed are unchanged between the previous TS and the change proposed by this amendment. In the worst case scenario, assuming a single failure, one DC bus on the shutdown unit will always be operable, and the ability to mitigate the consequences of any accident previously analyzed is preserved.

The change to delete all references in the Braidwood TS to AT&T batteries and the AOT extension granted under TS Amendment Number 99 is administrative only, and has no impact on the probability or consequences of accidents previously evaluated.

Therefore this proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

The proposed change does not involve a physical change to the plant. No new equipment is being introduced, and installed equipment is not being operated in a new or different manner. There is no change being made to the parameters within which the plant is operated. There are no setpoints affected by this change at which protective or mitigative actions are initiated. This change will not alter the manner in which equipment operation is initiated, nor will the function demands on credited equipment be changed. No alteration in the procedures which ensure the plant remains within analyzed limits in being proposed, and no change is being made to the procedures relied upon to respond to an off-normal event. As such, no new failure modes are being introduced. The change does not alter assumptions made in the safety analysis and licensing basis. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated

The change to delete all references in the Braidwood TS to AT&T batteries and the AOT extension granted under TS Amendment Number 99 is administrative only, and cannot create the possibility of a new or different kind of accident.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3. **Does the proposed change involve a significant reduction in a margin of safety?**

The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. Sufficient equipment remains available to actuate upon demand for the purpose of mitigating an analyzed event. The proposed change, which will allow one DC bus on a shutdown unit to be supplied via the DC bus cross-tie to the opposite unit, is acceptable because of the limitations imposed on operation in this configuration, and because the other DC bus on the shutdown unit will at all times be required to be fully operable, supplied by the associated battery and charger, and the associated cross-ties open. The TS in effect prior to the implementation of the Improved TS allowed operation in the manner proposed by this amendment. In the worst case scenario, assuming a single failure, one DC bus on the shutdown unit will always be operable. Thus, there is no detrimental impact on any equipment design parameter, and the plant will still be required to operate within prescribed limits. Therefore, the change does not reduce the margin of safety.

The change to delete all references in the Braidwood TS to AT&T batteries and the AOT extension granted under TS Amendment Number 99 is administrative only, and does not reduce the margin of safety.

Therefore, these changes do not involve a significant reduction in the margin of safety.

ATTACHMENT D
Proposed Changes to Technical Specifications for
Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2

INFORMATION SUPPORTING AN ENVIRONMENTAL ASSESSMENT

ComEd has evaluated this proposed operating license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. ComEd has determined that this proposed license amendment request meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or that changes an inspection or a surveillance requirement, and the amendment meets the following specific criteria.

(i) The amendment involves no significant hazards consideration.

As demonstrated in Attachment C, this proposed amendment does not involve any significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed change is limited to use of the DC cross-tie in a manner that is consistent with the design basis of the plant. This change does not allow for an increase in unit power level, does not increase the production, nor alter the flow path or method of disposal of radioactive waste or byproducts. Therefore, the proposed change does not affect unit effluents.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will not result in changes in the operation or configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from this change.