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December 5, 1995

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
Proposed Technical Specification (TS) Amendment
TS 3/4.8.2 - D.C. Sources
Supplemental Information

Dear Sir:

By letter dated 8/20/92, McGuire submitted a proposed TS amendment requesting the deletion of the "during shutdown" term in McGuire TS Surveillance Requirement (SR) 4.8.2.1.2.e for 60-month battery testing. Several technical discussions followed that submittal. By letter dated 12/28/94, ONRR staff requested additional information (RAI) regarding the "during shutdown" amendment request and regarding another subject relating to the battery performance parameters included in SR's 4.8.2.1.2.e and 4.8.2.1.2.f. Following several technical discussions, a telecon was held on November 6, 1995 between ONRR staff and McGuire staff regarding these two subjects.

Per the agreements of the November 6, 1995 telecon, please find attached the following:

Attachment 1 - Response to the 12/28/94 RAI.
Attachment 2 - Revised Analysis of Significant Hazards Consideration for the 8/20/92 amendment request. (The original Environmental Impact Analysis is unchanged).
Attachment 3 - Commitments to support the 8/20/92 amendment.
Attachment 4 - Proposed change to TS 3/4.8.2 BASES to document the Attachment 2 commitments.
Attachment 5 - Final TS pages for the 8/20/92 amendment request.

The due dates for the 60-month battery discharge tests (SR 4.8.2.1.2.e) for batteries EVCA, EVCC, EVCB, and EVCD are 5/9/96, 5/30/96, 5/8/97, and 5/8/97, respectively. As such, we request that approval of the proposed TS changes be granted before 2/1/96

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to provide for implementation of the requested changes prior to the test due dates.

A copy of this document is being forwarded to the appropriate North Carolina State Official.

If any additional information is required, please call P.T. Vu at (704) 875-4302.

Very truly yours,

T. C. McMeekin

Attachments

xc: (w/attachments)

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McGuire TS Change Subject File
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Z.L. Taylor (CN01RC)
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ATTACHMENT 1

12/28/94 REQUEST FOR ADDITIONAL INFORMATION

QUESTIONS AND ANSWERS

1.a) Question:

Provide the rationale and justification (deterministic) as to why it is acceptable to perform the battery PDT during the 72-hour AOT in view of the guidance given in Regulatory Guides (RGs) 1.6, "Single Failures" and 1.93, "Availability of Electric Power Sources." Provide justification for one, and two unit operation.

1.a) Summarized Answer:

RGs 1.81, "Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants", and 1.93 are not included in the McGuire licensing basis.

When the ACTION statement of TS 3.8.2.1.b.2 is invoked via use of OPERABLE tie breakers, the battery and charger are removed from a bus (example EVDA bus). This bus (EVDA) and its associated same-train A bus (EVDC bus) are energized by the EVDC battery, battery charger, and spare charger. **Train redundancy is maintained at all times**.

The McGuire shared DC system design is not vulnerable to a single failure (RG 1.6) because of the additional capacity and redundancy. Even during a 72-hour AOT, the single failure of any component of either train (including Emergency Diesel Generator) will still leave a full capacity train available to provide vital instrumentation and control power for both Units.

1.a) Detailed Answer:

The current McGuire licensing basis regarding RGs is defined by the McGuire FSAR Table 1-4. FSAR Table 1-4 indicates that McGuire is committed to RG 1.32, "Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations", Rev. 0, 1972. RGs 1.81, "Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants", and 1.93 are not included in the McGuire licensing basis. McGuire adopted RG 1.32, Rev. 0, formally titled Safety Guide 32, Use of IEEE STD 308-1971. This RG addresses availability of the battery chargers. This edition does not include the requirement pertaining to shared electric systems for multi-unit nuclear power plants.

The 1977 edition of RG 1.32 Position C.2.a. states that shared electric systems for multi-unit stations are unacceptable except as specified in RG 1.81. Position C.2 of RG 1.81 indicates that multi-unit plants under construction with permit applications prior to June 1, 1973 will be reviewed on an individual case basis. McGuire Construction Permit was granted on 2/28/73.

The concern of sharing the 125 VDC system between the units at McGuire was first identified in the Safety Evaluation Report. This concern was answered in Supplement 1 of the SER, 1978, after additional justification was provided that addressed Position C.2 of RG 1.81 in its entirety. Based on this justification, it was concluded that the 125 VDC system design met General Design Criteria 17 and 18, July, 1971 and IEEE Standard 308-1971, "Criteria for Class 1E Electric Systems," and applicable RGs for power reactors.

The design of the 125 VDC system is such that four batteries, chargers and distribution centers serve both units (see diagram at end of this attachment). A dedicated battery and charger are connected to each distribution center. Also, a spare charger (not shown on diagram) is normally connected to two same-train distribution centers when they are tied together for removing a battery and its charger for maintenance. This alignment is controlled by approved procedures. Each battery is sized to carry the accident loads of one unit plus the safe shutdown loads of the other unit for a complete train assuming a loss of offsite power. Coordination also exist with the completion of NSM-52428 (scheduled for completion before the upcoming Unit 1 outage) such that a fault at the system level on the non-accident Unit will not affect the ability to supply ESF loads in one Unit and safely shutdown the other Unit, assuming a loss of offsite power.

The loads served from these distribution centers are all safety-related and unitized; one group consisting of a DC panelboard and an inverter serves Unit 1, and another group serves Unit 2. These unitized panelboards allow independence between the engineered safety features (ESF) for each Unit.

Distribution centers EVDA and EVDC can be tied together and controlled by approved procedures since they are of the same train (Train A). Likewise, distribution centers EVDB and EVDD can be tied together since they are of the same train (Train B).

When the ACTION statement of TS 3.8.2.1.b.2 is invoked via OPERABLE tie breakers and one battery and charger is removed from a bus (example EVDA bus), this bus and its associated same train bus (EVDC bus) are energized by EVDC battery, battery charger, and spare charger. **Train redundancy is maintained at all times**.

The McGuire shared DC system design is not vulnerable to a single failure (RG 1.6) because of the additional capacity and redundancy explained above. Even during a 72-hour AOT, the single failure of any component of either train (including

Emergency Diesel Generator) will still leave a full capacity train available to provide vital instrumentation and control power for both Units.

Section B.5 of RG 1.93, dated December 1974, defines the degradation level as the available DC power supplies not having the required redundancy (i.e., a subsequent single failure could render the entire power system ineffective on a generator trip). Even though it is necessary to remove a battery from service to conduct a PDT, the compensatory augmentation offered by a same-train bus cross-tie provides continuous train redundancy and independence. Therefore neither Unit is susceptible to single failure vulnerability during the AOT.

With this design and redundancy, a battery can safely be removed from service, for the purpose of performing a battery PDT, without presenting appreciable risk. The probabilistic risk analysis (PRA) to quantify the added risk is addressed in RAI answer 1b below.

1.b) Question:

Quantify the overall plant risk (PRA) associated with performing the PDT during the 72-hour AOT (i.e., one battery being in testing configuration) for one, and two unit operation.

1.b) Summarized Answer:

Results of the PRA calculations show that, when the proposed 72 hr cross-tie configuration is accomplished as often as once per year, the increase in the core damage frequency (CDF) is 8E-09/yr or 0.01% relative to the overall McGuire PRA result. It should be noted that this 0.01% value would remain the same with the replacement (ref. TS change submittal dated 2/23/95 for McGuire Nuclear Station which has been approved via Amendments 155/137 dated 4/14/95) of the main and battery breakers with fusible and non-fusible switches, respectively. If the proposed 72 hr cross-tie configuration is accomplished as many as four times a year, the **increase in CDF is 0.04%** relative to the overall McGuire PRA result. This negligible increase also applies to the second unit when it is in power operation. **Based on the NEI PSA Application Guide, EPRITR-105396, August 1995, any change in risk less than approximately 10% is considered non-risk significant for McGuire.**

1.b) Detailed Answer:

Loss of power on Train B 125 VDC panelboard 1EVDD is the T14 transient initiator for the McGuire PRA. The first consequences of the T14 initiator are plant trips due to main steam line isolation and main feedwater isolation when the air holding open the air-operated Main Steam Isolation Valves and Main Feedwater Control Valves is released. Normally energized solenoid valves (holding air on the valve operators and keeping the valves open) are de-energized on loss of control power, venting air from the valve operators and allowing the valves to transfer to their fail-safe closed positions. This loss of main feedwater transient can be mitigated utilizing the Train A Motor-Driven Auxiliary Feedwater Pump or the Turbine-Driven Auxiliary Feedwater Pump.

Loss of 1EVDD is chosen over loss of 1EVDA as the T14 initiator because the loss of 1EVDD causes the unavailability of power to 2 Reactor Coolant System (NCS) Power Operated Relief Valves (PORVs) while the loss of 1EVDA causes the loss of power to only one NCS PORV. The feed and bleed cooling mode typically assumes two PORVs to be available for simplification of the injection flow path modeling. However, RETRAN analyses with all injection paths and onc PORV available show that this is sufficient for successful feed and bleed.

<u>Loss of 125 VDC (Normal Alignment) Frequency:</u>

The fault tree solution for the loss of 125 VDC bus 1EVDD in its normal configuration for a 72 hr exposure time is 1.4E-04.

This solution is derived from the sum of the following components:

(1)	125 VDC Bkr EVDD-3C (bkr to 1EVDD from EVDD) Transfers Open	3.6E-05
(2)	125 VDC Bkr EVDD-2B (EVDD Feeder Breaker) Transfers Open	3.6E-05
(3)	125 VDC Bkr EVDD-2A (Battery EVCD Breaker) Transfers Open	3.6E-05
(4)	125 VDC Distribution Center EVDD Fails	1.44E-05
(5)	125 VDC Panelboard 1EVDD Fails	1.44E-05

Similarly, the fault tree solution for the loss of 125 VDC bus 2EVDD (also fed from Distribution Center EVDD) in its normal configuration for a 72 hr exposure time is 1.4E-04. The components making up the result are the same as the 1EVDD case above except that 125 VDC feeder bkr EVDD-3D is substituted for 125 VDC feeder bkr EVDD-3C and 125 VDC Panelboard 2EVDD is substituted for Panelboard 1EVDD.

Loss of 125 VDC (Alternate Alignment) Frequency:

The fault tree solution for the loss of 125 VDC bus 1EVDD in its alternate configuration (battery EVCB supplying battery EVCD loads through the EVDD/EVDB bus tie) for a 72 hr exposure time is 2.2E-04.

This solution is derived from the sum of the following components:

(1)	125 VDC Bkr EVDD-3C Transfers Open	3.6E-05
(2)	125 VDC Bkr EVDD-1B (EVDD to EVDB bus tie bkr) Transfers Open	3.6E-05
(3)	125 VDC Bkr EVDB-1B (EVDB to EVDD bus tie bkr) Transfers Open	3.6E-05
(4)	125 VDC Bkr EVDB-2B (EVDB Feeder Breaker) Transfers Open	3.6E-05
(5)	125 VDC Bkr EVDB-2A (Battery EVCB Breaker) Transfers Open	3.6E-05
(6)	125 VDC Distribution Center EVDB Fails	1.44E-05
(7)	125 VDC Distribution Center EVDD Fails	1.44E-05
(8)	125 VDC Panelboard 1EVDD Fails	1.44E-05

The fault tree solution for the loss of 125 VDC bus 2EVDD in its alternate power configuration for a 72 hr exposure time is 2.2E-04. Component parts of this result are the same as for 1EVDD above except feeder bkr EVDD-3D takes the place of feeder bkr EVDD-3C and 125 VDC Panelboard 2EVDD takes the place of Panelboard 1EVDD.

Core Damage Frequency due to Loss of 125 VDC (Normal Alignment):

The McGuire PRA transient event tree was solved for the CDF given that a T14 initiator occurs. The dominant core damaging cutsets involve failure of secondary side heat removal and failure to open a bleed path for feed and bleed cooling (TBP sequences) in which random failures of the Train A motor-driven emergency feedwater (CA) pump and turbine-driven CA pump occur and the Train B CA pump is unable to start due to loss of control power. A bleed path for feed and bleed cooling is conservatively assumed not established since two NCS PORVs are disabled. Local manual start of CA Pump B is applied as a recovery having an estimated failure probability of 5E-02 per demand.

The dominant cutset failure frequencies for a single unit experiencing a T14 initiator are summed to obtain a conditional core damage frequency of about 1.0E-04.

These cutset failure frequencies are as follows:

1.000E-05 = (1)*(2)
1.000E-05 = (2)*(3)
9.800E-06 = (4)*(5)
9.744E-06 = (4)*(6)*(7)
6.838E-06 = (8)*(9)*(10)
4.340E-06 = (11)*(5)
4.315E-06 = (11)*(6)*(7)
3.864E-06 = (12)*(5)
3.842E-06 = (12)*(6)*(7)
3.720E-06 = (11)*(13)*(7)
3.312E-06 = (12)*(13)*(7)
2.100E-06 = (4)*(14)*(7)
2.100E-06 = (15)*(5)
2.088E-06 = (15)*(6)*(7)
Total = 1.0E-04

where,

(1) =	Latent Human Error Causes Swap to Assured CA Suction Source	=	1.0E-03
(2) =	Common Cause Failure of Nuclear Service Water (RN) Sources	=	1.0E-02
(3) =	Operators Fail to Throttle CA Flow from Hotwell	=	1.0E-03
(4) =	Turbine-Driven CA Pump Train in Maintenance or Testing	=	1.4E-02
(5) =	Common Cause Failure of Both Motor-Driven CA Pumps to Run	=	7.0E-04
(6) =	Motor-Driven CA Pump 1A Fails to Run	=	1.392E-02

(7) = Failure to Locally Start Motor-Driven CA Pump 1B = 5.0E-02

(8) = Flow to any NC Pump Seal from the Standby Shutdown System Fails = 2.59E-01

(9) = RN Pump 1A Fails to Run = 2.64E-04

(10) = Operators Fail to align RN to Containment Ventilation Cooling = 1.0E-01

(11) = Turbine-Driven CA Pump Fails to Start = 6.2E-03

(12) = Turbine-Driven CA Pump Fails to Run = 5.52E-03

(13) = Motor-Driven CA Pump 1A in Maintenance or Testing = 1.2E-02

(14) = Latent Human Error Fails Motor-Driven CA Pump 1A = 3.0E-03

(15) = Latent Human Error Fails Turbine-Driven CA Pump = 3.0E-03

Additional Core Damage Risk Due to Loss of 125 VDC (Alternate Alignment):

It follows that, for a 72 hr period, the core damage probability due to the T14 initiator with the 125 VDC system in the normal alignment is the product of the T14 probability for 72 hrs in the normal alignment (1.4E-4) and the conditional core damage probability (1.0E-4)

(1) T14 CDP for 72 hrs (normal) = 1.4E-4 * 1.0E-4
= 1.4E-8,

and the core damage probability due to the T14 initiator with the 125 VDC system in the alternate alignment for a like period is

(2) T14 CDP for 72 hrs (alternate) = 2.2E-4 * 1.0E-4
= 2.2E-8.

Thus, when the alternate alignment is used for a 72 hr period, the core damage probability is increased by approximately (2)-(1) = 8E-9.

The equipment failures which cause the increased T14 probability in the alternate alignment have the potential to cause a transient on both units. Therefore, the effect of having both units operating during the alternate configuration would be for each unit to see a 8E-9 increase in CDF.

The annual core damage frequency from all accident initiators, as calculated by the McGuire PRA is 7.4E-5/yr. If we assume that the alternate alignment will be utilized once per year, then the potential impact on the McGuire core damage frequency is :

Increase of McGuire 1 Annual CDF (%) = (8E-9/7.4E-5)*100
= 0.01%

Increase of McGuire 2 Annual CDF (%) = (8E-9/7.4E-5)*100
= 0.01%

2. Question:

The staff believes that the battery replacement (i.e., 80%) and degradation (i.e., 85% and 10%) values given in SRs 4.8.2.1.2.e and 4.8.2.1.2.f, respectively, are for the square cell batteries, which are no longer in use at McGuire. Provide the bases and justification why the battery replacement and degradation criteria in the above SRs should not be replaced with criteria that is consistent with the AT&T round cell battery characteristics (i.e., increasing capacity with age).

2. Answer:

The manufacturer's product specifications indicate the capacity will not drop below published rates for the guaranteed life of the cell. With this considered, sizing of the round cell in accordance with IEEE-485, "Sizing Large Lead Storage Batteries for Generating Stations and Substations," would not have to include a 1.25 aging factor that is traditionally used for rectangular lead-calcium cells. Even though not required, original sizing and testing of the McGuire replacement batteries did include an additional aging margin of 10%. In addition to the aging margin, a 60 degree F worst case temperature margin, and additional 10% design margin were also included. This conservative sizing methodology provides a battery that is much larger than actually required for normal operating and emergency conditions.

McGuire agrees that these acceptance values should be re-examined for the AT&T round-cell batteries once sufficient industry data is available. McGuire commits to become actively involved with

the appropriate industry groups in resolving this battery test acceptance criteria issue. Once it is resolved, McGuire will accordingly submit a proposal for TS change (see Commitment 3 in Attachment 2 for further details).

3. Question:

Provide information regarding how the PDT has been (will be) conducted (i.e., the discharge (amperage) rate, the test length, the time required to complete the recharge, etc.). State whether the prescribed 72-hour AOT is adequate to complete the PDT for the round cell battery.

3. Answer:

The initial PDT was first run on the AT&T round cells at the C & D Power Systems Company manufacturing facility in Leoila, Pa. as a factory acceptance test in the 1991-1992 time frame. The batteries were discharged at the eight (8) hour rate to an end voltage of 1.78 volts per cell (VPC). Since the length of the emergency duty cycle for McGuire is 1 hour, it was decided that subsequent capacity tests would be run at the 1 hour rate.

The first PDT after installation was run in the 1993-1994 time frame to satisfy the requirements of IEEE-450. This test was performed at the 1 hour rate to an end voltage of 1.78 VPC. Performance discharge testing at McGuire have yielded results from 103% to 108% capacity.

The PDT discharges the battery at 758 amps (1 hour rate, temperature corrected to 77 deg. F) until it reaches an average of 1.78 VPC. The discharged battery is immediately recharged using its normal 400 amp charger (500 amp current limited) in the equalize mode set at 2.50 VPC. This elevated constant potential recharge is sufficient to produce energetic cell gassing to agitate the electrolyte, therefore minimizing stratification of heavier sulfuric acid being expelled from the plates. Results of this recharging routine eliminates waiting time normally required for the lagging specific gravity to "catch up" with the apparent return of capacity. Normally, a completely discharged battery will accept 500 amps from its charger for approximately 1 hour, then current tapers linearly for an additional hour. At this point, around 95% capacity has been returned to each cell. The final recharge current decreases non-linearly for several additional hours, until the battery is fully charged. **With a 1 hour discharge rate, and an accelerated recharge procedure, a PDT can be conducted within the allotted 72 hours.**

4. Question:

Provide a list and related information regarding various battery tests performed on the new battery to date (i.e., service test, within a 2-year performance discharge test after delivery, etc.) Identify which one of the two SRs (4.8.2.1.2.d.1 or 4.8.2.1.2.d.2) was performed to satisfy the battery service test requirement. Explain how this test differs from the PDT.

4. Answer:

There are four (4) 125 VDC Vital I&C batteries at McGuire, designated EVCA, EVCB, EVCC, and EVCD. The following is a list of Periodic Tests performed on each battery:

PERIODIC TEST	DESCRIPTION
Weekly Inspection	Check pilot cell parameters and battery voltage
Quarterly Inspection	Check all cell parameters and battery voltage
18-Month Terminal Post Inspection	Check for connector tightness, condition, and resistance
18-Month Service Discharge Test	Discharge to simulated emerg. loads, maintain above 105 VDC
60-Month Performance Discharge Test	Discharge at fixed 1 hr rate to 105 VDC

The following is a list of discharge tests performed on each round cell battery to date:

BATTERY	TEST TYPE	TEST DATE	SR	ACCEPTANCE
EVCA	Service	08/12/91	4.8.2.1.2.d.1	Yes
	Service	03/02/93	4.8.2.1.2.d.1	Yes
	Service	11/03/94	4.8.2.1.2.d.1	Yes
	Performance	03/03/93	IEEE-450	Yes
EVCB	Service	06/01/92	4.8.2.1.2.d.1	Yes
	Service	03/21/94	4.8.2.1.2.d.1	Yes
	Performance	12/13/94	IEEE-450	Yes
EVCC	Service	08/26/91	4.8.2.1.2.d.1	Yes
	Service	07/07/93	4.8.2.1.2.d.1	Yes
	Service	01/23/95	4.8.2.1.2.d.1	Yes
	Performance	03/23/93	IEEE-450	Yes

EVCD	Service	06/16/92	4.8.2.1.2.d.1	Yes
	Service	03/07/94	4.8.2.1.2.d.1	Yes
	Performance	11/14/94	IEEE-450	Yes

SR 4.8.2.1.2.d.1 is used to satisfy the 18-month service test requirement. This requires the battery to be discharged using a computer controlled load bank that steps through a 3 level duty cycle. This test is used to replicate the emergency duty cycle while maintaining battery terminal voltage above a bus minimum of 105 VDC. The Service Test discharges the battery at varying currents for exactly 1 hour. The PDT discharges the battery at a fixed rate (1 hour rate) until the battery terminal voltage is 105 VDC (1.78 VPC times 59 cells). Battery capacity (%) can be derived from the PDT by dividing elapsed test time by battery rated time (60 min), then multiplying by 100.

5. Question (requested during the 11/6/95 telecon):

Quantify the overall plant risk (PRA) associated with a combination of performing the PDT during the 72-hour AOT (Question 1b) and assumed subsequent degradation of the battery in the 10 days following the PDT.

5. Summarized Answer:

Using the conservative assumption that half of the battery challenges during the 10-day period following the PDT will result in battery failure, the additional core melt probability is 1.3E-07/yr/PDT or **an increase of 0.19%** over the present PRA value. In the worst case **when four PDTs/yr are scheduled**, this converts to a core damage risk of 5.2E-07/yr or **an increase of 0.76%** over the present PRA value. This negligible increase also applies to the second unit when it is in power operation. **Based on the NEI PSA Application Guide, EPRITR-105396, August 1995, any change in risk less than approximately 10% is considered non-risk significant for McGuire.**

5. Detailed Answer:

Assuming the newly charged battery may not be capable of fulfilling the battery's Design Basis requirements until a float charge is maintained on the battery for ten days following the battery equalizing charge, a conservative consequence of this is an increased battery failure probability for the first ten (10) days following the PDT. The PRA analysis presented in Answer 1b is expanded to include this additional assumption. Recovery from failure of power on 1EVDD is not considered in this expanded analysis, although restoration of the alternate lineup is easily accomplished via approved procedures.

The expanded initiator frequency is composed of the basic events which will cause a loss of 125 VDC power on 125 VDC Panelboard 1EVDD (a) for the seventy-two (72) hr period that Battery EVCD is lined up in its alternate configuration and (b) for the ten (10) day period that Battery EVCD may be degraded and is lined up in a normal configuration.

From Answer 1b, the difference between the cumulative basic events of the normal and alternate configurations was the factor needed to determine the change in core melt frequency affected by the alternate configuration. For (a) this difference is 8.0E-05 (2.2E-04 minus 1.4E-04). For (b) the number of challenges to the battery must be determined, since the battery failure rate is in failures/demand. In the more recent probabilistic analyses, battery failure is characterized as a demand failure mode. The database used currently is the SAROS database which uses a battery failure rate of 9.3E-04/demand. Without knowing the degraded battery failure rates for the ten days following the battery charge, assumptions must be made. Conservatively, the battery failure rate is 1.0/demand at the start of the 10 day period and 9.3E-04/demand (the SAROS value) at the end of the period. The average value is then approximately 0.5 over the ten day period.

Basic events that make up the battery demand frequency are listed as follows:

Loss of battery charger output power to the battery:

Basic Event	Time	Failure Rate	Probability
125 VDC Breaker EVDD-1A transfers open	240	5.0E-07/hr	1.2E-04
Battery Charger EVCD fails	240	7.0E-06/hr	1.7E-03
600 VAC Breaker 1EMXB-6E transfers open	240	5.0E-07/hr	1.2E-04
600 VAC MCC 1EMXB fault	240	2.51E-07/hr	6.0E-05
600 VAC Breaker 1ELXB-5C transfers open	240	5.0E-07/hr	1.2E-04
600 VAC Load Center 1ELXB fault	240	2.51E-07/hr	6.0E-05
600 VAC Breaker 1ELXB-4B transfers open	240	5.0E-07/hr	1.2E-04
4160/600 VAC Transformer 1ELXB fails	240	7.0E-07/hr	1.7E-04
4160 VAC Breaker 1ETB-16 transfers open	240	6.0E-07/hr	1.4E-04
			2.6E-03

(2.6E-03 demands)(0.5 failures/demand) = 1.3E-03 failures in ten days for the not fully charged battery

Failures closer to the power source are included in T11 (Loss of 4160 V Bus) initiating events. T11 initiators result in loss of a complete train of accident mitigating components, so the loss of the train's I&C power is of no additional consequence. The T14 consequences are therefore subsumed by the T11 consequences.

Answer 1b assumed a fully charged battery after the equalizing charge.

(2.6E-03 demands)(9.3E-04 failures/demand) = 2.4E-06 failures in ten days

The difference in battery challenge failures between Answer 1b and this expanded analysis is approximately 1.3E-03 failures in ten days.

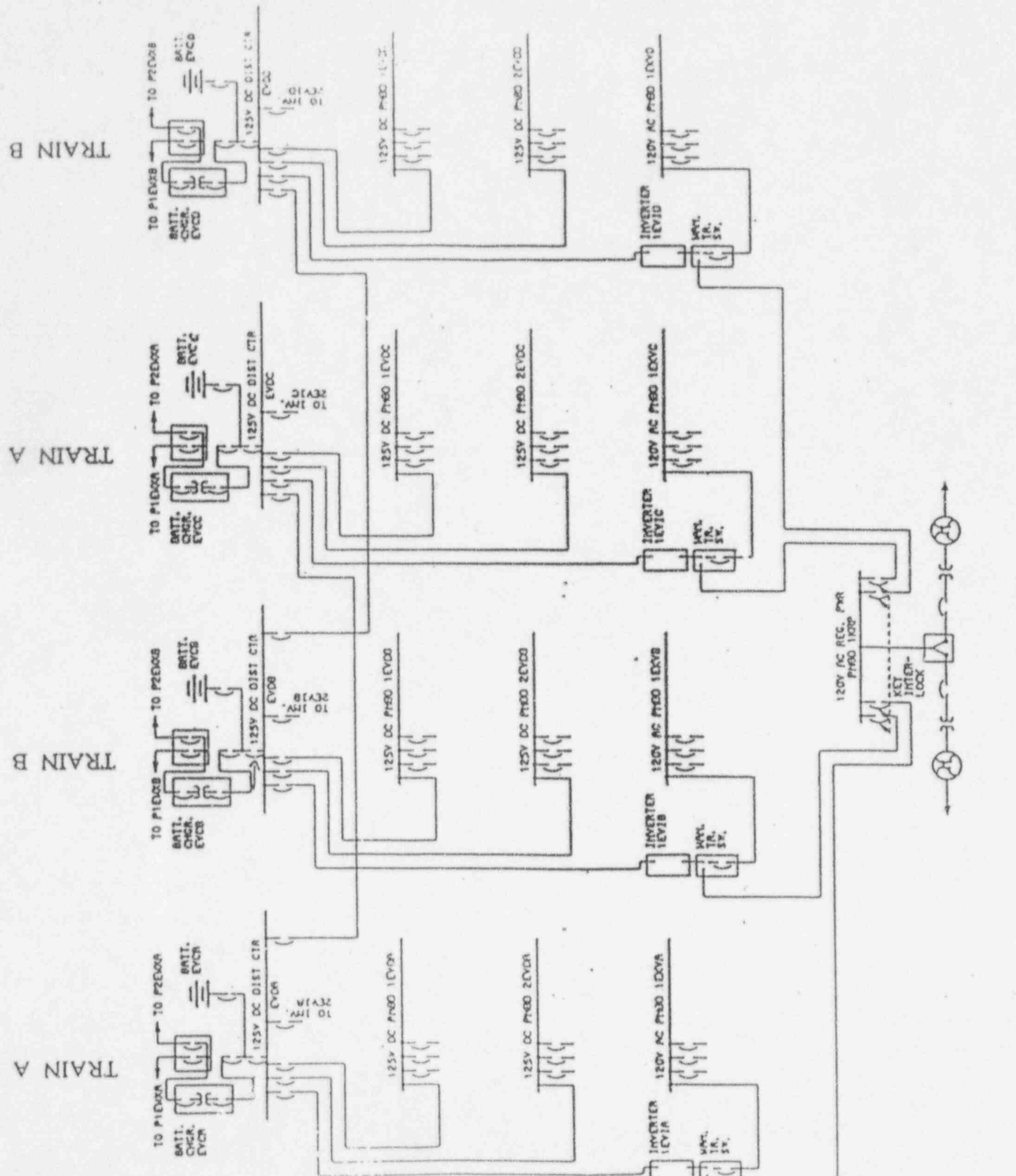
Given from (a) 8.0E-05 failures in 72 hr, and from (b) an additional 1.3E-03 failures in the following ten days with a conditional core melt frequency of 1E-04, then the additional core melt probability over the thirteen day period is

(1.0E-04)(1.3E-03 + 8.0E-05) = 1.3E-07

Assuming that a battery equalizing charge will occur one time a year then the additional core melt probability associated with this event is 1.2E-07. The increase in core damage frequency over the McGuire PRA result of 7.4E-05 is

(1.3E-07 / 7.4E-05)*100 = 0.19%

Thus, this analysis shows that, the additional risk posed by the possibility that a battery may require a ten day trickle charge after an equalizing charge to ensure the battery is capable of its design basis, is of little significance.



Vital Instrumentation and Control Power System

ATTACHMENT 2

REVISED SIGNIFICANT HAZARDS CONSIDERATION

ANALYSIS OF SIGNIFICANT HAZARDS CONSIDERATION

As required by 10CFR50.91, this analysis is provided concerning whether the proposed amendment involves significant hazards considerations, as defined in 10CFR50.92. Standards for determination that a proposed amendment involves no significant hazards considerations are if operation of the facility in accordance with the proposed amendment would not: 1) involve a significant increase in the probability 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.

1) The proposed amendment seeks to change the surveillance requirements to allow the performance with the units on line. The surveillance can be safely completed as proposed without affecting unit operation. The equipment would not be removed from service for a time that would exceed the current allowed outage time. The probability or consequences of any accident previously evaluated will not be increased because the removal of a battery from service can be performed while on line, and the loads of each battery can be assumed by another same-train battery which is the case for the battery being inoperable for any other reason. During the allowed outage time, even a single failure of any component (including Emergency Diesel Generator) will still leave a full capacity train available to provide instrumentation and control power for both units. Train redundancy is maintained at all times. Compensatory action is taken to prohibit discharge testing of the other remaining batteries within 10 days following a battery performance discharge test to ensure that the tested battery is fully recharged. Probabilistic Risk Analysis shows that the increase in Core Damage Frequency due to this operation is negligible.

2) The proposed amendment will not change any actual surveillance requirements, the change would simply allow the requirements to be met at different unit conditions. The performance of the surveillance with the units on line does not require any new component configurations that would reduce the ability of any equipment to mitigate an accident. The station would not be in any degraded status beyond that which has previously been evaluated. Therefore the proposed change will not create the possibility of a new accident.

3) The change would allow a battery to be removed from service for testing. However, the testing must be completed within the current allowed outage time. As the allowed outage time defines the required margin of safety for equipment operability, removing equipment from service for testing and returning it to service within the allowed time does not affect a margin of safety. Compensatory action is taken to prohibit discharge testing of the other remaining batteries within 10 days following a battery performance discharge test to ensure that the tested battery is fully recharged.

Based upon the preceding analysis, Duke Power Company concludes that the proposed amendment does not involve a Significant Hazards Consideration.

ATTACHMENT 3

COMMITMENTS

PER 11-6-95 TELECON

Commitments:

1) After a battery is returned to service (re-connected to and supplying its normal DC distribution center) following a Performance Discharge Test, no discharge testing shall be done within 10 days on the other three batteries. This commitment is included in the attached TS 3/4.8.2 BASES (Attachment 4). This commitment is effective until the concern regarding recovered battery capacity immediately following recharging (see Commitment 2 below) is resolved.

2) McGuire is actively pursuing the concern regarding recovered battery capacity immediately following recharging. McGuire commits to inform the NRC by December 13, 1995 on the status of the dialog between McGuire and the vendor. McGuire will periodically inform the NRC of the progress of this dialog until the final conclusion by the two companies is documented.

3) McGuire commits to become actively involved with the appropriate industry groups in resolving the battery test acceptance criteria issue. Due to the industry-wide nature of this issue, McGuire commits to work with the appropriate industry groups and provide an update to the NRC by June 30, 1996 and periodically thereafter. McGuire also commits to resolve this issue to the mutual satisfaction of both parties.