October 13, 1994

Mr. William L. Stewart
Executive Vice President, Nuclear
Arizona Public Service Company
Post Office Box 53999
Phoenix, Arizona 85072-3999

SUBJECT: ISSUANCE OF EMERGENCY AMENDMENT FOR THE PALO VERDE NUCLEAR GENERATING STATION UNIT NO. 2 (TAC NO. M90581)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 71 to Facility Operating License No. NPF-51 for the Palo Verde Nuclear Generating Station (PVNGS), Unit No. 2. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated October 9, 1994, as supplemented by letter dated October 12, 1994.

The amendment modifies TS 4.8.2.1.e, "DC Sources - Operating," to specify that the provisions of TS 4.0.1 and 4.0.4 are not applicable to the battery capacity requirements until entry into Mode 4 coming out of the fifth refueling outage or upon any deep discharge cycle of the battery. You requested the change on an emergency basis when you discovered that the 125V DC batteries do not meet the TS requirement for minimum battery capacity, thereby precluding PVNGS Unit 2 from changing modes.

A copy of the related safety evaluation is also enclosed. A Notice of Issuance and Final Determination of No Significant Hazards Consideration and Opportunity for Hearing will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,
Original Signed By
Brian E. Holian, Senior Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. STN 50-529

Enclosure: 1. Amendment No. 71 to NPF-51
2. Safety Evaluation

cc w/encls: See next page

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DOCUMENT NAME: PV90581.AMD *See Previous Concurrence Sheet

OFC	LA/DRPW	PM/PDIV-2	PM/PDIV-2	EELB *	OGC	D/PDIV-2	DD:DRPW
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 13, 1994

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Executive Vice President, Nuclear
Arizona Public Service Company
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Office of Nuclear Reactor Regulation

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2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-529

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 71

License No. NPF-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated October 9, 1994, as supplemented by letter dated October 12, 1994, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment; and paragraph 2.C(2) of Facility Operating License No. NPF-51 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 71, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of the date of issuance and must be fully implemented prior to entry into Mode 4 from the current midcycle outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam

Elinor G. Adensam, Deputy Director
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 13, 1994

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 71 TO FACILITY OPERATING LICENSE NO. NPF-51

DOCKET NO. STN 50-529

Replace the following page of the Appendix A Technical Specifications with the enclosed page. The revised page is identified by amendment number and contains vertical lines indicating the areas of change.

Remove	Insert
3/4 8-10	3/4 8-10

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1. The parameters in Table 4.8-2 meet the Category B limits,

2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150×10^{-6} ohms, and

3. The average electrolyte temperature of six connected cells is above 60°F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,

2. The cell-to-cell and terminal connections are clean, tight, and coated with anticorrosion material,

3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohms, and

4. The battery charger will supply at least 400 amperes for batteries A and B and 300 amperes for batteries C and D at 125 volts for at least 8 hours.

d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.

e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% (Exide) or 90% (AT&T) of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test may be performed in lieu of the battery service test required by Surveillance Requirement 4.8.2.1d.*

f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% (Exide) or 5% (AT&T) of rated capacity from its average on previous performance tests, or is below 90% (Exide) or 95% (AT&T) of the manufacturer's rating.

*The provisions of Specification 4.0.1 and 4.0.4 are not applicable. This provision expires upon entry into Mode 4 coming out of the fifth refueling outage or upon any deep discharge of the battery.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 71 TO FACILITY OPERATING LICENSE NO. NPF-51,

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 2

DOCKET NOS. STN 50-529

1.0 INTRODUCTION

By letter dated October 9, 1994, as supplemented by letter dated October 12, 1994, the Arizona Public Service Company (APS or the licensee) submitted a request for changes to the Technical Specifications (TS) for the Palo Verde Nuclear Generating Station, Unit 2 (Appendix A to Facility Operating License No. NPF-51). The Arizona Public Service Company submitted this request on behalf of itself, the Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority. The proposed amendment would modify TS 4.8.2.1.e, DC Sources - Operating, to specify that the provisions of TSs 4.0.1 and 4.0.4 are not applicable to the battery capacity requirements until entry into Mode 4 coming out of the fifth refueling outage or upon any deep discharge cycle of the battery.

The licensee requested an emergency TS change in order to declare the Unit 2 batteries operable based upon the current capacities of the batteries without having to satisfy the surveillance requirement of TS 4.8.2.1.e., and thereby change modes and start-up from the current mid-cycle steam generator inspection outage.

2.0 BACKGROUND

TS 3.8.2.1, DC Sources - Operating, requires the operability of two trains of DC power sources to ensure that sufficient power will be available to supply the safety-related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility.

Palo Verde Nuclear Generating Station Units 1, 2, and 3 have AT&T LINEAGE 2000 Round Cell batteries installed in the safety-related 125V DC battery banks. The AT&T LINEAGE 2000 Round Cell battery, although relatively new in nuclear applications, has been available for almost twenty years, and there are more than 500,000 in service today. The Round Cell battery is similar in design to other lead-acid batteries in that it uses a conventional pasted plate construction. However, the Round Cell battery is unique in that the positive grid is of pure lead and is of circular construction which creates a slow,

uniform growth rate of ≈ 2% over 70 years compared with a growth rate of ≈ 4% over 15 years in conventional rectangular lead calcium batteries. Because each concentric ring of the positive grid in the Round Cell grows at the same rate, good contact with the active material (or paste) is maintained over the life of the battery and capacity is predicted to increase over the life of the battery.

Four Class 1E DC power banks designated A, B, C, and D are provided in each unit. The DC banks A and B provide control power for alternating current (AC) load groups 1 and 2, respectively. These banks also provide vital instrumentation and control power for channels A and B, respectively, of the reactor protection and Engineered Safety Features (ESF) systems and diesel generators A and B, respectively. The DC banks C and D provide vital instrumentation and control power for channels C and D, respectively, of the reactor protection and ESF systems, and other safety-related loads as referenced in Table 8.3-6, Class 1E DC System Loads, of the Updated Final Safety Analysis Report (FSAR). Each Class 1E DC power bank consists of one 125V DC battery composed of 60 cells, one battery charger, one distribution panel, and is supplied with 480V AC power from a separate motor control center (MCC). Four inverters, supplied from the DC banks, provide four independent 120V AC vital instrumentation and control power supplies for the banks of reactor protection and ESF systems.

During normal operation, the normal battery charger supplies DC power at a float voltage of 135V DC. In addition to carrying the DC loads, the normal battery charger provides a float (trickle) charge to the battery to keep the battery fully charged. The battery is available as a standby DC source to carry the loads automatically in case of loss of the charger. In case of complete loss of AC power, each DC control center will be fed by its battery for at least 2 hours. Upon restoration of AC power, the battery charger is operated in the equalize mode to supply all the steady state loads and the charging current required to restore the battery from the design minimum charge state to the fully-charged state within 12 hours. In case of loss of AC power to the normal battery charger or nonavailability of the normal battery charger due to maintenance or testing, a backup battery charger is available in each train which can be manually connected to supply the loads and trickle charge for one battery.

3.0 DISCUSSION

To date Units 1 and 3 have experienced the expected capacity from the 125V DC batteries. This has been confirmed by recent tests of the four spare cells in each of these units. The 125V DC batteries installed in Unit 2, however, are exhibiting degraded capacity. Capacity discharge tests run in September 1994 (during the mid-cycle outage) indicated capacities of 91.6% for bank A, 89.0% for bank B, 90.6% for bank C, and 88.3% for bank D. The licensee has concluded that the failure mechanism causes the batteries to degrade during the discharge/recharge cycle and that the projected capacities of the banks following the last capacity discharge test are: (1) bank A, 78.82%; (2) bank B, 82.49%; (3) bank C, 76.73%; and (4) bank D, 81.75%. As such, all banks are below the 90% limit of Specification 4.8.2.1.e. All banks have currently been

declared inoperable. The proposed TS amendment would allow operation of the Unit 2 safety-related 125V DC battery banks at less than the required 90% capacity in Specification 4.8.2.1.e. This proposed change is necessary to allow the Unit to change modes and to operate approximately three and one-half months (until the fifth refueling outage currently scheduled to begin on February 4, 1995). At that time all cells from the original AT&T lot in the four Class 1E batteries of Unit 2 will be replaced.

Each of the Class 1E batteries has sufficient capacity to independently supply the required loads as shown in Table 8.3-6 of the Updated FSAR for 2 hours. The sizing of the batteries is based on a minimum temperature of 60° F in the battery room for the 2-hour service period. The PVNGS design exceeds the IEEE Standard 450-1980 requirement for 25% design margin. For example, battery bank B has a design profile requiring 69.06% of the manufacturer's rated capacity of this battery bank (and recent recalculations by the licensee have resulted in additional margin for this particular battery). The current TS requires the as-found capacity to equal or exceed 90% of manufacturer's rated capacity and was conservatively selected based upon the expectation that the AT&T LINEAGE 2000 Round Cell battery capacity would increase for the rest of plant life.

Unit 2 Testing and Degradation Predictions

During the current outage to perform eddy current testing in Unit 2, the licensee conducted performance discharge capacity testing of the Class 1E batteries to satisfy the requirement of IEEE Standard 450-1980 to capacity test new batteries within the first two years in service. The test revealed that the battery capacities for the B and D battery banks were less than the 90% capacity required by TS 4.8.2.1.e (i.e., 89% and 88.3% respectively) while banks A and C were 91.6% and 90.6%, respectively. These results indicated unexpected degradation has occurred in battery capacity. The licensee performed an individual cell and battery capacity evaluation on previous tests of banks A, B, C, & D, factory tests, and additional testing on spare cells. The projections for battery capacity from this evaluation indicated that all four battery banks in Unit 2 were inoperable.

Each cell was evaluated for capacity using actual test data from the factory and Palo Verde capacity discharge testing. During these tests, individual cell voltages were recorded on a periodic basis throughout the testing. From this data, actual cell capacities could be determined directly or, in some cases, by extrapolation. Data was recorded (time and voltage) until overall battery terminal voltage reached 105.0V DC or an average of 1.75V DC per cell for a 60 cell bank.

After each individual cell capacity was calculated, a projection was made on cell capacity after the last test. Known cell degradation was calculated between discharge tests by subtracting the difference between tests. A linear regression analysis was performed on the data for battery banks B and D since there were three data points for these banks. The analysis showed that 117 of the 120 cells passed the goodness of fit test (correlation coefficient greater than 0.85). These results indicated that a linear degradation model

(averaging approximately 12% per capacity discharge test) adequately described the observed degradation process based on the data accumulated to date. Hence, using the known degradations from previous testing, a degradation was calculated for projection purposes.

After the calculated capacities were obtained for each cell, the total battery capacity was calculated. The actual capacities from Palo Verde test results for the four battery banks were compared to the analysis method to verify the results of the analysis and determine the magnitude of error. The analysis results were shown to be within 1 to 4% of actual test results. Part of this error is due to rounding up on calculated individual cell capacities.

Using the same methodology described above, a plan was formulated to make use of the spare cells from Units 1 and 3, and 23 new cells received from the manufacturer. It was determined to replace the four weakest cells in each of banks B and D with the spares from Units 1 and 3, and to replace the weakest 11 cells in bank A and the weakest 12 cells in bank C with the 23 new cells. As a result of this replacement, the capacities of the banks using the method discussed above are projected to be slightly above 85%. These capacities provide adequate margin to the required capacity for the most limiting battery bank (Battery A at approximately 56%) and ensure that the safety-related function of the batteries can be performed without cell reversal.

Compensatory Actions

The licensee has replaced the four weakest cells in battery banks B and D. Also prior to entering Mode 4, 11 of the weakest cells will be replaced in bank A and 12 in bank C. These replacements will increase projected battery capacities so that there will be adequate margin above that required for safety-related loads. Projected battery capacities prior to entering Mode 4 are expected to be slightly above 85% for each bank. Testing of the replacement cells and subsequent calculation of the resulting battery bank capacities prior to entry into Mode 4 will demonstrate that the battery banks will have sufficient capacity to perform their safety-related functions.

The licensee has replaced a combined total of 23 cells in the bank A and C batteries. The replaced cells will be used to form four control groups of 4 cells each. Testing of these four groups will be performed at approximately 30-day intervals as follows:

	Time From Present and Type of Test			
Control Group #	October	November	December	January
1	S	N/A	N/A	N/A
2	N/A	S	N/A	N/A
3	N/A	N/A	S	N/A
4	N/A	N/A	N/A	S

Legend: S = Battery Service Test (performed to the bank A battery load profile)

This testing is being performed to provide assurance that the degradation mechanism is primarily related to discharge/recharge cycling of the batteries (in lieu of aging) and to demonstrate that the batteries in the unit are capable of meeting the design duty cycle. After each test, an evaluation of the performance of each group will be performed using the following acceptance criteria:

(1) the control group results meet the bank A battery service load profile and

(2) no individual cell reversal occurs (<1.0 volts).

If the above criteria are not met, the unit will enter the action statement for Specification 3.8.2.1 and will take appropriate actions. During the meeting with the staff on October 12, 1994, the licensee additionally committed to verify the validity of their degradation model following each test and to provide the NRC staff with the results of each test.

In addition to the above testing, the licensee has committed to perform additional monitoring and measurements on the installed battery trains. The monitoring and measurements will be performed every other week for all cells, on a staggered basis between trains (so that one train is monitored each week) with limits and required action as shown below:

Parameter	Limits/Allowable	Actions to be Taken if Outside Limits
Float Voltage	≥ 2.18 Volts	Battery Inoperable
Float Current	≤500 ma	Battery Inoperable
Specific Gravity	≥ 1.280	Restore within limits within 7 days
	Avg of all connected cells >1.290	Restore within limits within 7 days
	Not more than 0.020 below average of all connected cells	Battery Inoperable
	Avg of all connected cells ≥ 1.280	Battery Inoperable

The licensee has also committed to the following additional controls and limitations on maintenance on important equipment:

PRA will be used to review all 125V DC system and related auxiliaries corrective/preventive maintenance work. The need to perform long-term maintenance and achieve long-term availability of important-to-safety equipment will be balanced.

PVNGS will issue a night order to the Unit 1 Control Room stating that Unit 2 offsite power supplies and associated 13.8 kV buses should not be interrupted.

Access to the switchyard will be limited. All emergent switchyard work will be reviewed by the Unit 1 Shift Supervisor.

Manual operation of the Auxiliary Feedwater Pump Turbine and Atmospheric Dump Valves will be reviewed with the Unit 2 operators.

Margin Calculation and Additional Testing

As discussed in the October 12, 1994, meeting with the staff, the licensee committed to complete the electrical load calculation for bank B battery by October 14, 1994. This action ensures that the bank A load profile is the worst-case profile.

Also, the licensee reported that additional capacity tests were performed on five cells removed from Battery 2A. The average of the results from these five cells supported the licensee's projections on battery capacity degradation during testing.

Root Cause

The three worst cells from bank D have been shipped to C&D Charter Power in Leola, Pennsylvania (the manufacturer) for a root cause determination. This root cause effort is being overseen by APS with the participation of C&D, AT&T (the cell designer) and Failure Prevention International. The cells arrived October 6, 1994; and one cell has undergone preliminary examination to exclude sudden loss of capacity as the potential cause of failure. The three sudden failure modes are (1) open or near open circuit, (2) low impedance short circuit, and (3) passivation of electrode active material. Teardown inspection of one cell revealed some signs of poor workmanship, but did not reveal the reason for diminished capacity. The cell examination ruled out sudden loss of capacity as a failure mode for this particular cell. It was, therefore, concluded for this cell that the failure mode would be a gradual decline in capacity due to an active material utilization problem. Further examination and testing will be performed until a final determination of the cause of failure is made. Disassembly and inspection of the remaining 2 cells at the C&D Facility will be performed. The licensee has committed to promptly report to the NRC staff any significant findings that invalidate their conclusion(s) from surveillance testing, root cause determination, or any other source. Also, the licensee committed to provide the NRC staff with results from their root cause determination efforts.

An NRC staff member toured the manufacturer's facility on October 9, 1994, and observed the root cause determination effort. A visual inspection of the three cells (including the internal parts from the teardown) was performed and a walkdown of the different manufacturing stages was conducted.

Conclusions

The initial conditions of the Design Basis Accident and transient analyses in the Updated FSAR, Chapter 6 and Chapter 15, assumes that Engineered Safety Feature systems are operable. The DC electric power system provides normal and emergency DC electrical power for the Emergency Diesel Generators, emergency auxiliaries, and control and switching during all modes of operation. The operability of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources operable during accident conditions in the event of (1) an assumed loss of all offsite AC power or all onsite AC power and (2) a worst case single failure.

The degradation experienced by the Unit 2 batteries has resulted in capacities which are still in excess of that required for the batteries to perform their safety-related function. The licensee has performed calculations that demonstrate that the maximum required capacity necessary for the most limiting bank (Battery bank A, at approximately 56%) is maintained with adequate margin. Additionally, the licensee has performed adequate testing on the spare cells and cells removed from Battery 2A to support their degradation model, and has proposed acceptable compensatory actions to ensure continued battery operability. Therefore, the staff concludes that projected available capacity for each battery (greater than 85%), although a reduction from the current TS margin based on a minimum of 90% capacity, is acceptable.

4.0 EMERGENCY CIRCUMSTANCES

During the current Unit 2 outage to conduct steam generator eddy current testing, APS performed capacity testing on the Class 1E batteries. Battery Banks A and C were capacity discharge tested to satisfy the requirements of IEEE Standard 450-1980 to capacity test new batteries within the first two years of service. While test results met TS requirements, the capacity of the battery banks were below that expected. As a result, the B and D banks were capacity tested. On September 29, 1994, the B and D battery banks were declared inoperable because the measured capacity was less than the required 90% capacity stated in Specification 4.8.2.1.e. Although preliminary test results indicated that battery Banks A and C were satisfactory, on October 6, 1994, they were also declared inoperable because a projection of the test results based upon anticipated degradation indicated that they did not meet the 90% criteria of Specification 4.8.2.1.e. Currently, Unit 2 is complying with Action a. of Specification 3.8.2.2, "DC Sources - Shutdown."

The emergency circumstances exist because the four Class 1E batteries do not meet the 90% requirement; therefore, PVNGS Unit 2 cannot change modes per TSs 4.0.1 and 4.0.4. TS 4.0.1 states that Surveillance Requirements shall be applicable during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement. TS 4.0.4 states that entry into an OPERATION MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as

otherwise specified. This provision shall not prevent passage through or to operational MODES as required to comply with ACTION requirements. The proposed one-time TS states that the provisions of Specifications 4.0.1 and 4.0.4 are not applicable only to the battery performance discharge test of SR 4.8.1.2.e until the batteries are replaced during the upcoming refueling outage or upon any deep discharge of the battery. This change permits resumed plant operation, while maintaining the current TS action statements and limiting conditions for operation.

APS has eight spare cells on hand, and 23 cells have been received from the vendor. A replacement plan has been developed so that the four battery banks will all have capacities which exceed 85% as determined by engineering analysis. It has been determined that this capacity is sufficient for the battery banks to perform their safety-related function until entry into Mode 4 following the Unit 2 shutdown for refueling in February 1995. Calculations performed by the licensee, and documented in their letter dated October 12, 1994, show greater than 25% capacity margin on all batteries.

The emergency circumstances could not be avoided because the degradation in battery capacity was unexpected. The batteries were installed in Unit 2 in May 1993 and were expected to have a useful life of at least 40 years. Therefore, APS was not prepared to replace the batteries at this time. An insufficient number of cells exist to replace all four battery banks (a total of 244 cells) at this time. Successful manufacture, testing, delivery and installation cannot be accomplished for several weeks.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the 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. The licensee has evaluated the proposed changes against these standards and has concluded that:

a. The change does not involve a significant increase in the probability or consequences of an accident previously evaluated:

The DC power sources are required to ensure that sufficient power is available to supply safety-related equipment required for safe plant shutdown and the mitigation and control of accident conditions. Therefore, a change in battery capacity requirements does not involve a significant increase in on [sic] the probability of an accident previously evaluated.

APS has determined, through calculation and test, that the most highly loaded battery bank can continue to perform safety-related

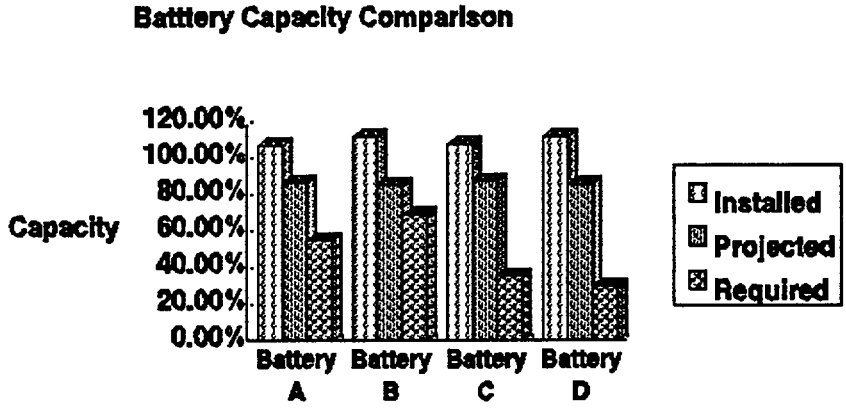
function with its capacity reduced to 69.06% of the original installed capacity. With the replacement of 11 cells in bank A, 4 cells in bank B, 12 cells in bank C and 4 cells in bank D, analysis shows that the projected capacities of the banks, will provide at least 15% margin above that required for the safety-related loads. The projected capacities are expected to be in excess of 85% for each bank. As such, the battery banks have sufficient capacity for the safety-related loads following a design basis event. In addition, the majority of the degradation of the battery cells occurs during discharge testing of the batteries. Therefore, since no discharge testing of the batteries will be performed between now and the next refueling outage, the battery capacity will remain above that needed to fulfill the required safety function. Should any deep discharge of any battery occur, the battery will be declared inoperable. Therefore, the proposed change to the battery capacity requirement does not involve a significant reduction in the consequences of an accident previously evaluated.

b. The change does not create the possibility of a new or different kind of accident from any accident previously evaluated:

Calculations and testing have demonstrated that the most highly loaded battery bank (bank B) will continue to perform its safety-related function even if degraded to 69.06% of its original installed capacity. Conservative projections indicate that battery capacity will remain well above this value. Therefore, the proposed change will not create the possibility of a new or different kind of accident from any previously evaluated.

c. The change does not involve a significant reduction in a margin of safety:

Although battery capacity is less than required by Specification 4.8.2.1.e, sufficient capacity remains for the batteries to perform their intended function. The following graph demonstrates the margin in capacity based on projected capacity after the replacement of 31 cells as described above.



In the most limiting case, the B battery still has greater than 15% margin between the projected and required capacities. Therefore, the proposed change to battery capacity requirements does not involve a significant reduction in a margin of safety.

The NRC staff notes that by letter dated October 12, 1994, the licensee stated that the electrical load calculation for bank B battery has been completed, thereby ensuring that the bank A load profile is the worst-case profile. This recalculation provides additional margin between the worst-case projected and required capacities (Battery A has greater than 25% margin). The NRC staff agrees that the above standards are satisfied and, therefore, determines that the amendment request involves no significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arizona State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission made a final no significant hazards consideration finding with respect to this amendment. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: October 13, 1994