

PVNGS LIGHTING SYSTEM EVALUATION

INTRODUCTION

The normal lighting system provides approximately 90 percent of the illumination throughout the power block of each unit and is fed from Non-Class 1E power sources.

The essential lighting system supplements normal lighting, and provides each unit with approximately 10 percent of normal operating illumination throughout the power block in the event of a failure of the normal lighting system. Power for the essential lighting system is provided by diesel backed Class 1E power that is isolated in the event of a SIAS actuation.

The 8 hour emergency lighting system provides reliable battery-powered lighting for all safe shutdown areas, routes to those areas from the control room, and for access and egress along emergency exit routes for the power block. Emergency illumination is provided in all plant areas to back up the essential lighting.

The power block emergency lighting is energized automatically upon the loss of essential lighting. In the control room suspended ceiling area, a specific number of the fluorescent fixtures of the essential lighting system provide emergency lighting. Integral battery-powered units, each with two incandescent lamps, provide emergency lighting in all other areas. The batteries are sized for 8 hours of operation in areas needed for the operation of safe shutdown equipment and in access and egress routes thereto. Emergency lighting for personnel egress from other plant areas is provided by 1-1/2 hour (minimum) battery units. Power for emergency lights in the horseshoe portion of the control room and in the panel area is supplied by a seismically qualified emergency power unit containing an inverter, battery, charger, and output transfer switch to transfer from essential power source to the inverter output. The emergency power unit feeds one fluorescent lamp, each, in selected fixtures in the ceiling lighting system and in the panel area.

The integral emergency lighting units are Dual Lite No. AS110-2-C-SST-277V or 120V with EXT-P5SB 6-volt lamps, nickel cadmium battery; Dual Lite Nema 4 x 7 with sealed 6-volt storage battery, charger, and automatic solid-state transfer delay, and Emergi-Lite 6-volt with two 9v heads.

Some fluorescent fixtures in the control building ac switchgear room, dc equipment area, auxiliary building channel A and B penetration rooms, and the remote shutdown panel area are fed from four UPS (E-QBN-001, -002, -003, and -004) as shown on drawings 13-E-ZAL-004, -005 and 13-E-ZJL-002.

INITIATING EVENT

During the Unit 3 trip on March 3, 1989, inadequate lighting hampered the operator's ability to manually open the ADV's. The ADV's are located on the 120' elevation of the MSSS Bldg but the handwheels required to manually operate the ADV's are located on the 140' elevation of the MSSS Bldg. The lighting system in each room of the 140' MSSS Bldg. consisted of two 500 watt incandescent lamps fed from the normal lighting system, one 500 watt incandescent lamp fed from the essential lighting system and two Dual-Lite self contained battery pack emergency lighting units rated for 1-1/2 hours of operation. The status of the lighting system at the time when the operator tried to manually operate the ADV's was the normal lighting was inoperable due to the loss of the Non-Class 1E power source, the essential lights were off due to SIAS actuation isolation, and the emergency light in both rooms provides only access and egress from the rooms. When the essential lighting system was restore, the essential light in the south room had a burned out bulb leaving that room in total darkness and the essential light in the north was very dim and would not have helped the operator in the manual operation of the ADV's. The emergency lights were off as per design.

PROBLEMS

FSAR INTERPRETATION

FSAR Section 9B requires 8 hour emergency lighting to manually operate ADV's. This lighting was installed at the 120' elevation of the MSSS Bldg. and illuminated the valve itself. The ADV manual operators (handwheels) are located at the 140' elevation of the MSSS Bldg. The only emergency lights at the 140' level are two 1-1/2 personnel safety access and egress lights.

EED Electrical felt that the intent of the FSAR was to manually control the ADV's from the handwheels at the 140' elevation of the MSSS Bldg. After the March 3rd event, several discussions were held with NED, EED and Licensing. As a result of these discussions, NED and Licensing felt that these lights were only an enhancement and not required to be Appendix 'R' lights, but agreed to make them 8 hour rated lights. EED and Management still had concerns on the interpretation of the FSAR. This resulted in DCP 1, 2, 3FE-QD-022 being issued to upgrade 140' elevation emergency lighting to 8 hour rated emergency lights and meet specific criteria.

PM's/Maintenance

Prior to the March 3rd event, EED had concerns about the reliability of the emergency lighting in the MSSS Bldg. PCR's 87-13-QD-004 and 87-13-QD-007 were generated to upgrade the emergency lighting. Both PCR's were cancelled in March of 1988 by NED. EED Electrical and the Electrical Standard Group developed new preventive maintenance tasks to relamp all incandescent lamps by groups with the correct long life bulbs. These tasks were written in late 1988 and were not performed in the MSSS Bldg. but were scheduled for the upcoming refueling outage. EED feels that if these tasks would have been completed prior to the event, there would have been adequate essential lighting to operate the ADV's.

Prior to the event, the 1-1/2 hour rated emergency lighting PM tasks were waived 5 consecutive times. Emergency lighting would have been more reliable if these PM's had been completed. (Some questions to whether the emergency lights worked during the event have never been answered.)

EED's EVALUATION OF CORRECTIVE ACTIONS TAKEN

1, 2, 3FE-QD-022 was generated by NED as an enhancement to resolve the lighting issues in the MSSS Bldg. and to provide access and egress to that area. Prior to the issuance of this DCP, EED Electrical generated PCR 89-13-QD-001, approved by PMC on 3/15/89, to install emergency lights in the MSSS powered by an UPS in a location outside of the MSSS Bldg. Decisions were made to install self contained battery pack emergency lights (Emergi-Lite) because of parts lead time and the Unit restart schedule. EED had many concerns about the quality and reliability of the Emergi-Lite units. EED considered these units to be of poor quality and unsuitable for the application. EED also questioned the reliability, NEMA rating and temperature rating of these units. This was discussed in great detail with Management, and the System Engineer was directed to pursue a higher quality product. Exide battery pack lighting used by SONGS was found available and seemed to be of better quality but NED determined that these lights may not be able to handle summertime temperatures at PVNGS. EED again asked NED to pursue the external UPS design. Several letters were written to express EED's reluctance to install Emergi-Lite units. A decision was made to install Emergi-Lite units in Unit Two as a temporary fix and pursue the UPS design for Units One and Three. This decision was changed to install Emergi-Lite in all three Units but the UPS was to be installed prior to summer to keep from having problems from high ambient temperatures. This decision was changed because of economic consideration by the PMC and scheduled for 1991. The Emergi-Lite units were installed in all three Units and successfully passed their 8 hour burn test after experiencing a very high failure rate. EED Electrical believed parts could have been obtained to install the external UPS design prior to restart of Units 1 and 3. EED also expressed concerns that QD-022 lights were shown in Safe Shutdown procedure and on Safe Shutdown drawings but were considered enhancements. As a result of the event, EED Electrical and Operations conducted walkdowns of each Unit utilizing

Procedure 4XAO-XZZ44 (Shutdown Outside Control Room Due to Fire and/or Smoke), 4XOP-XDG02 (Emergency Diesel Generator 'B') and Safe Shutdown drawings 13-E-ZPL-003 Rev. 4, 13-E-ZPL-002 Rev. 5, and 13-E-ZPL-003 Rev. 4. Final Reports of these walkdowns were issued to NED after meetings with Operation Standards, EED, and Management. The results of these walkdowns showed several areas requiring upgraded or additional emergency lighting to meet the Appendix 'R' requirements and procedure intent. (Ref. LER 89-019). The walkdowns resulted in the issuance of DCP 1, 2, 3FE-QD-023. Some areas considered EED and Operation Standards required Safe Shutdown lights, NED considered enhancements. (Letter #167-04502-SLK/EC Sept. 20, 1989). EED still had concerns that all the total Appendix 'R' Safe Shutdown path lighting may not be adequately addressed. Thus S-Mod 1, 2, 3SM-QD-007 was generated to be done after restart as an enhancement.

Although DCPs QD-022 and QD-023 were designed and installed in the Units prior to restart, Electrical Standards was unable to generate PM tasks due to a SIMS database procedural problems. ICR 06478 against procedure 81AC-OCC05 was written by EED on March 27, 1989 with the intention to resolve this issue. Several EERs were also written to address these concerns. This problem, however, never been resolved; and therefore no PMs were being generated to cover the additional lights installed by DCP QD-022 and QD-023, due to lack of location codes in SIMS. Several meetings with EED and Electrical Standards were held to determine how to implement location codes into the SIMS database. Also Hot Line was appraised of this concern and the Quality Department was asked to generate a CAR. Electrical Standards has walkdown all locations and is in the process of completing the PMs.

RECOMMENDATIONS

- | | |
|-----------------|---|
| LIC/NED | Determine requirements of Appendix 'R' Safe Shutdown and FSAR lighting. |
| LIC | Initiate FSAR change to clarify MSSS ADV lighting, egress and access routes. |
| NED | Initiate/change Safe Shutdown drawings to reflect actual Safe Shutdown path and light locations. |
| OPS STD/NED | Revise Safe Shutdown procedures to be in agreement with NED final determination of Appendix 'R' Safe Shutdown equipment. |
| NED | Generate Design Change to identify Safe Shutdown route in Units. PCR 89-13-ZZ-003 initiated by EED. |
| NED | Issue drawings to show equipment illuminated by Appendix 'R' Safe Shutdown lighting. |
| NED/EED | Install external UPS DCP prior to summer of 1990. |
| NED/OPS STD/EED | Determine actual Appendix 'R' Safe Shutdown requirements and update all procedures and implement design changes if required. |
| NED | Modify Sitemod QD-007 to include areas that were omitted. |
| MAINT/EED/ABRM | Install Sitemod QD-007 prior to restart Units 1 and 2 and as soon as possible in Unit 3. |
| NED | Change Procedure 81AC-OCC05 to allow location codes of new equipment to be entered into SIMS database, as part of the normal design modification process. |
| NED | Incorporate outstanding PCRs that require SIMS database updates. |
| NED | Review old DCPs that are being worked which adds new equipment to ensure all equipment is added to SIMS database. |

EED

Walkdown and generate a monthly State of System report to upper management reflecting the condition of all Appendix 'R' Safe Shutdown lighting not in high radiation areas.

Management

Create a program that will allow System Engineers to get priority work done on critical equipment in a timely manner.

Maint

Ensure emergency lighting receives priority maintenance and feedback to be given to System Engineers.

NED

Resolve concerns addressed in EED lighting report that all Auxiliary Bldg. essential lighting is fed from Train A bus.

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT ONE

EQUIPMENT NUMBER	STATUS	COMMENTS
1E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
1E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-06	LIGHTS OK	PC BOARD WARPED
1E-STL-74C-09-110-07	LIGHTS OK	
1E-STL-74C-09-130-08	LIGHTS OK	
1E-STL-74C-09-140-09	LIGHTS OK	
1E-SCL-72A-14-140-15		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-16		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-17		PC BOARD WARPED REAL BAD
1E-SCL-72A-14-140-18		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-19		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-20		PC BOARD LITTLE WARPED
1EQBN0004		BATTERY #2A FAILED TO MEET ACCEPTANCE CRITERIA AFTER 1/2 HR OPEN CIRCUIT. WO 391762 WRITTEN TO FIX.
1EQBN0001		BATTERY FAILED ACCEPTANCE CRITERIA. WR 389835 WRITTEN TO FIX.
1EQBN0002		POST ON BATTERY #3A WAS CRACKED AND FLATTEN OUT. WO 348770 WRITTEN TO FIX.

STL For ADV area (cypress & access)

SCL lights for ADV handwheel

2/25/90

Quarterly PM not written yet

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT TWO

EQUIPMENT NUMBER	STATUS	COMMENTS
2E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WAPPED BAD
2E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-090-06	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-110-07	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-130-08	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-140-09	LIGHTS OK	PC BOARD WARPED
2E-SCL-72A-14-140-15		* LIGHT FAILED 8 HR BURN TEST. WO 411517 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003
2E-SCL-72A-14-140-16		LIGHT HAS CONTINUOUS HI-CHARGE INDICATION. WO 408933 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SCL-72A-14-140-17		LIGHT HAS CONTINUOUS HI-CHARGE INDICATION. WO 408937 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SCL-72A-14-140-18		PC BOARD WARPED
2E-SCL-72A-14-140-19		* LIGHT FAILED 8 HR BURN TEST. WO 411551 WRITTEN TO FIX. PC BOARD WARPED BAD, EER 90-QD-003.
2E-SCL-72A-14-140-20		* LIGHT FAILED 8 HR BURN TEST. WO 411549 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SJL-D79-04-080-08	LIGHTS OK	UNIT READY AND HI-CHARGE LIGHT ON. WR 543555 WRITTEN TO FIX.
2E-QBN-0002		BATT #2B FAILED MIN. VOLT ACC. CRITERIA. WO 410186 WRITTEN TO FIX. UPS IS READING 30% LOAD. WR 346029 WRITTEN TO FIX.

2/25/90

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT THREE

EQUIPMENT NUMBER	STATUS	COMMENTS
3E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
3E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-090-06	LIGHTS OK	
3E-STL-74C-09-110-07	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-130-08	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-140-09	LIGHTS OK	PC BOARD WARPED
3E-SCL-72A-14-140-15		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-16		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-17		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-18		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-19		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-20		PC BOARD LITTLE WARPED
<hr/>		
3EQBN002-G	LAMP OUT	PMWO 402054 ALSO WAS REPORTED ON INVALID MNCR 90-QB-0001
3EQBN002-F	LIGHT OK	FIXTURE SUPPORT BROKEN
3E-SGL-D79-05-100-02	LIGHT OK	POSSIBLE CHARGING CARD PROBLEM WP 543554 WRITTEN BY SE
3E-SJL-D79-04-100-10	LIGHT OK	POSSIBLE CHARGING CARD PROB' EM WR 543554 WRITTEN BY ST
3E-SAL-72D-03-120-20	LIGHT OK	OVER SPRAYED WITH GRAY PAINT
3E-SAL-72C-03-100-03	LIGHT OOS	WR 368605 CANCELLED BY WO 404114
3E-ZAL-72C-03-100-05	LIGHT OK	TO BE UPGRADED BY 3SM-QD-007 TO A SAFESHUTDOWN LGT. WO 407506 WRITTEN TO IMPLEMENT SITEMOD. SITEMOD IS NOT ISSUED YET.

2/25/90

TO: DAN SMYERS

DATE: 02-25-90

FROM: LINDA MITCHELL

DURING MY SYSTEM ENGINEER WALKDOWN IN UNIT 3, ON SATURDAY FEB. 24, 1990, I FOUND THAT THE SAFE SHUTDOWN LIGHT 3EQBN002-G IN CONTROL BUILDING 100' ELEVATION HAD NOT BEEN REPAIRED YET. THIS LIGHT WAS A UNIT RESTART ITEM INSTALLED UNDER DCP 3FE-QD-023 AND HAS NOT BEEN OPERATING SINCE 01-05-90. THIS CONDITION WAS REPORTED ON MNCR 90-QB-0001, BUT MNCR WAS INVALIDATED ON 02-16-90.

THE NRC REGION INSPECTION TEAM WAS TOLD THAT SAFE SHUTDOWN LIGHT 3EQBN002-G WAS BEING REPAIRED ON 02-15-90. ALTHOUGH PM WO# 00402054 HAS BEEN GENERATED TO REPAIR THIS LIGHT, IT HAS NOT BEEN FIXED TO DATE. ALSO THE OTHER SAFE SHUTDOWN LIGHT IN THAT AREA, 3EQBN002-F, HAS COME UNBOLTED FROM UNISTRUT. THIS CONDITION HAS ALSO EXISTED SINCE 12-24-89.(REF. WO# 00405087)

I FIND THESE REPAIRS TO BE UNTIMELY.

MATERIAL NONCONFORMANCE REPORT

19 MNR NO. _____ 21 PAGE _____ OF _____

INITIATOR

1 PRINT NAME: Michael 2 DEPARTMENT: EEB ELECTRICAL 3 PHONE: 2647
 4 SIGNATURE: [Signature] 5 DATE: 2/7/90 6 TIME: 2:00
 X

DESCRIPTION

7 EQUIPMENT NO. _____ 8 LOCATION: 13-1 9 P.O. SPECIFICATION NO. _____
 10 MODEL/TYPE/PART NO. 35 11 SERIAL HEAT LOT/UNIQUE IDENTIFIERS: 13-1 12 CLASS: 7-5 13 UNITS: 3 14 SEC. B: _____
 15 CONDITION: SAFE SHUT DOWN LIGHT IS NOT FEASIBLE. LIGHT IS REQUIRED FOR SAFE SHUT DOWN. ADDED PER GCP 455-90-22 FOR UNIT RESTART. (MAINTENANCE)

16 REQUIREMENTS: ADDITIONAL REQUIREMENT TO BE IN SAFETY

VALIDATION

17 Valid YES NO 18 X [Signature] DATE: 2-16-90 TIME: 11:50 AM
 20 Notification: NAME _____ ORGANIZATION _____ DATE _____ TIME _____
 21 Conditional Release YES NO
 Notification: NAME _____ ORGANIZATION _____ DATE _____ TIME _____
 22 Tape Issued YES NO
 23 Comments: [Handwritten notes]

DISPOSITION

24 Scrap Rework Repair Use As Is 25 Disposition: _____
 26 Additional Sheets YES NO

27 Root Cause YES NO 28 50 59 YES NO 29 Copy to ANII YES NO 30 Design Change YES NO
 32 Dispositioner X SIGNATURE: _____ TITLE: _____ DATE: _____
 33 Concurrence (SUPERVISOR) X SIGNATURE: _____ TITLE: _____ DATE: _____
 34 Concurrence (QA OC) X SIGNATURE: _____ TITLE: _____ DATE: _____

CLOSURE

35. NED Design Verification X NED SIGNATURE: _____ DATE: _____
 36. Verification of C/A X OC SIGNATURE: _____ DATE: _____
 37. Final Acceptance X OC SIGNATURE: _____ DATE: _____



PVNGS WORK REQUEST

WR NO 382852		ORIGINATOR NAME Rod Mattila		STA NO 474	EXT 2944	DATE 12-24-89	TIME 2200
EQUIPMENT TAG NO 3EGBN002		NIBBS COMPONENT CODE IPN SUP		EQUIPMENT FUNCTION DESCRIPTION Safe			
LOCATION A Battery charger equip Rm		UNIT III		PLANT FAILURE MODE 3	STATUS AT FAILURE A	FAILURE DETECTION J	
PROBLEM DESCRIPTION ONE end of fixture has become un-Bolted from the unistrent ON 3EGBN002 F							
RECOMMENDED ACTION Re-Attach fixture to unistrent							
REFERENCES (P&ID TECH MANUALS ETC.)							
MAINTENANCE REQUIRED TAG HUNG? (CHECK ONE) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> CRDL				LOCATION OF MAINTENANCE REQUIRED TAG ON FIXTURE			
NAME (PRINTED) Richard D Williams				SIGNATURE, DATE, EXT, STA NO [Signature] 12/24/89 6074 2915			
TECH SPEC RELATED? (CHECK ONE) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				ORIGINATING SUPERVISOR			
RELEASING ORGANIZATION							
ROOT CAUSE ANALYSIS REQUIRED? (CHECK ONE) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		EER NO NIA	RESTRICT MOLE 0	EFFECT ON SYSTEM E	EFFECT ON PLANT G	PLANT MODE	
TSCCR/CRDL NO NIA		SIGNATURE, DATE, EXT [Signature] 12-24-89 3441				PRIORITY 3A	NEED DATE 1-4-90
COMMENTS							
RECEIVED AND INPUT BY [Signature]							
DISPOSITION (CHECK ONE)		DATE 12/27/89		TIME 2230		SPECIAL CONDITIONS	
<input type="checkbox"/> WR CANCELLED DUPLICATE OF		COMMENTS		WORK CENTER AINTC		DISCIPLINE FLEC	
<input type="checkbox"/> WR NOT APPROVED. SEE COMMENTS							
<input type="checkbox"/> BLANKET WO ISSUED							
<input type="checkbox"/> WO ISSUED. WO NO. 408027							
<input type="checkbox"/> WR CANCELLED. SEE WO NO.							
WORK CONTROL REVIEWER [Signature]				EXT 2444		DATE 1/17/90	

*Rec'd by
2-19-90*

FLEC



PVNGS WORK REQUEST

ORIGINATOR					
WR NO 382867	ORIGINATOR NAME PAUL E OHLSON	STA NO 2174 2915	EXT 2915	DATE 1-5-90	TIME 1600
EQUIPMENT TAG NO 3EQPN002 G	NPROS COMPONENT CODE IPW SUP	EQUIPMENT FUNCTION DESCRIPTION LIGHT FIXTURE			
LOCATION "A" EQUIP RM 254423E-DHA-M-1	UNIT III	PLANT FAILURE MODE 3	STATUS AT FAILURE A	FAILURE DETECTION J	
PROBLEM DESCRIPTION LIGHT FIXTURE DOES NOT WORK AFTER RE-LAMPING. TRIED TO START, BUT, WOULD NOT LIGHT.					
RECOMMENDED ACTION RE-PLACE BALLAST					
REFERENCES (PAID TECH MANUALS ETC.)				ADDITIONAL INFORMATION ATTACHED (CHECK ONE) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
MAINTENANCE REQUIRED TAG HUNG (CHECK ONE) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> CRDL		LOCATION OF MAINTENANCE REQ. TAG 3EQPN002 G			
ORIGINATING SUPERVISOR					
NAME (PRINTED) P. Ohlson	SIGNATURE <i>[Signature]</i>	DATE/EXT 1-4-90 2915	TECH SPEC RELATED (CHECK ONE) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
RELEASING ORGANIZATION					
ROOT CAUSE ANALYSIS REQUIRED? (CHECK ONE) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	ECR NO NIA	RESTRICT MODE 0	EFFECT ON SYSTEM B	EFFECT ON PLANT G	PLANT MODE 1 2 3 4 5 6 7 8 9 0
TCCR/CRDL NO NIA	SIGNATURE <i>[Signature]</i>	DATE/EXT 1-9-90 3001	PRIORITY 3A	NEED DATE 1-15-90	
COMMENTS					
WORK CONTROL CENTER					
RECEIVED AND INPUT BY <i>[Signature]</i>	DATE 1/8/90	TIME 0830	SPECIAL CONDITION	WORK CENTER HNTC	DISCIPLINE ELEC
DISPOSITION (CHECK ONE)		COMMENTS added to wo # 395110			
<input type="checkbox"/> WR CANCELLED. DUPLICATE OF _____					
<input checked="" type="checkbox"/> WR NOT APPROVED. SEE COMMENTS					
<input type="checkbox"/> BLANKET WO ISSUED					
<input type="checkbox"/> WO ISSUED. WO NO _____					
<input type="checkbox"/> WR CANCELLED. SEE WO NO _____					
WORK CONTROL REVIEWER <i>[Signature]</i>		EXT 3440	DATE 1/9/90		

*Rec'd - By Syp. Et
2-16-90*

- 1) Do bus test on all Emer. lights
- 2) Generate a list of all Emer. lights
 - where are they
 - what type are they
 - are they original design App. 'R' lights
 - current status
- 3) Write the quarterly (now monthly) PM
- 4) Expedite the DCP to upgrade the Emer. lights
- 5) Do root cause of failing lights
- 6) Put together a team to do this.
- 7) Get independent evaluation by NSO ~~NSO~~

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT ONE

EQUIPMENT NUMBER	STATUS	COMMENTS
1E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
1E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-06	LIGHTS OK	PC BOARD WARPED
1E-STL-74C-09-110-07	LIGHTS OK	
1E-STL-74C-09-130-08	LIGHTS OK	
1E-STL-74C-09-140-09	LIGHTS OK	
1E-SCL-72A-14-140-15		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-16		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-17		PC BOARD WARPED REAL BAD
1E-SCL-72A-14-140-18		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-19		PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-20		PC BOARD LITTLE WARPED
1EQBN0004		BATTERY #2A FAILED TO MEET ACCEPTANCE CRITERIA AFTER 1/2 HR OPEN CIRCUIT. WO 391762 WRITTEN TO FIX.
1EQBN0001		BATTERY FAILED ACCEPTANCE CRITERIA. WR 389835 WRITTEN TO FIX.
1EQBN0002		POST ON BATTERY #3A WAS CRACKED AND FLATTEN OUT. WO 348770 WRITTEN TO FIX.

2/25/90

E/2

3 PAGES

EXHIBIT "B"

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT TWO

EQUIPMENT NUMBER	STATUS	COMMENTS
2E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-090-06	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-110-07	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-130-08	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-140-09	LIGHTS OK	PC BOARD WARPED
2E-SCL-72A-14-140-15		LIGHT FAILED 8 HR BURN TEST. WO 411517 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003
2E-SCL-72A-14-140-16		LIGHT HAS CONTINUOUS HI-CHARGE INDICATION. WO 408933 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SCL-72A-14-140-17		LIGHT HAS CONTINUOUS HI-CHARGE INDICATION. WO 408937 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SCL-72A-14-140-18		PC BOARD WARPED
2E-SCL-72A-14-140-19		LIGHT FAILED 8 HR BURN TEST. WO 411551 WRITTEN TO FIX. PC BOARD WARPED BAD, EER 90-QD-003.
2E-SCL-72A-14-140-20		LIGHT FAILED 8 HR BURN TEST. WO 411549 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SJL-D79-04-080-08	LIGHTS OK	UNIT READY AND HI-CHARGE LIGHT ON. WR 543555 WRITTEN TO FIX.
2E-QBN-0002		BATT #2B FAILED MIN. VOLT ACC. CRITERIA. WO 410186 WRITTEN TO FIX. UPS IS READING 30% LOAD. WR 346029 WRITTEN TO FIX.

2/25/90

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT THREE

EQUIPMENT NUMBER	STATUS	COMMENTS
3E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
3E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-090-06	LIGHTS OK	
3E-STL-74C-09-110-07	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-130-08	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-140-09	LIGHTS OK	PC BOARD WARPED
3E-SCL-72A-14-140-15		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-16		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-17		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-18		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-19		PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-20		PC BOARD LITTLE WARPED
3EQBN002-G	LAMP OUT	PMWO 402054 ALSO WAS REPORTED ON INVALID MNCR 90-QB-0001
3EQBN002-F	LIGHT OK	FIXTURE SUPPORT BROKEN
3E-SGL-D79-05-100-02	LIGHT OK	POSSIBLE CHARGING CARD PROBLEM WR 543554 WRITTEN BY SE
3E-SJL-D79-04-100-10	LIGHT OK	POSSIBLE CHARGING CARD PROBLEM WR 543554 WRITTEN BY SE
3E-SAL-72D-03-120-20	LIGHT OK	OVER SPRAYED WITH GRAY PAINT
3E-SAL-72C-03-100-03	LIGHT OOS	WR 368605 CANCELLED BY WO 404114
3E-SAL-72C-03-100-05	LIGHT OK	TO BE UPGRADED BY 3SM-QD-007 TO A SAFESHUTDOWN LGT. WO 407506 WRITTEN TO IMPLEMENT SITEMOD. SITEMOD IS NOT ISSUED YET.

2/25/90

PVNGS LIGHTING SYSTEM EVALUATION

INTRODUCTION

The normal lighting system provides approximately 90 percent of the illumination throughout the power block of each unit and is fed from Non-Class 1E power sources.

The essential lighting system supplements normal lighting, and provides each unit with approximately 10 percent of normal operating illumination throughout the power block in the event of a failure of the normal lighting system. Power for the essential lighting system is provided by diesel backed Class 1E power that is isolated in the event of a SIAS actuation.

The 8 hour emergency lighting system provides reliable battery-powered lighting for all safe shutdown areas, routes to those areas from the control room, and for access and egress along emergency exit routes for the power block. Emergency illumination is provided in all plant areas to back up the essential lighting.

The power block emergency lighting is energized automatically upon the loss of essential lighting. In the control room suspended ceiling area, a specific number of the fluorescent fixtures of the essential lighting system provide emergency lighting. Integral battery-powered units, each with two incandescent lamps, provide emergency lighting in all other areas. The batteries are sized for 8 hours of operation in areas needed for the operation of safe shutdown equipment and in access and egress routes thereto. Emergency lighting for personnel egress from other plant areas is provided by 1-1/2 hour (minimum) battery units. Power for emergency lights in the horseshoe portion of the control room and in the panel area is supplied by a seismically qualified emergency power unit containing an inverter, battery, charger, and output transfer switch to transfer from essential power source to the inverter output. The emergency power unit feeds one fluorescent lamp, each, in selected fixtures in the ceiling lighting system and in the panel area.

The integral emergency lighting units are Dual Lite No. AS110-2-C-SST-277V or 120V with EXT-P5SB 6-volt lamps, nickel cadmium battery; Dual Lite Nema 4 x 7 with sealed 6-volt storage battery, charger, and automatic solid-state transfer delay, and Emergi-Lite 6-volt with two 9v heads.

Some fluorescent fixtures in the control building at switchgear room, dc equipment area, auxiliary building channel A and B penetration rooms, and the remote shutdown panel area are fed from four UPS (E-QBN-001, -002, -003, and -004) as shown on drawings 13-E-ZAL-004, -005 and 13-E-ZJL-002.

INITIATING EVENT

During the Unit 3 trip on March 3, 1989, inadequate lighting hampered the operator's ability to manually open the ADV's. The ADV's are located on the 120' elevation of the MSSS Bldg but the handwheels required to manually operate the ADV's are located on the 140' elevation of the MSSS Bldg. The lighting system in each room of the 140' MSSS Bldg. consisted of two 500 watt incandescent lamps fed from the normal lighting system, one 500 watt incandescent lamp fed from the essential lighting system and two Dual-Lite self contained battery pack emergency lighting units rated for 1-1/2 hours of operation. The status of the lighting system at the time when the operator tried to manually operate the ADV's was the normal lighting was inoperable due to the loss of the Non-Class 1E power source, the essential lights were off due to SIAS actuation isolation, and the emergency light in both rooms provides only access and egress from the rooms. When the essential lighting system was restore, the essential light in the south room had a burned out bulb leaving that room in total darkness and the essential light in the north was very dim and would not have helped the operator in the manual operation of the ADV's. The emergency lights were off as per design.

4PAGES E/3
EXHIBIT "A"

PROBLEMS

FSAR INTERPRETATION

FSAR Section 9B requires 8 hour emergency lighting to manually operate ADV's. This lighting was installed at the 120' elevation of the MSSS Bldg. and illuminated the valve itself. The ADV manual operators (handwheels) are located at the 140' elevation of the MSSS Bldg. The only emergency lights at the 140' level are two 1-1/2 personnel safety access and egress lights.

EED Electrical felt that the intent of the FSAR was to manually control the ADV's from the handwheels at the 140' elevation of the MSSS Bldg. After the March 3rd event, several discussions were held with NED, EED and Licensing. As a result of these discussion, NED and Licensing felt that these lights were only an enhancement and not required to be Appendix 'R' lights, but agreed to make them 8 hour rated lights. EED and Management still had concerns on the interpretation of the FSAR. This resulted in DCP 1, 2, 3FE-QD-022 being issued to upgrade 140' elevation emergency lighting to 8 hour rated emergency lights and meet specific criteria.

PM's/Maintenance

Prior to the March 3rd event, EED had concerns about the reliability of the emergency lighting in the MSSS Bldg. PCR's 87-13-QD-004 and 87-13-QD-007 were generated to upgrade the emergency lighting. Both PCR's were cancelled in March of 1988 by NED. EED Electrical and the Electrical Standard Group developed new preventive maintenance tasks to relamp all incandescent lamps by groups with the correct long life bulbs. These tasks were written in late 1988 and were not performed in the MSSS Bldg. but were scheduled for the upcoming refueling outage. EED feels that if these tasks would have been completed prior to the event, there would have been adequate essential lighting to operate the ADV's.

Prior to the event, the 1-1/2 hour rated emergency lighting PM tasks were waived 5 consecutive times. Emergency lighting would have been more reliable if these PM's had been completed. (Some questions to whether the emergency lights worked during the event have never been answered.)

EED's EVALUATION OF CORRECTIVE ACTIONS TAKEN

1, 2, 3FE-QD-022 was generated by NED as an enhancement to resolve the lighting issues in the MSSS Bldg. and to provide access and egress to that area. Prior to the issuance of this DCP, EED Electrical generated PCR 89-13-QD-001, approved by PMC on 3/15/89, to install emergency lights in the MSSS powered by an UPS in a location outside of the MSSS Bldg. Decisions were made to ins all self contained battery pack emergency lights (Emergi-Lite) because of parts lead time and the Unit restart schedule. EED had many concerns about the quality and reliability of the Emergi-Lite units. EED considered these units to be of poor quality and unsuitable for the application. EED also question the reliability, NEMA rating and temperature rating of these units. This was discussed in great detail with Management, and the System Engineer was directed to pursue a higher quality product. Exide battery pack lighting used by SONGS was found available and seemed to be of better quality but NED determined that these lights may not be able to handle summertime temperatures at PVNGS. EED again asked NED to pursue the external UPS design. Several letters were written to express EED's reluctance to install Emergi-Lite units. A decision was made to install Emergi-Lite units in Unit Two as a temporary fix and pursue the UPS design for Units One and Three. This decision was changed to install Emergi-Lite in all three Units but the UPS was to be installed prior to summer to keep from having problems from high ambient temperatures. This decision was changed because of economic consideration by the PMC and scheduled for 1991. The Emergi-Lite units were installed in all three Units and successfully passed their 8 hour burn test after experiencing a very high failure rate. EED Electrical believed parts could have been obtained to install the external UPS design prior to restart of Units 1 and 3. EED also expressed concerns that QD-022 lights were shown in Safe Shutdown procedure and on Safe Shutdown drawings but were considered enhancements. As a result of the event, EED Electrical and Operations conducted walkdowns of each Unit utilizing

Procedure 4XAO-XZZ44 (Shutdown Outside Control Room Due to Fire and/or Smoke), 4XOP-XDG02 (Emergency Diesel Generator 'B') and Safe Shutdown drawings 13-E-ZPL-003 Rev. 4, 13-E-ZPL-002 Rev. 5, and 13-E-ZPL-003 Rev. 4. Final Reports of these walkdowns were issued to NED after meetings with Operation Standards, EED, and Management. The results of these walkdowns showed several areas requiring upgraded or additional emergency lighting to meet the Appendix R requirements and procedure intent. (Ref. LER 89-019). The walkdowns resulted in the issuance of DCP 1, 2, 3FE-QD-023. Some areas considered EED and Operation Standards required Safe Shutdown lights, NED considered enhancements. (Letter #167-04502-SLK/EC Sept. 20, 1989). EED still had concerns that all the total Appendix 'R' Safe Shutdown path lighting may not be adequately addressed. Thus S-Mod 1, 2, 3SM-QD-007 was generated to be done after restart as an enhancement.

Although DCPs QD-022 and QD-023 were designed and installed in the Units prior to restart, Electrical Standards was unable to generate PM tasks due to a SLMS database procedural problems. ICR 06478 against procedure 81AC-OCC05 was written by EED on March 27, 1989 with the intention to resolve this issue. Several EERs were also written to address these concerns. This problem, however, never been resolved; and therefore no PMs were being generated to cover the additional lights installed by DCP QD-022 and QD-023, due to lack of location codes in SIMS. Several meetings with EED and Electrical Standards were held to determine how to implement location codes into the SLMS database. Also Hot Line was apprised of this concern and the Quality Department was asked to generate a CAR. Electrical Standards has walkdown all locations and is in the process of completing the PMs.

RECOMMENDATIONS

- | | | |
|-----------------|---|------------------------------------|
| LIC/NED | Determine requirements of Appendix 'R' Safe Shutdown and FSAR lighting. | |
| LIC | Initiate FSAR change to clarify MSSS ADV lighting, egress and access routes. | |
| NED | Initiate/change Safe Shutdown drawings to reflect actual Safe Shutdown path and light locations. | |
| OPS STD/NED | Revise Safe Shutdown procedures to be in agreement with NED final determination of Appendix 'R' Safe Shutdown equipment. | |
| NED | Generate Design Change to identify Safe Shutdown route in Units. | PCR 89-13-ZZ-003 initiated by EED. |
| NED | Issue drawings to show equipment illuminated by Appendix 'R' Safe Shutdown lighting. | |
| NED/EED | Install external UPS DCP prior to summer of 1990. | |
| NED/OPS STD/EED | Determine actual Appendix 'R' Safe Shutdown requirements and update all procedures and implement design changes if required. | |
| NED | Modify Sitemod QD-007 to include areas that were omitted. | |
| MAINT/EED/ABRM | Install Sitemod QD-007 prior to restart Units 1 and 2 and as soon as possible in Unit 3. | |
| NED | Change Procedure 81AC-OCC05 to allow location codes of new equipment to be entered into SIMS database, as part of the normal design modification process. | |
| NED | Incorporate outstanding PCRs that require SIMS database updates. | |
| NED | Review old DCPs that are being worked which adds new equipment to ensure all equipment is added to SIMS database. | |

- EED Walkdown and generate a monthly State of System report to upper management reflecting the condition of all Appendix 'R' Safe Shutdown lighting not in high radiation areas.
- Management Create a program that will allow System Engineers to get priority work done on critical equipment in a timely manner.
- Maint Ensure emergency lighting receives priority maintenance and feedback to be given to System Engineers.
- NED Resolve concerns addressed in EED lighting report that all Auxiliary Bldg. essential lighting is fed from Train A bus.

2/26/90
L. Mitchell
L. Mitchell
2/26/90

EMERGENCY LIGHTING
ACTION PLAN

EED ELECTRICAL TO COORDINATE THE FOLLOWING:

1 - WORK CONTROL IN ALL UNITS - DEVELOPE A SCHEDULE TO DO 8 HOUR BURN TEST ON:

- ALL EMERGI-LIGHTS
- 10% OF ALL OTHER TYPES (EED TO PROVIDE LIST)
- MAINTENANCE - IMPLEMENT 3 HOUR BURN TESTS AND FEEDBACK ALL FAILURES TO SYSTEM ENGINEER.

- 2 - all emergi-lights
- 3 - 10% of all other types

4 - EED ELECTRICAL - GENERATE A LIST OF ALL EMERGENCY LIGHTS THAT INCLUDES THE FOLLOWING INFORMATION:

- LOCATION OF EACH LIGHT
- TYPE OF LIGHT
- DESIGN OF LIGHT AND DOCUMENT USE TO INSTALL ie. APPENDIX 'R' ORIGINAL, APPENDIX 'R' ADDED BY DCP, ETC.
- CURRENT STATUS OF EACH LIGHT

5 - ELECTRICAL STANDARDS - GENERATE QUARTERLY PM TO INSPECT AND BUTTON TEST EACH LIGHT MONTHLY.

6 - NED ELECTRICAL - EXPEDITE DESIGN OF EXTERNAL UPS DCP TO UPGRADE MSSS LIGHTING.

7 - EED ELECTRICAL - DETERMINE ROOT CAUSE OF FAILURE OF 3 FAILED EMERGI-LIGHTS IN UNIT II. (90-QD-003)

8 - ELECTRICAL STANDARDS - ADD STATEMENT TO ALL EMERGENCY LIGHTING PM'S TO "IMMEDIATELY CONTACT ENGINEERING IF ANY FAILURES OCCUR".

9 - EED ELECTRICAL - RESEARCH ALL CORRECTIVE ACTIONS THAT HAVE BEEN DONE ON EMERGI-LIGHTS. CA* AGORIZE AND DETERMINE WHETHER ACTIONS WERE TAKEN BEFORE OP. AFTER LIGHTS WERE PUT IN SERVICE.

25 PAGES
EXHIBIT "D": E/4

2/26/90

FORECAST COMPLETION DATES:

- (1) 2/27/90 2:30 P.M.
- (2) 3/4/90
- (3) 3/9/90 UNIT I
3/16/90 UNIT II
3/15/90 UNIT III
- (4) 2/27/90 2:30 P.M.
- (5) 3/5/90
- (6) 4/3/90 *prelimary*
- (7) 3/15/90
- (8) 3/5/90
- (9) 3/8/90

00-022

INIT 1

<u>LIGHT</u>	<u>W.I.R.#</u>	<u>DATE INT</u>	<u>WO#</u>	<u>DATE INT</u>	<u>CIS</u>
1ESTL74C0910003	389083	10-15-89	391998	10-15-89	CIS
ESTL74C0911007	389084	1-27-90	409000	1-27-90	11-4-90 AUTH

INIT 2

<u>LIGHT</u>	<u>W.I.R.#</u>	<u>DATE INT</u>	<u>WO#</u>	<u>DATE INT</u>	<u>CIS</u>
2ESTL74C0909006	366826	10-26-89 10-26-89	391956	10-26-89	12-18-89 Clar.
2ESCL72A1414017	379881	2-8-90	408937	2-8-90	FLND
2ESCL72A1414016	379880	2-8-90	408933	2-8-90	FLND
2ESTL74C0914009	344644	9-7-89	382091	9-7-89	7-KG
2ESCL72A1414020	366505	2-15-90	411549	STILL	OPEN
↓	19	366509	411551	↓	
	15	366511	411517		

INIT 3

<u>LIGHT</u>	<u>W.I.R.#</u>	<u>DATE INT</u>	<u>WO#</u>	<u>DATE INT</u>	<u>CIS</u>
3ESTL74C0915810	770252 387617	11-6-89	410869	2-20-90	AUTH

ENGINEERING EVALUATION REQUEST

PAGE 1 OF

EER# 90-QD-003

INITIATOR SECTION

190 SYS: QD UNIT: 1,2,3 EQUIPMENT TAG NUMBER: 2ESTL74C0909006; 2ESTL74C09110-07, 7A1A1914-16 COMPONENT TYPE: BATTERY

DESCRIPTION: ERGI-LITE EMERGENCY LIGHTING UNITS

L. Mitchell EXT: 3647 STA: 6078 ADMIN. UNIT NO

WORK DOCUMENTS: W.O. 00391956, 00409000

SPECIAL CONSIDERATION

ENGINEER OR STA CONTACTED:

Mitchell

WORK REQUIRED?

TO 2/24/90

RCF INITIATED BY:

TREND EVENT TSSCR# MI CR#

DESCRIPTION:

TL74C0909006 ON W.O. 00391956 & 1ESTL74C09-11007 ON W.O. 00409000 HAD BATTERY FAILURES, 2ESCL72A14140-17 W.O. 0040933 AND 2ESCL72A14140-16 ON W.O. 00408933 CHARGING CARD FAILURES. 1ESTL74C0910003 ON W.O. 391998 HAD "G LOOSE ON XFMR TERMINAL" 3ESTL74C0915810 IS TO BE WORKED W.O. 410869. 2ESTL74C0914009 HAD A PC BOARD REPLACED W.O. 38209. THE FOLLOWING LIGHTS HAVE FAILED THEIR HR BURN TEST AND HAVE TROUBLE SHOOT AND REPAIR W.R'S ESCL72A14140-20, 2ESCL72A14140-19, 2ESCL72A14140-15. ALL LIGHTS TO MSSS 140' ARE INCP. EXCEPT 2ESCL72A14140-18

RECOMMENDED RESOLUTION/NEEDS ASSESSMENT:

ENGINEERING TO EVALUATE FAILURES

IF NORMAL WORK CONTROL PROCESS CANNOT RESOLVE THIS CONDITION, AN ENGINEERING EVALUATION IS REQUIRED TO INVESTIGATE THE PROBLEM.

WORK REQUIRED BY:

CRS SOURCE: [Signature] DATE: 2/23/90 INITIATOR'S MANAGER: _____ DATE: _____

21 CLSD
79 CLSD
2 11-4-8
AUT+

CLSD
12-18-89
11-24-89
PLND
PLND
7-KB/dsc
OPEN

AUTH

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT ONE

EQUIPMENT NUMBER	STATUS	COMMENTS
1E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
1E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED BAD
1E-STL-74C-09-100-06	LIGHTS OK	PC BOARD WARPED
1E-STL-74C-09-110-07	LIGHTS OK	
1E-STL-74C-09-130-08	LIGHTS OK	
1E-STL-74C-09-140-09	LIGHTS OK	
1E-SCL-72A-14-140-15	LIGHTS OK	PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-16	LIGHTS OK	PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-17	LIGHTS OK	PC BOARD WARPED REAL BAD
1E-SCL-72A-14-140-18	LIGHTS OK	PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-19	LIGHTS OK	PC BOARD LITTLE WARPED
1E-SCL-72A-14-140-20	LIGHTS OK	PC BOARD LITTLE WARPED
1EQBN0034		BATTERY #2A FAILED TO MEET ACCEPTANCE CRITERIA AFTER 1/2 HR OPEN CIRCUIT. WO 391762 WRITTEN TO FIX
1EQBN0001		BATTERY FAILED ACCEPTANCE CRITERIA. WR 389835 WRITTEN TO FIX
1EQBN0002		POST ON BATTERY #3A WAS CRACKED AND FLATTEN OUT. WO 348770 WRITTEN TO FIX

2/25/90

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT THREE

EQUIPMENT NUMBER	STATUS	COMMENTS
3E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
3E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-090-06	LIGHTS OK	
3E-STL-74C-09-110-07	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-130-08	LIGHTS OK	PC BOARD WARPED
3E-STL-74C-09-140-09	LIGHTS OK	PC BOARD WARPED
3E-SCL-72A-14-140-15	LIGHTS OK	PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-16	LIGHTS OK	PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-17	LIGHTS OK	PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-18	LIGHTS OK	PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-19	LIGHTS OK	PC BOARD LITTLE WARPED
3E-SCL-72A-14-140-20	LIGHTS OK	PC BOARD LITTLE WARPED
3EQBN002-G	LAMP OUT	PMWO 402054 ALSO WAS REPORTED ON INVALID MNCR 90-QB-0001
3EQBN002-F	LIGHT OK	FLXTURE SUPPORT BROKEN
3E-SGL-D79-05-100-02	LIGHT OK	POSSIBLE CHARGING CARD PROBLEM WR 543554 WRITTEN BY SE
3E-SJL-D79-04-100-10	LIGHT OK	POSSIBLE CHARGING CARD PROBLEM WR 543554 WRITTEN BY SE
3E-SAL-72D-03-120-20	LIGHT OK	OVER SPRAYED WITH GRAY PAINT
3E-SAL-72C-03-100-03	LIGHT OOS	WR 368605 CANCELLED BY WO 404114
3E-ZAL-72C-03-100-05	LIGHT OK	TO BE UPGRADED BY 3SM-QD-007 TO A SAFESHUTDOWN LGT. WO 407506 WRITTEN TO IMPLEMENT SITEMOD. SITEMOD IS NOT ISSUED YET.

2/25/90

SUMMATION OF SYSTEM ENGINEER'S WALKDOWN UNIT TWO

EQUIPMENT NUMBER	STATUS	COMMENTS
2E-STL-74C-09-100-01	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-100-02	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-03	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-04	LIGHTS OK	PC BOARD WARPED BAD
2E-STL-74C-09-100-05	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-090-06	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-110-07	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-130-08	LIGHTS OK	PC BOARD WARPED
2E-STL-74C-09-140-09	LIGHTS OK	PC BOARD WARPED
2E-SCL-72A-14-140-15	LIGHTS OK	LIGHT FAILED 8 HR BURN TEST. WO 411517 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003
2E-SCL-72A-14-140-16	LIGHTS OK	LIGHT HAS CONTINUOUS HI-CHARGE INDICATION. WO 408933 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SCL-72A-14-140-17	LIGHTS OK	LIGHT HAS CONTINUOUS HI-CHARGE INDICATION. WO 408937 WRITTEN TO FL. PC BOARD WARPED, EER 90-QD-003.
2E-SCL-72A-14-140-18	LIGHTS OK	PC BOARD WARPED
2E-SCL-72A-14-140-19	LIGHTS OK	LIGHT FAILED 8 HR BURN TEST. WO 411551 WRITTEN TO FIX. PC BOARD WARPED BAD, EER 90-QD-003.
2E-SCL-72A-14-140-20	LIGHTS OK	LIGHT FAILED 8 HR BURN TEST. WO 411549 WRITTEN TO FIX. PC BOARD WARPED, EER 90-QD-003.
2E-SJL-D79-04-080-08	LIGHTS OK	UNIT READY AND HI-CHARGE LIGHT ON. WR 543555 WRITTEN TO FIX.
2E-QBN-0002		BATT #2B FAILED MIN. VOLT ACC. CRITERIA. WO 410186 WRITTEN TO FIX. UPS IS READING 30% LOAD. WR 346029 WRITTEN TO FIX.

2/25/90

LIGHTS/UPS REQUIRING TESTING

EQUIPMENT NUMBER

TASK NUMBER

EMERGI-LITE (DCP QD-022)

- 1E-STL-74C-09-100-01
- 1E-STL-74C-09-100-02
- 1E-STL-74C-09-100-03
- 1E-STL-74C-09-100-04
- 1E-STL-74C-09-100-05
- 1E-STL-74C-09-090-06
- 1E-STL-74C-09-110-07
- 1E-STL-74C-09-130-08
- 1E-STL-74C-09-140-09
- 1E-SCL-72A-14-140-15
- 1E-SCL-72A-14-140-16
- 1E-SCL-72A-14-140-17
- 1E-SCL-72A-14-140-18
- 1E-SCL-72A-14-140-19
- 1E-SCL-72A-14-140-20

411961
 411962
 404527

2/27/90 to 3/2/90

HALOPHANE UPS

- 1EQBN0001
- 1EQBN0002
- 1EQBN0003
- 1EQBN0004

PICK ONE

41965
 START 3/5/90 - 3/6/90

EXIDE UPS

- 1EQDNF01
- 1EQDNF02

PICK ONE

409016 2/28/90 - 3/1/90

DUAL LITE

- 1E-SAL-71C-03-100-06
- 1E-SAL-71C-01-140-06
- 1E-SJL-D79-02-074-10
- 1E-SJL-D79-02-074-07
- 1E-SGL-D79-05-100-06
- 1E-STL-74C-07-100-03
- 1E-SAL-72D-03-120-23
- 1E-SAL-72D-03-120-12
- 1E-SJL-D79-02-074-01
- 1E-SJL-D79-04-100-10
- 1E-STL-74A-05-100-05
- 1E-SAL-72C-07-130-03
- 1E-SJL-D84-18-140-06
- 1E-STL-74C-09-100-07
- 1E-SAL-72D-03-120-18

START
 3/5/90 to 3/9/90

055237

055317

LIGHTS/UPS REQUIRING TESTING

EQUIPMENT NUMBER

TASK NUMBER

EMERGI-LITE (DCP QD-022)

3E-STL-74C-09-100-01	067993
3E-STL-74C-09-100-02	067993
3E-STL-74C-09-100-03	067993
3E-STL-74C-09-100-04	<u>067993</u> wo 411 963
3E-STL-74C-09-100-05	066658
3E-STL-74C-09-100-06	066658
3E-STL-74C-09-110-07	066658
3E-STL-74C-09-120-08	066658
3E-STL-74C-09-140-09	<u>066658</u> 410725
3E-SCL-72A-14-140-15	066659
3E-SCL-72A-14-140-16	066659
3E-SCL-72A-14-140-17	066659
3E-SCL-72A-14-140-18	066659
3E-SCL-72A-14-140-19	066659
3E-SCL-72A-14-140-20	<u>066659</u> 410726

12 HRS 20
3/31 - 2000

Now

3/31 - 2000

HALOPHANE UPS

3EQBN0001	} pick one 410 538 410 539 Closed copy of w/o - 2/27/02
3EQBN0002	
3EQBN0003	
3EQBN0004	

EXIDE UPS

3EQDNF01	} pick one	054994	411 964	3/27
3EQDNF02				

Schedule

DUAL LITE

3E-SAL-71C-03-100-06	055803	404115	10
3E-SAL-71C-01-140-06			2/27
3E-SJL-D79-02-074-10			
3E-SJL-D79-02-074-07	055836		
3E-SGL-D79-05-100-06			
3E-STL-74C-07-100-03	068121	404135	
3E-SAL-72D-03-120-23			
3E-SAL-72D-03-120-12			
3E-SJL-D79-02-074-08	055836		3/1
3E-SJL-D79-04-100-10			
3E-STL-74X-05-100-05	068121	407967	
3E-SAL-72C-07-130-03	055804	404116	
3E-SJL-D84-18-140-06	056832	412	3/1 - 2000
3E-STL-74C-09-100-07			16

LIGHTS/UPS REQUIRING TESTING

EQUIPMENT NUMBER

TASK NUMBER

EMERGI-LITE (DCP QD-022)

	TASK	W.O. #	SCHED	F. I.
2E-STL-74C-09-100-01	066809	411982	2-28-90	3/1/90
2E-STL-74C-09-100-02	↓	↓	↓	
2E-STL-74C-09-100-03	↓	↓	↓	
2E-STL-74C-09-100-04	↓	↓	↓	
2E-STL-74C-09-100-05	↓	↓	↓	
2E-STL-74C-09-090-06	↓	↓	↓	
2E-STL-74C-09-110-07	066810	411981		
2E-STL-74C-09-130-08	↓	↓	↓	
2E-STL-74C-09-140-09	↓	↓	↓	
2E-SCL-72A-14-140-15	066808	406747	2-23-90	Failed, Replace/RETEST W/O 411517 2-27-90 2
2E-SCL-72A-14-140-16	↓	↓	↓	Failed RETEST W/O 408433 3/2/90
2E-SCL-72A-14-140-17	↓	↓	↓	Failed RETEST W/O 408437 3/2/90
2E-SCL-72A-14-140-18	↓	↓	↓	
2E-SCL-72A-14-140-19	↓	↓	↓	Failed, Replace/RETEST W/O 411551 2-27-90 2
2E-SCL-72A-14-140-20	↓	↓	↓	Failed, Replace/RETEST W/O 411549 2-27-90 2

ALL OTHERS ASAP
HALOPHANE UPS

2EQBN0001	44902	412340	3-6-90	3/1/90
2EQBN0002	44918			
2EQBN0003	44919			
2EQBN0004	44920			

EXIDE UPS

2EQDNF01	54993			
2EQDNF02	68169	412339	3-15-90	3/1/90

DUAL LITE

2E-SAL-71C-01-140-11	055631	412336	3-8-90	3/1
2E-SAL-71C-01-140-12	055631	412336	3-8-90	↓
2E-SAL-71C-01-140-06	055631	412336	3-8-90	↓
2E-SJL-D79-02-074-02	055655	412337	3-9-90	3/1
2E-SJL-D79-02-074-07	055655	412337	3-9-90	↓
2E-SAL-71C-01-140-14	055631	412336	3-8-90	2/1
2E-STL-74C-07-100-03	065580	412338	3-7-90	3/1
2E-SAL-72D-03-120-23	055631	412336	3-8-90	3/1
2E-SAL-72D-03-120-12	055631	412336	3-8-90	3/1
2E-SJL-D79-02-074-08	055655	412337	3-9-90	3/1
2E-SAL-71C-07-150-04	055631	412336	3-8-90	2/1
2E-STL-74C-07-100-05	065580	412338	3-7-90	3/1
2E-SAL-72D-03-120-18	055631	412336	3-8-90	3/1
2E-SAL-72D-03-120-24	055631	412336	3-8-90	
2E-SAL-72D-07-120-01	055631	412336	3-8-90	↓
2E-SJL-D79-02-074-09	055655	412337	3-9-90	3/1
2E-SJL-D79-04-080-08	055655	412337	3-9-90	3/1
2E-STL-74C-07-100-02	065580	412338	3-7-90	3/1
2E-STL-74C-07-100-04	065580	412338	3-7-90	3/1
2E-STL-74A-05-100-05	065580	412338	2-2-90	3/1

EMERGENCY LIGHTING DESIGN
REPORT

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
IESAL72A0405110	DUAL-LITE BAT PACK	51' AUXILARY BUILDING		
IESAL72A0405111	DUAL-LITE BAT PACK	51' AUXILARY BUILDING	1FE-00-C23	WR 543552
IESAL71A0107005	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		WR 543556
IESAL71A0107011	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107012	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107013	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107014	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107015	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107016	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107017	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107018	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107019	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL72A0507006	DUAL-LITE BAT PACK	70' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL72A0507015	DUAL-LITE BAT PACK	70' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL72A0507016	DUAL-LITE BAT PACK	70' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL72A0407007	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
IESAL71A0107701	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		WR 543558
IESAL71A0107702	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
IESAL71A0107719	DUAL-LITE BAT PACK	77' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL71C0707701	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
IESAL72A0307701	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
IESAL71A0107708	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
IESAL72A0307709	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
IESAL72A0307710	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
IESAL72C0707707	DUAL-LITE BAT PACK	77' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL72C0707708	DUAL-LITE BAT PACK	77' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL71C0708707	DUAL-LITE BAT PACK	87' AUXILARY BUILDING		
IESAL72C0708701	DUAL-LITE BAT PACK	87' AUXILARY BUILDING		
IESAL71A0108811	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
IESAL71A0108816	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
IESAL71A0108817	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
IESAL72A0308812	DUAL-LITE BAT PACK	88' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL72C0709606	DUAL-LITE BAT PACK	96' AUXILARY BUILDING		
IESAL71C0310005	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
IESAL71C0310006	DUAL-LITE BAT PACK	100' AUXILARY BUILDING	1FE-00-023	WR 543552
IESAL71C0310007	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
IESAL71C0310008	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		

EMERGENCY LIGHTING DESIGN
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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
ESAL72A0610007	DUAL-LITE 14" PACK	100' AUXILIARY BUILDING		
ESAL72C0310001	DUAL-LITE 14" PACK	100' AUXILIARY BUILDING		
ESAL72C0310002	DUAL-LITE 14" PACK	100' AUXILIARY BUILDING		
ESAL72C0310003	DUAL-LITE 14" PACK	100' AUXILIARY BUILDING		FW 543558
ESAL72C0310006	DUAL-LITE 14" PACK	100' AUXILIARY BUILDING		
ESAL71C0711002	DUAL-LITE 14" PACK	110' AUXILIARY BUILDING		
ESAL72C0711002	DUAL-LITE 14" PACK	110' AUXILIARY BUILDING		
ESAL72D0312001	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312002	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312005	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312007	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312008	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312009	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312011	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312012	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING	IFE-02-020	WR 543552
ESAL72D0312017	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		WR 543558
ESAL72D0312018	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING	IFE-02-020	WR 543552 & 556
ESAL72D0312019	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312020	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312021	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		WR 543556
ESAL72D0312022	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL72D0312023	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING	IFE-02-020	WR 543552
ESAL72D0312024	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		
ESAL71C0713003	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		WR 543558
ESAL72C0713003	DUAL-LITE 14" PACK	120' AUXILIARY BUILDING		WR 543556
ESAL71C0114001	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		WR 543556
ESAL71C0114006	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING	IFE-02-020	WR 543552 & 556
ESAL71C0114007	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		
ESAL71C0114009	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		WR 543558
ESAL71C0114011	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		
ESAL71C0114012	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		
ESAL71C0114013	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		WR 543556
ESAL71C0114014	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		
ESAL71C0114015	DUAL-LITE 14" PACK	140' AUXILIARY BUILDING		

EMERGENCY LIGHTING DESIGN
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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
1ESAL71C0114016	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		WR 543558
1ESAL71C0114017	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		WR 543558
1ESAL71C0114018	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		WR 543558
1ESAL72C0114002	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
1ESAL72C0114006	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
1ESAL72C0114010	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		WR 543556
1ESAL72C0114011	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
1ESAL72C0114012	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
1ESAL71C0715004	DUAL-LITE BAT PACK	150' AUXILIARY BUILDING		WR 543556
1EGBN001	HALOPHANE INVERTER	100' CONTROL BUILDING	1CE-00-009 & 1FE-00-023	WO 389875
1EGBN002	HALOPHANE INVERTER	100' CONTROL BUILDING	1CE-00-009 & 1FE-00-023	WO 389770
1EGBN003	HALOPHANE INVERTER	120' AUXILIARY BUILDING	1CE-00-009 & 1FE-00-023	
1EGBN004	HALOPHANE INVERTER	150' AUXILIARY BUILDING	1CE-00-009	WO 391762
1ESCL72A1408101	DUAL-LITE BAT PACK	81' MESS BUILDING		
1ESCL72A1408102	DUAL-LITE BAT PACK	81' MESS BUILDING		
1ESCL72A1412011	DUAL-LITE BAT PACK	81' MESS BUILDING		
1ESCL72A1408112	DUAL-LITE BAT PACK	81' MESS BUILDING		
1ESCL72A1412015	DUAL-LITE BAT PACK	120' MESS BUILDING		
1ESCL72A1412006	DUAL-LITE BAT PACK	120' MESS BUILDING		
1ESCL72A1412013	DUAL-LITE BAT PACK	120' MESS BUILDING		
1ESCL72A1412014	DUAL-LITE BAT PACK	120' MESS BUILDING		
1ESCL72A1414015	EMERGI-LITE BAT PACK	140' MESS BUILDING	1FE-00-022	
1ESCL72A1414016	EMERGI-LITE BAT PACK	140' MESS BUILDING	1FE-00-022	
1ESCL72A1414017	EMERGI-LITE BAT PACK	140' MESS BUILDING	1FE-00-022	
1ESCL72A1414018	EMERGI-LITE BAT PACK	140' MESS BUILDING	1FE-00-022	
1ESCL72A1414019	EMERGI-LITE BAT PACK	140' MESS BUILDING	1FE-00-022	
1ESCL72A1414020	EMERGI-LITE BAT PACK	140' MESS BUILDING	1FE-00-022	
1EGDNF01	EXIDE BATTERY PACK	100' CONTROL BUILDING		
1EGDNF02	EXIDE BATTERY PACK	100' CONTROL BUILDING		
1EGDNN01	EXIDE INVERTER	140' CONTROL BUILDING		
1EGDNN02	EXIDE INVERTER	140' CONTROL BUILDING		
1ESBLD790510002	DUAL-LITE BAT PACK	100' DIESEL BUILDING	1FE-00-023	WR 543552
1ESBLD790510003	DUAL-LITE BAT PACK	100' DIESEL BUILDING		
1ESBLD790510005	DUAL-LITE BAT PACK	100' DIESEL BUILDING	1FE-00-023	WR 543552

EMERGENCY LIGHTING DESIGN
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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
1ESBLD790510006	DUAL-LITE BAT PACK	100' DIESEL BUILDING	1FE-00-023	NR 543552
1ESBLD790510007	DUAL-LITE BAT PACK	100' DIESEL BUILDING	1FE-00-023	NR 543552
1ESBLD800511507	DUAL-LITE BAT PACK	100' DIESEL BUILDING		
1ESJLD790207402	DUAL-LITE BAT PACK	74' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD790207407	DUAL-LITE BAT PACK	74' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD790207408	DUAL-LITE BAT PACK	74' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD790207409	DUAL-LITE BAT PACK	74' CONTROL BUILDING		
1ESJLD790207410	DUAL-LITE BAT PACK	74' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD790407410	DUAL-LITE BAT PACK	74' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD790408008	DUAL-LITE BAT PACK	80' CONTROL BUILDING		
1ESJLD790210003	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790210004	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790210005	DUAL-LITE BAT PACK	100' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD790710007	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790410004	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790410006	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790410007	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790410009	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD790410010	DUAL-LITE BAT PACK	100' CONTROL BUILDING		NR 543556
1ESJLD800210003	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD800210004	DUAL-LITE BAT PACK	100' CONTROL BUILDING	1FE-00-023	NR 543552
1ESJLD800210010	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD801010002	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD810510001	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD841810001	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
1ESJLD791011001	DUAL-LITE BAT PACK	110' CONTROL BUILDING		
1ESJLD801011003	DUAL-LITE BAT PACK	110' CONTROL BUILDING		
1ESJLD791013002	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
1ESJLD801013004	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
1ESJLD800714007	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLD800714008	DUAL-LITE BAT PACK	140' CONTROL BUILDING		NR 543556
1ESJLD800714011	DUAL-LITE BAT PACK	140' CONTROL BUILDING		NR 543556
1ESJLD800714012	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLD811814001	DUAL-LITE BAT PACK	140' CONTROL BUILDING		

EMERGENCY LIGHTING DESIGN
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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
1ESJLDB11B14002	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLDB11B14003	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLDB11B14006	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLDB41B14003	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLDB41B14006	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLDB41B14008	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
1ESJLD791015003	DUAL-LITE BAT PACK	150' CONTROL BUILDING		
1ESTL74C0909006	EMERGI-LITE BAT PACK	90' MSSS	1FE-00-020	
1ESTL74A0510002	DUAL-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0710002	DUAL-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0710003	DUAL-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0710004	DUAL-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0710005	DUAL-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0910001	EMERGI-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0910002	EMERGI-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0910003	EMERGI-LITE BAT PACK	100' TURBINE	1FE-00-020	WR 540552
1ESTL74C0910004	EMERGI-LITE BAT PACK	100' TURBINE	1FE-00-020	
1ESTL74C0910005	EMERGI-LITE BAT PACK	100' TURBINE	1FE-00-020	
1ESTL74C0910007	EMERGI-LITE BAT PACK	100' TURBINE	1FE-00-020	
1ESTL74C0911007	EMERGI-LITE BAT PACK	110' MSSS (STAIRS)	1FE-00-020	
1ESTL74C0913008	EMERGI-LITE BAT PACK	130' MSSS (STAIRS)	1FE-00-020	
1ESTL74C0914009	EMERGI-LITE BAT PACK	140' MSSS (STAIRS)	1FE-00-020	
1ESYU03E1010005	DUAL-LITE BAT PACK	190' CONDENSATE TRANSFER	1FE-00-020	ORIGINAL
1ESYU03E2010006	DUAL-LITE BAT PACK	190' CONDENSATE TRANSFER	ORIGINAL	
2ESAL72A0405110	DUAL-LITE BAT PACK	51' AUXILARY BUILDING		
2ESAL72A0415111	DUAL-LITE BAT PACK	51' AUXILARY BUILDING		
2ESAL71A0107005	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL71A0107011	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL71A0107012	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL71A0107013	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL71A0107014	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL71A0107015	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL72A0307002	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
2ESAL72A0307006	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
2ESAL72A0307015	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		2FE-00-023
2ESAL72A0307016	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		2FE-00-023
2ESAL72A0407007	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL71A0107701	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL71A0107702	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL71C0707701	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL72K0107701	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL72A0307708	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL72A0307709	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL72A0307710	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL72C0707707	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL72C0707708	DUAL-LITE BAT PACK	71' AUXILARY BUILDING		
2ESAL71C0708707	DUAL-LITE BAT PACK	87' AUXILARY BUILDING		
2ESAL72C0708701	DUAL-LITE BAT PACK	87' AUXILARY BUILDING		
2ESAL71A0108810	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108810	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108811	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108812	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108813	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108814	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108815	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108816	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108817	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108818	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108819	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71A0108820	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
2ESAL71C0310005	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL71C0310006	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL71C0310007	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL71C0310008	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL72C0310001	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL72C0310002	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL72C0310003	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL72C0310004	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
2ESAL71C0711002	DUAL-LITE BAT PACK	110' AUXILARY BUILDING		
2ESAL72C0711002	DUAL-LITE BAT PACK	110' AUXILARY BUILDING		
2ESAL72C0312012	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		2FE-00-023
2ESAL72D0312001	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
2ESAL72D0312002	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
2ESAL7200312005	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312007	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312008	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312009	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312011	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312012	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING	2FC-00-023	
2ESAL7200312017	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312018	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING	2FC-00-023	
2ESAL7200312019	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312020	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312021	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312022	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7200312023	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING	2FE-00-023	
2ESAL7200312024	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING	2FE-00-023	
2ESAL7200712001	DUAL-LITE BAT PACK	120' AUXILIARY BUILDING		
2ESAL7100713003	DUAL-LITE BAT PACK	130' AUXILIARY BUILDING		
2ESAL7200713003	DUAL-LITE BAT PACK	130' AUXILIARY BUILDING		
2ESAL7100114001	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114006	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING	2FE-00-023	
2ESAL7100114007	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114009	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114011	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114012	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114013	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114014	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114015	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114016	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114017	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7100114018	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7200114002	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7200114006	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7200114010	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7200114011	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		
2ESAL7200114012	DUAL-LITE BAT PACK	140' AUXILIARY BUILDING		

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX "R" DESIGN COMMENTS	CURRENT WORK STATUS
2ESAL7100715004	DUAL-LITE BAT PACK	150' AUXILARY BUILDING		
2EGBN001	HALOPHANE INVERTER	100' CONTROL BUILDING	2CE-00-009	
2EGBN002	HALOPHANE INVERTER	100' CONTROL BUILDING	2CE-00-009	NO 410195/146029
2EGBN003	HALOPHANE INVERTER	120' AUXILARY BUILDING	2CE-00-009	
2EGBN004	HALOPHANE INVERTER	1' AUXILARY BUILDING	2CE-00-009	
2ESCL72A1408101	DUAL-LITE BAT PACK	81' MESS BUILDING		
2ESCL72A1408102	DUAL-LITE BAT PACK	81' MESS BUILDING		
2ESCL72A1408111	DUAL-LITE BAT PACK	81' MESS BUILDING		
2ESCL72A1408112	DUAL-LITE BAT PACK	81' MESS BUILDING		
2ESCL72A1412005	DUAL-LITE BAT PACK	120' MESS BUILDING		
2ESCL72A1412006	DUAL-LITE BAT PACK	120' MESS BUILDING		
2ESCL72A1412013	DUAL-LITE BAT PACK	120' MESS BUILDING		
2ESCL72A1412014	DUAL-LITE BAT PACK	120' MESS BUILDING		
2ESCL72A1414015	EMERGI-LITE BAT PACK	140' MESS BUILDING	2FE-00-022	NO 411517
2ESCL72A1414016	EMERGI-LITE BAT PACK	140' MESS BUILDING	2FE-00-022	NO 408933
2ESCL72A1414017	EMERGI-LITE BAT PACK	140' MESS BUILDING	2FE-00-022	NO 408937
2ESCL72A1414018	EMERGI-LITE BAT PACK	140' MESS BUILDING	2FE-00-022	WARRPED PC BOARD
2ESCL72A1414019	EMERGI-LITE BAT PACK	140' MESS BUILDING	2FE-00-022	NO 411551
2ESCL72A1414020	EMERGI-LITE BAT PACK	140' MESS BUILDING	2FE-00-022	NO 411549
2EEDNF01	EXIDE BATTERY PACK	140' CONTROL BUILDING		
2EEDNF02	EXIDE BATTERY PACK	140' CONTROL BUILDING		
2EEDNN01	EXIDE INVERTER	140' CONTROL BUILDING		
2EEDNN02	EXIDE INVERTER	140' CONTROL BUILDING		
2ESBLD790510002	DUAL-LITE BAT PACK	100' DIESEL BUILDING		
2ESBLD790510003	DUAL-LITE BAT PACK	100' DIESEL BUILDING		
2ESBLD790510005	DUAL-LITE BAT PACK	100' DIESEL BUILDING		
2ESBLD790510006	DUAL-LITE BAT PACK	100' DIESEL BUILDING	2FE-00-023	
2ESBLD790510007	DUAL-LITE BAT PACK	100' DIESEL BUILDING		
2ESBLD8600511507	DUAL-LITE BAT PACK	115' DIESEL BUILDING		
2ESJLD790207402	DUAL-LITE BAT PACK	74' CONTROL BUILDING		
2ESJLD790207407	DUAL-LITE BAT PACK	74' CONTROL BUILDING		
2ESJLD790207408	DUAL-LITE BAT PACK	74' CONTROL BUILDING	2FE-00-023	
2ESJLD790207409	DUAL-LITE BAT PACK	74' CONTROL BUILDING		
2ESJLD790408008	DUAL-LITE BAT PACK	80' CONTROL BUILDING		WR 543555

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
2ESJLD790210003	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD790210004	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD790210005	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESJLD790210007	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESJLD790410006	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESJLD790410007	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESJLD790410009	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD790410010	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESJLD800210003	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD800210004	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESJLD800210010	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD801010002	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD801010020	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD810510001	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD841810001	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD841810003	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
2ESJLD791011001	DUAL-LITE BAT PACK	110' CONTROL BUILDING		
2ESJLD800111003	DUAL-LITE BAT PACK	110' CONTROL BUILDING		
2ESJLD791012002	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
2ESJLD800112004	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
2ESJLD800714007	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD800714008	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD800714011	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD800714012	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD811814001	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD811814002	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD841814003	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD841814006	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD841814008	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESJLD841814011	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
2ESTL74C0909006	EMERGI-LITE BAT PACK	90' MSSS	2FE-00-022	
2ESTL74A0510002	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESTL74C0710002	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESTL74C0710003	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
2ESTL74C0710004	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESTL74C0710005	DUAL-LITE BAT PACK	100' CONTROL BUILDING	2FE-00-023	
2ESTL74C0910001	EMERGI-LITE BAT PACK	100' TURBINE	2FE-00-022	
2ESTL74C0910002	EMERGI-LITE BAT PACK	100' TURBINE	2FE-00-022	
2ESTL74C0910003	EMERGI-LITE BAT PACK	100' TURBINE	2FE-00-022	
2ESTL74C0910004	EMERGI-LITE BAT PACK	100' TURBINE	2FE-00-022	
2ESTL74C0910005	EMERGI-LITE BAT PACK	100' TURBINE	2FE-00-022	
2ESTL74C0910007	EMERGI-LITE BAT PACK	100' TURBINE	2FE-00-022	
2ESTL74C0911007	EMERGI-LITE	110' MSSS (STAIRS)	2FE-00-022	
2ESTL74C0913009	EMERGI-LITE	130' MSSS (STAIRS)	2FE-00-022	
2ESTL74C0914009	EMERGI-LITE	140' MSSS (STAIRS)	2FE-00-022	
2ESYU03E2010005	DUAL-LITE BAT PACK	100' CONDENSATE TRANSFER	ORIGINAL	
2ESYU03E2010006	DUAL-LITE BAT PACK	100' CONDENSATE TRANSFER	ORIGINAL	
3ESAL72A0405110	DUAL-LITE BAT PACK	51' AUXILARY BUILDING		
3ESAL72A0405111	DUAL-LITE BAT PACK	51' AUXILARY BUILDING		
3ESAL71A0107005	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL71A0107011	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL71A0107012	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL71A0107013	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL71A0107014	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL71A0107015	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL72A0307002	DUAL-LITE BAT PACK	AUXILARY BUILDING		
3ESAL72A0307006	DUAL-LITE BAT PACK	70' AUXILARY BUILDING	3FE-00-021	
3ESAL72A0307015	DUAL-LITE BAT PACK	70' AUXILARY BUILDING	3FE-00-022	
3ESAL72A0307016	DUAL-LITE BAT PACK	70' AUXILARY BUILDING	3FE-00-022	
3ESAL72A0407007	DUAL-LITE BAT PACK	70' AUXILARY BUILDING		
3ESAL71A0107701	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL71A0107702	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL71A0107709	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL71C0707701	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL72A0307701	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL72A0307708	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL72A0307709	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		
3ESAL72A0307710	DUAL-LITE BAT PACK	77' AUXILARY BUILDING		

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LIT. NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
3ESAL72C0707707	DUAL-LITE BAT PACK	77' AUXILARY BUILDING	3FE-00-023	
3ESAL72C0707708	DUAL-LITE BAT PACK	77' AUXILARY BUILDING	3FE-00-023	
3ESAL71C0708707	DUAL-LITE BAT PACK	87' AUXILARY BUILDING		
3ESAL72C0708701	DUAL-LITE BAT PACK	87' AUXILARY BUILDING		
3ESAL71A0108816	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
3ESAL71A0108817	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
3ESAL71A0108818	DUAL-LITE BAT PACK	88' AUXILARY BUILDING	3FE-00-023	
3ESAL71A0308801	DUAL-LITE BAT PACK	88' AUXILARY BUILDING		
3ESAL72A0308812	DUAL-LITE BAT PACK	88' AUXILARY BUILDING	3FE-00-023	
3ESAL72A0308813	DUAL-LITE BAT PACK	88' AUXILARY BUILDING	3FE-00-023	
3ESAL71C0709606	DUAL-LITE BAT PACK	96' AUXILARY BUILDING		
3ESAL72C0709606	DUAL-LITE BAT PACK	96' AUXILARY BUILDING		
3ESAL71C0310005	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL71C0310006	DUAL-LITE BAT PACK	100' AUXILARY BUILDING	3FE-00-023	
3ESAL71C0310007	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL71C0310008	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL72A0610007	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL72C0310001	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL72C0310002	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL72C0310003	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		MO 404114
3ESAL72C0310006	DUAL-LITE BAT PACK	100' AUXILARY BUILDING		
3ESAL71C0711002	DUAL-LITE BAT PACK	110' AUXILARY BUILDING		
3ESAL72C0711002	DUAL-LITE BAT PACK	110' AUXILARY BUILDING		
3ESAL72D0312001	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312002	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312005	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312007	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312008	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312009	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312011	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312012	DUAL-LITE BAT PACK	120' AUXILARY BUILDING	3FE-00-023	
3ESAL72D0312017	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		
3ESAL72D0312018	DUAL-LITE BAT PACK	120' AUXILARY BUILDING	3FE-00-023	
3ESAL72D0312019	DUAL-LITE BAT PACK	120' AUXILARY BUILDING		

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NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS	STATUS
12020	DUAL-LITE BAT PACK	120' AUXILARY BUILDING			
12021	DUAL-LITE BAT PACK	120' AUXILARY BUILDING			
12022	DUAL-LITE BAT PACK	120' AUXILARY BUILDING			
12023	DUAL-LITE BAT PACK	120' AUXILARY BUILDING			
12024	DUAL-LITE BAT PACK	120' AUXILARY BUILDING			0
13003	DUAL-LITE BAT PACK	130' AUXILARY BUILDING			0
13003	DUAL-LITE BAT PACK	130' AUXILARY BUILDING			0
14001	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			0
14006	DUAL-LITE BAT PACK	140' CONTROL BUILDING	3FE-00-023		0
14007	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			0
14009	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14011	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14012	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14013	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14014	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14015	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14016	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14017	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14002	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14008	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14009	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14011	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14012	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
14014	DUAL-LITE BAT PACK	140' AUXILARY BUILDING			
13004	DUAL-LITE BAT PACK	150' AUXILARY BUILDING			
	HALOPHANE INVERTER	100' CONTROL BUILDING	3CE-00-009 & 3FE-00-023		
	HALOPHANE INVERTER	100' CONTROL BUILDING	3CE-00-009 & 3FE-00-023	MO 402054	
	HALOPHANE INVERTER	120' AUXILARY BUILDING	3CE-00-009 & 3FE-00-023		
	HALOPHANE INVERTER	100' AUXILARY BUILDING	3CE-00-009		
08101	DUAL-LITE BAT PACK	81' MSSS BUILDING	ORIGINAL		
08102	DUAL-LITE BAT PACK	81' MSSS BUILDING	ORIGINAL		
08111	DUAL-LITE BAT PACK	81' MSSS BUILDING	ORIGINAL		
08112	DUAL-LITE BAT PACK	81' MSSS BUILDING	ORIGINAL		
08112	DUAL-LITE BAT PACK	81' MSSS BUILDING			

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX "R" DESIGN COMMENTS	CURRENT WORK STATUS
3ESJLD790410010	DUAL-LITE BAT PACK	100' CONTROL BUILDING	3FE-00-023	MR 543554
3ESJLD800210003	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD800210004	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD800210004	DUAL-LITE BAT PACK	100' CONTROL BUILDING	3FE-00-023	
3ESJLD800210010	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD801010002	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD801010020	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD80510001	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD8041810001	DUAL-LITE BAT PACK	100' CONTROL BUILDING		
3ESJLD791011001	DUAL-LITE BAT PACK	110' CONTROL BUILDING		
3ESJLD801011003	DUAL-LITE BAT PACK	110' CONTROL BUILDING		
3ESJLD791013002	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
3ESJLD791013004	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
3ESJLD801013004	DUAL-LITE BAT PACK	130' CONTROL BUILDING		
3ESJLD800714007	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD800714008	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD800714011	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD800714012	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD811814001	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD811814002	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD811814003	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD811814006	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD841814007	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJL7941814006	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD841814008	DUAL-LITE BAT PACK	140' CONTROL BUILDING		
3ESJLD791015003	DUAL-LITE BAT PACK	150' CONTROL BUILDING		
3ESTL74C0909006	EMERGI-LITE BAT PACK	90' TURBINE BUILDING	3FE-00-022	
3ESTL74C0710002	DUAL-LITE BAT PACK	100' TURBINE BUILDING		
3ESTL74C0710003	DUAL-LITE BAT PACK	100' TURBINE BUILDING		
3ESTL74C0710004	DUAL-LITE BAT PACK	100' TURBINE BUILDING		
3ESTL74C0710005	DUAL-LITE BAT PACK	100' TURBINE BUILDING		
3ESTL74C0910001	EMERGI-LITE BAT PACK	100' TURBINE BUILDING	3FE-00-022	
3ESTL74C0910002	EMERGI-LITE BAT PACK	100' TURBINE BUILDING	3FE-00-022	
3ESTL74C0910003	EMERGI-LITE BAT PACK	100' TURBINE BUILDING	3FE-00-022	

EMERGENCY LIGHTING DESIGN
REPORT

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LIGHT NUMBER	TYPE OF LIGHT	LOCATION OF LIGHT	APPENDIX 'R' DESIGN COMMENTS	CURRENT WORK STATUS
3ESTL74C0910004	EMERGI-LITE BAT PACK	100' TURBINE BUILDING	1FE-00-002	
3ESTL74C0910005	EMERGI-LITE BAT PACK	100' TURBINE BUILDING	3FE-00-002	
3ESTL74C0910007	EMERGI-LITE BAT PACK	100' TURBINE BUILDING	0FC-20-002	
3ESTL74C0911007	EMERGI-LITE BAT PACK	110' TURBINE BUILDING	3FE-00-002	
3ESTL74C0913008	EMERGI-LITE BAT PACK	120' TURBINE BUILDING	2FE-00-002	
3ESTL74C0914009	EMERGI-LITE BAT PACK	140' TURBINE BUILDING	3FE-00-002	
3ESYUG3E2010005	DUAL-LITE BAT PACK	100' CONDENSATE TRANSFER		
3ESYU03E2010006	DUAL-LITE BAT PACK	130' CONDENSATE TRANSFER		

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES
ALEXANDER & FELD

1500 MARKET CENTER
THIRD AVENUE
SUITE 1500
NEW YORK, N.Y. 10022-4218
PHONE (212) 512-2000
FAX (212) 512-2001

200 NEW HAVEN SQUARE
SUITE 400
WASHINGTON, D.C. 20036
PHONE (202) 887-4000
FAX (202) 887-4288

2100 FRANKLIN PLAZA
111 CONGRESS AVENUE
AUSTIN, TEXAS 78701
PHONE (512) 499-6200

1500 NORN PLAZA
300 CONVENT STREET
SAN ANTONIO, TEXAS 78205
PHONE (512) 270-0800

1900 PENNZOIL PLACE SOUTH TOWER
711 LOUISIANA STREET
HOUSTON, TEXAS 77002
PHONE (713) 220-5800

4558

WRITER'S DIRECT DIAL NUMBER (202) 887-_____

August 19, 1991

BY HAND DELIVERY

Donnie H. Grimsley, Director
Division of Freedom of Information &
Publications Service
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

FREEDOM OF INFORMATION
ACT REQUEST

FOIA-91-349
Rec'd 8-19-91

Dear Mr. Grimsley:

This is a request pursuant to the Freedom of Information Act, 5 U.S.C. 552, and 10 CFR Part 9 for NRC documents relating to NRC Investigation Reports Nos. 91-24G and 91-28G.

For the purpose of this request, the term "document" means all memoranda, letters, filings, testimony, exhibits, contracts, transcripts, minutes, notes, drafts, studies, analyses, reports, maps, diagrams, charts, books, articles, pictures, printouts, tapes, or other written, graphic, or computerized information in any form which constitutes agency records under the Freedom of Information Act.

The documents we are requesting relate to an investigation by the NRC involving the Palo Verde Nuclear Facility and can more particularly be described as:

1. A copy of Investigation Reports Nos. 91-24G and 91-28G.
2. A copy of all exhibits and other supporting material referenced in Investigation Reports Nos. 91-24G and 91-28G, or used by NRC to support the conclusions reached in the referenced investigation reports.

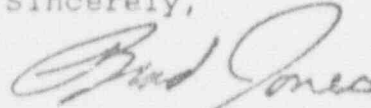
Pursuant to 5 U.S.C. § 552(a)(6), a response to this request is required in ten days. We are willing to pay all necessary search and copy fees associated with this request. Please notify

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AKA C
Donnie
August
Page 2

the undersigned at (202) 887-4558 if these fees are expected to exceed \$450.00. If any portion of this request is denied, please provide a detailed explanation of the reasons for the denial, as required by 5 U.S.C. § 552(a)(6).

Sincerely,



Bradley, W. Jones