ENCLOSURE 1 TO NL-09-170

FEX-00050-02

Indian Point - 125 VDC Battery Sizing Calculation

ENTERGY NUCLEAR OPERATIONS, INC
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET No. 50-247

CON EDISON CALCULATION / ANALYSIS
COVER SHEET

11/27/00

Calculation Number: FEX-00050-02
Entry Date: 11/27/2000

Type: CA12
ELECTRICAL SYSTEM

Project Number: NONE
Document Page : 9
Old_Calculation:

Modification: NONE
Scanned: N
Revision:

Title INDIAN POINT - 125VDC BATTERY SIZING CALCULATION

Tag Number
BATT22

Component Type	Component Description
BATT	BATTERY

Component Style	Style Description
BATT	BATTERY

System	Description
DC	BATTERIES AND 125V DC

Structure	Description
CB	CONTROL BUILDING

Preparer: W.E. KEEGAN
Signature: W.E. Keegan
Update Date 11/27/2000
Reviewer: G. WILSON
Signature/Date: G. Wilson 11/22/00

Approval/Date 11/30/00.

Confirm. Required?

Concurrence (If Required)

22CON EDISON CALCULATION/ANALYSIS SHEET	CALCULATION No. FEX-00050 -02	REVISION NO 02	PAGE 2 OF 9
PREPARER/DATE W.E. Keegan W.E. Keegan 11/22/00	REVIEWER/DATE G. Wilson G. Wilson 11/22/00	CLASS 1E	
SUBJECT/TITLE INDIAN POINT - 125VDC BATTERY 22 SIZING CALCULATION		PROJECT No. None	
		MOD. NO. - REV. None	

DESCRIPTION OF CHANGE SHEET

Revision Number	Description of Change	Reason for Change
00	Original Issue. This calculation supersedes Calculation EGE-00013-02	1997 RFO Modifications
01	Revised Battery Sizing This calculation supersedes Calculation FEX-00050-00	Reduced Design margin from 1.10 to 1.05, revised load profile, and revised to Use the appropriate capacity Curve
02	Revised Battery Sizing to reflect the removal of seal oil pump load from battery #22.	Modification Procedure FEX-98-1326-E

22CON EDISON CALCULATION/ANALYSIS SHEET	CALCULATION No. FEX-00050 -02	REVISION NO 02	PAGE 3 OF 9
PREPARER/DATE W.E. Keegan W.E. Keegan 11/22/00	REVIEWER/DATE G. Wilson G. Wilson 11/22/00	CLASS 1E	
SUBJECT/TITLE INDIAN POINT - 125VDC BATTERY 22 SIZING CALCULATION		PROJECT No. None	
		MOD. NO. - REV. None	

OBJECTIVE

The objective of this calculation is to determine the required size for 125VDC Battery 22 to supply the duty cycle, as it exists following the removal of the seal oil pump load , for two hours of plant operation for a postulated loss of offsite power, loss of an emergency diesel generator and loss of cooling accident.

METHODOLOGY

Perform the battery sizing calculation as per IEEE 485 to determine the number of positive plates required .
Design Margin=1.05, Temperature Correction Factor=1.05 and Aging Factor=1.25.
Sizing is calculated to a final voltage of 1.81 volts per cell.
This calculation utilizes the load profile modeled in EGP-00012-04 and adjusted for the deletion of the emergency seal oil pump load.

REFERENCES

1. UFSAR, Chapter 8, Section 8.2.3.5, Batteries and Battery Chargers: specification for 2-hour duty cycle.

2. EPG- 00012-04, 125 VDC Load Study for Battery 22

3. 485-1997 IEEE Recommended Practice for Sizing Large Lead Storage Batteries for Generating Stationss and Substations

4. Exide Specification for Type GN Battery

5. TNMS Tag; BATT22 lists the battery as an Exide, 2GN-23, 58 cells, Class A.

6. Modification Procedure; FEX-98-1326-E, Relocate Emergency Seal Oil Pump From Battery 22 to Battery 11.

7. As per a telephone discussion with Mr. Patel of Yuasa Exide in 12/4/97, the curves that Yuasa Exide issues incorporate the *coup de fouet* effect (temporary initial decrease in cell voltage, due to the transition time required for a fully charged cell to completely initiate the chemical reaction at the plate/electrolyte boundary during battery discharge) and no further compensation of the data is necessary.

CONCLUSIONS

The attached analysis shows that the number of positive plates, corrected for aging, design margin, and temperature is 5.95. The installed Exide GN 23 battery has eleven positive plates and is, therefore, more than adequately sized for the 2-hour duty cycle.

The existing Battery #22 capacity testing parameters under PT-R76B envelopes the 2-load duty cycle.

BATTERY 22 SIZING

FEX-00050-02

TEMPERATURE CORRECTION FACTOR	1.05
DESIGN MARGIN	1.05
AGING FACTOR	1.25

		LOAD	TIME
LOAD DURING FIRST CYCLE	A1=	265	1
LOAD DURING SECOND CYCLE	A2=	175	1
LOAD DURING THIRD CYCLE	A3=	185	1
LOAD DURING FOURTH CYCLE	A4=	175	17
LOAD DURING FIFTH CYCLE	A5=	203	1
LOAD DURING SIXTH CYCLE	A6=	175	9
LOAD DURING SEVENTH CYCLE	A7=	215	1
LOAD DURING EIGHTH CYCLE	A8=	175	29
LOAD DURING NINTH CYCLE	A9=	195	1
LOAD DURING TENTH CYCLE	A10=	175	58
LOAD DURING ELEVENTH CYCLE	A11=	285	1

LOAD	CHANGE IN LOAD		DURATION OF PERIOD	TIME TO END OF SECTION	CAPACITY AT 'T' MIN RATE		REQUIRED SECTION SIZE POS/NEG VALUE
SECTION 1 - First Period - If A2 is greater than A1, go to section 2							
A1= 265	A1-0	265	M1= 1	T=M1=	1	138.63	1.91
					TOTAL		1.91
SECTION 2 - First 2 Periods If A3 is greater than A2, go to section 3							
A1= 265	A1-0=	265	M1= 1	T=M1+M2=	2	136	1.95
A2= 175	A2-A1=	-90	M2= 1	T=M2=	1	138.63	-0.65
					TOTAL		1.30
SECTION 3 - First 3 Periods - If A4 is greater than A3, go to section 4							
A1= 265	A1-0	265	M1= 1	T=M1+M2+M3=	3	135	1.96
A2= 175	A2-A1	-90	M2= 1	T=M2+M3=	2	136	-0.66
A3= 185	A3-A2	10	M3= 1	T=M3=	1	138.63	0.07
					TOTAL		1.37
SECTION 4 - First 4 Periods - IF A5 is greater than A4, go to section 5.							
A1= 265	A1-0	265	M1= 1	T=M1+M2+M3+M4=	20	110	2.41
A2= 175	A2-A1	-90	M2= 1	T=M2+M3+M4=	19	111	-0.81
A3= 185	A3-A2	10	M3= 1	T=M3+M4=	18	114	0.09
A4= 175	A4-A3	-10	M4= 17	T=M4=	17	114.5	-0.09
					TOTAL		1.60
SECTION 5 - First 5 Periods - If A6 is greater than A5, go to section 6							
A1= 265	A1-0=	265	M1= 1	T=M1+M2+M3+M4+M5=	21	109.5	2.42
A2= 175	A2-A1=	-90	M2= 1	T=M2+M3+M4+M5=	20	110	-0.82
A3= 185	A3-A2=	10	M3= 1	T=M3+M4+M5=	19	111	0.09
A4= 175	A4-A3=	-10	M4= 17	T=M4+M5=	18	114	-0.09
A5= 203	A5-A4=	28	M5= 1	T=M5	1	138.63	0.20
					TOTAL		1.81
SECTION 6 - First 6 Periods - If A7 is greater than A6, go to section 7							

BATTERY 22 SIZING

A1=	265	A1-0=	265	M1=	1	T=M1+M2+M3+M4+M5+M6=	30	94	2.82
A2=	175	A2-A1=	-90	M2=	1	T=M2+M3+M4+M5+M6	29	99	-0.91
A3=	185	A3-A2=	10	M3=	1	T=M3+M4+M5+M6=	28	100	0.10
A4=	175	A4-A3=	-10	M4=	17	T=M4+M5+M6=	27	101	-0.10
A5=	203	A5-A4=	28	M5=	1	T=M5+M6	10	125	0.22
A6=	175	A6-A5=	-28	M6=	9	T=M6=	9	125.5	-0.22
								TOTAL	1.91

SECTION 7 - First 7 Periods - If A8 is greater than A7, go to section 8

A1=	265	A1-0=	265	M1=	1	T=M1+M2+M3+M4+M5+M6+M7=	31	93.5	2.83
A2=	175	A2-A1=	-90	M2=	1	T=M2+M3+M4+M5+M6+M7=	30	94	-0.96
A3=	185	A3-A2=	10	M3=	1	T=M3+M4+M5+M6+M7=	29	99	0.10
A4=	175	A4-A3=	-10	M4=	17	T=M4+M5+M6+M7=	28	100	-0.10
A5=	203	A5-A4=	28	M5=	1	T=M5+M6+M7=	11	124	0.23
A6=	175	A6-A5=	-28	M6=	9	T=M6+M7=	10	125	-0.22
A7=	215	A7-A6=	40	M7=	1	T=M7=	1	138.63	0.29
								TOTAL	2.17

SECTION 8 - Fist 8 Periods - If A9 is greater than A8, go to section 9

A1=	265	A1-0=	265	M1=	1	T=M1+M2+M3+M4+M5+M6+M7+M8=	60	72.72	3.64
A2=	175	A2-A1=	-90	M2=	1	T=M2+M3+M4+M5+M6+M7+M8=	59	74.13	-1.21
A3=	185	A3-A2=	10	M3=	1	T=M3+M4+M5+M6+M7+M8=	58	75	0.13
A4=	175	A4-A3=	-10	M4=	17	T=M4+M5+M6+M7+M8=	57	76	-0.13
A5=	203	A5-A4=	28	M5=	1	T=M5+M6+M7=+M8	40	87.5	0.32
A6=	175	A6-A5=	-28	M6=	9	T=M6+M7+M8=	39	88	-0.32
A7=	215	A7-A6=	40	M7=	1	T=M7+M8=	30	94	0.43
A8=	175	A8-A7=	-40	M8=	29	T=M8=	29	99	-0.40
								TOTAL	2.46

SECTION 9 - First 9 Periods - If A10 is greater than A9, go to section 10

A1=	265	A1-0=	265	M1=	1	T=M1+M2+M3+M4+M5+M6+M7+M8+M9=	61	72	3.68
A2=	175	A2-A1=	-90	M2=	1	T=M2+M3+M4+M5+M6+M7+M8+M9=	60	72.72	-1.24
A3=	185	A3-A2=	10	M3=	1	T=M3+M4+M5+M6+M7+M8+M9=	59	74.14	0.13
A4=	175	A4-A3=	-10	M4=	17	T=M4+M5+M6+M7+M8+M9=	58	75	-0.13
A5=	203	A5-A4=	28	M5=	1	T=M5+M6+M7=+M8+M9=	41	87	0.32
A6=	175	A6-A5=	-28	M6=	9	T=M6+M7+M8+M9=	40	87.5	-0.32
A7=	215	A7-A6=	40	M7=	1	T=M7+M8+M9=	31	93.5	0.43
A8=	175	A8-A7=	-40	M8=	29	T=M8+M9=	30	94	-0.43
A9=	195	A9-A8=	20	M9=	1	T=M9=	1	138.63	0.14
								TOTAL	2.59

BATTERY 22 SIZING

SECTION 10 - First 10 Periods - If A11 is greater than A10, go to section 11

A1=	265	A1-0=	265	M1=	1	T=M1+M2+M3+M4+M5+M6+M7+M8+M9+M10=	119	50.45	5.25
A2=	175	A2-A1=	-90	M2=	1	T=M2+M3+M4+M5+M6+M7+M8+M9+M10=	118	51	-1.76
A3=	185	A3-A2=	10	M3=	1	T=M3+M4+M5+M6+M7+M8+M9+M10=	117	52	0.19
A4=	175	A4-A3=	-10	M4=	17	T=M4+M5+M6+M7+M8+M9+M10=	116	53	-0.19
A5=	203	A5-A4=	28	M5=	1	T=M5+M6+M7=+M8+M9+M10=	99	57	0.49
A6=	175	A6-A5=	-28	M6=	9	T=M6+M7+M8+M9+M10=	98	58	-0.48
A7=	215	A7-A6=	40	M7=	1	T=M7+M8+M9+M10=	89	62	0.65
A8=	175	A8-A7=	-40	M8=	29	T=M8+M9+M10=	88	65	-0.62
A9=	195	A9-A8=	20	M9=	1	T=M9+M10=	59	74.14	0.27
A10=	175	A10-A9=	-20	M10=	58	T+M10	58	75	-0.27
								TOTAL	3.80

SECTION 11 - First 11 Periods - If A11 is greater than A10, go to section 12

A1=	265	A1-0=	265	M1=	1	T=M1+M2+M3+M4+M5+M6+M7+M8+M9+M10+M11=	120	50.45	5.25
A2=	175	A2-A1=	-90	M2=	1	T=M2+M3+M4+M5+M6+M7+M8+M9+M10+M11=	119	50.45	-1.78
A3=	185	A3-A2=	10	M3=	1	T=M3+M4+M5+M6+M7+M8+M9+M1+M110=	118	51	0.20
A4=	175	A4-A3=	-10	M4=	17	T=M4+M5+M6+M7+M8+M9+M10+M11=	116	53	-0.19
A5=	203	A5-A4=	28	M5=	1	T=M5+M6+M7=+M8+M9+M10+M11=	100	56	0.50
A6=	175	A6-A5=	-28	M6=	9	T=M6+M7+M8+M9+M10+M11=	99	57	-0.49
A7=	215	A7-A6=	40	M7=	1	T=M7+M8+M9+M10+M11=	90	59.09	0.68
A8=	175	A8-A7=	-40	M8=	29	T=M8+M9+M10+M11=	89	62	-0.65
A9=	195	A9-A8=	20	M9=	1	T=M9+M10+M11=	60	72.72	0.28
A10=	175	A10-A9=	-20	M10=	58	T=M10+M11	59	74.14	-0.27
A11=	285	A11-A10=	110	M11=	1	T=M11	1	138.63	0.79
								TOTAL	4.32

NUMBER OF POSITIVE PLATES = 4.32

CORRECTED NUMBER OF PLATES FOR AGING, DESIGN MARGIN AND TEMPERATURE = **5.95**

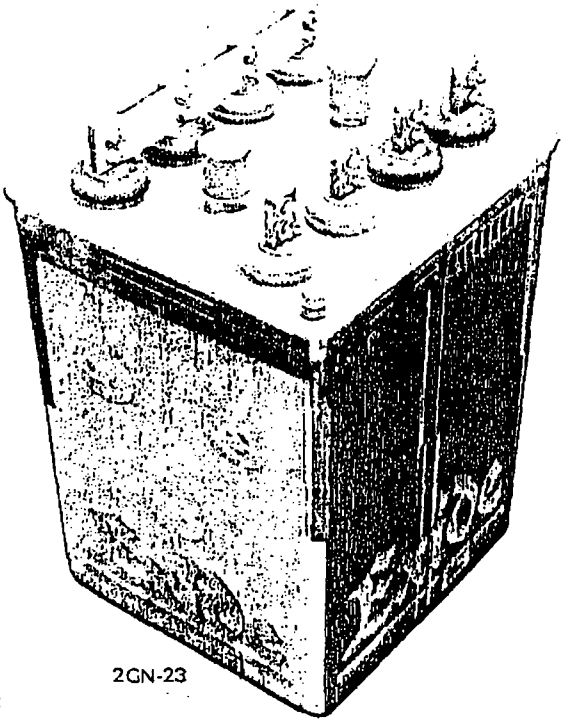
EXIDE

Calcium Flat Plate

Type GN

Nuclear Qualified

- ☐ Highest 1-minute rates
- ☐ Lowest maintenance—lowest water loss, lowest maintenance costs
- ☐ "Slide Lock"™ terminal post seal—virtually eliminates terminal post corrosion
- ☐ 20-year life expectancy
- ☐ Flat-plate construction—calcium alloy grids
- ☐ For floating applications where high ambient temperatures are not probable
- ☐ Optimum ratio of plate surface area to electrolyte volume for maximized performance in discharges of 1-minute to 8-hours duration. Specifically suited for demanding complex load profiles requiring high initial and end currents



2GN-23

SPECIFICATIONS

PLATE DIMENSIONS—

	HEIGHT	WIDTH	THICKNESS
POSITIVE:	17.3 in./439 mm	12.7 in./323 mm	0.31 in./7.9
NEGATIVE:	17.3 in./439 mm	12.7 in./323 mm	0.21 in./5.3

SEDIMENT SPACE: 1.32 in./33.5 mm
ELECTROLYTE OVER PLATES: 3.4 in./86 mm
CONTAINER: Thermoplastic resin
COVER: Thermoplastic resin
SEPARATORS: Microporous rubber
RETAINERS: "Vitrex" — glass fiber
POST TYPE: GN-13 and 15 — Single Post, lead-plated copper
GN-17 through 23 — Double Posts, lead-plated copper
POST SEAL TYPE: Slide-Lock™
PLATE SUSPENSION TYPE:
POSITIVE: Bridge hung
NEGATIVE: Bottom supported
ELECTROLYTE WITHDRAWAL TUBE: One per cell
VENT TYPE: Flame arrestor, fused alumina
FLOAT VOLTAGE:
Acceptable Range: 2.17-2.26 VPC
Recommended: 2.25 VPC
SPECIFIC GRAVITY: 1.215
BOLT CONNECTORS: Stainless steel, standard English measure, hex-head
INTERCELL CONNECTORS: Lead-plated copper
NUCLEAR QUALIFICATION:
IEEE-323-1974
IEEE-344-1975
IEEE-535-1979

Capacities-Dimensions-Weights

TYPE*	NOM. A.H. CAP.	OVERALL DIMENSIONS						WEIGHTS—VOLUMES								OUTLINE DRAWING: SEE CATALOG SECTION
		LENGTH		WIDTH		HEIGHT		UNPACKED		DOMESTIC PACKED		ELECTROLYTE ONLY 1.215 SP. GR.				
		In	mm	In	mm	In	mm	lbs	kg	lbs	kg	lbs	kg	gal	l	
2GN-13	1140	12.4	315	15.1	384	27.2	691	445	202	465	211	119	54	11.9	45	57.40
2GN-15	1260							485	220	505	229	111	50	11.1	42	
2GN-17	1500	16.6	422	15.1	384	27.2	691	585	265	607	275	163	74	16.3	62	
2GN-19	1600							620	281	642	291	155	70	15.5	59	
2GN-21	1700							655	297	677	307	147	67	14.7	56	
2GN-23	1800							695	315	717	325	139	63	13.9	53	

*Prefix Number Indicates Cells Per Unit, Suffix Number Indicates Total Plates Per Cell

Average Cell Performance Data*

(Discharge Rates in Amperes.
1.215 SP. GR. ELECTROLYTE AT 77° (25°C), INCLUDING CELL CONNECTORS

TYPE	NOM. A.H. CAP.	72 HR.	24 HR.	12 HR.	8 HR.	5 HR.	4 HR.	3 HR.	2 HR.	1.5 HR.	1 HR.	30 MIN.	15 MIN.	1 MIN.	TO 1.50 VPC 1 MIN.
To 1.75 VPC Final															
GN-13	1140	24.3	64	109	143	198	225	270	355	420	535	760	922	1090	2035
GN-15	1260	25.7	69	118	157	215	248	295	390	465	600	860	1046	1230	2300
GN-17	1500	30.0	77	135	187	255	304	365	480	560	710	980	1230	1680	3360
GN-19	1600	31.1	82	145	199	280	333	400	525	615	785	1075	1365	1830	3725
GN-21	1700	31.8	86	154	213	300	360	430	565	670	855	1160	1500	1970	4085
GN-23	1800	31.9	89	160	225	325	385	460	605	725	925	1240	1625	2100	4430
To 1.81 VPC Final															
GN-13	1140			103	136	185	212	250	315	370	465	610	719	817	
GN-15	1260			112	149	200	231	270	350	400	525	690	815	922	
GN-17	1500			129	175	240	284	336	430	505	625	805	965	1200	
GN-19	1600			139	189	260	310	367	474	555	685	885	1070	1315	
GN-21	1700			147	203	283	385	396	515	605	745	960	1170	1425	
GN-23	1800			155	214	303	360	422	555	650	800	1035	1265	1525	

*Rates shown depict average values and are subject to IEEE-485.

FEX-00050-02

AVERAGE CAPACITY OF MEAN SIZE CELLS INCLUDING CONNECTORS

EXIDE POWER SYSTEMS DIVISION
ESB INCORPORATED

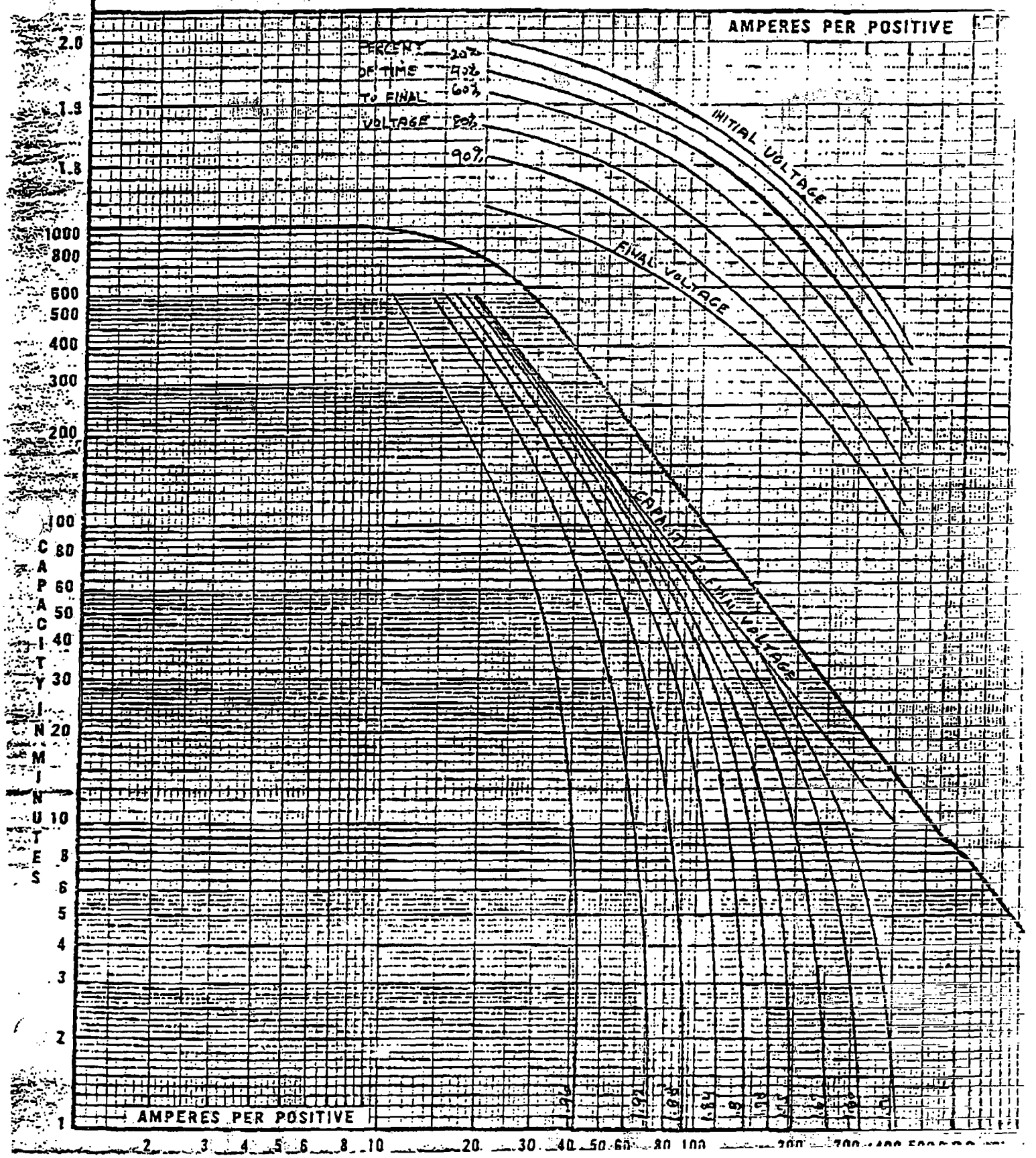
S-1021

GC-17+23

Date: 5/30/78

77°F

Sp. 1.215



ATTACHMENT 7.1
PAGE 1 OF 1

CONSOLIDATED EDISON
INDIAN POINT 2
DESIGN VERIFICATION DOCUMENTATION COVER SHEET

Project No N/A Verification Date 11/30/00
Modification No Cal. No. FEX-00050-02 Rev.: 02
Title/Subject IP2 125 VDC Battery Sizing Calculation

Design Verifier G. Wilson Dept Elect. Projects & Programs
Discipline Engineer W. Keegan Dept Elect. Projects & Programs

Documents Verified (Itemize below all items reviewed. Identify revision status as appropriate; i.e. memo dates, drawing revisions)

For multiple design documents, subject to a single verification, enter the words "see attached list" and attach a list of all documents, their revision numbers and titles.

See Attachment

Method of Verification (check one)

Design Review* X Alternate Calculation Validation Testing

* If the Design Review method has been used , include the completed Design Verification Checklist (Attachment 7.2).

The listed documents above have been verified and are acceptable.

Discipline Engineer: W. Keegan/W.E. Keegan (print/signature) 11/30/00 Date

Design Verifier: G. Wilson/ G. Wilson (print/signature) 11/30/00 Date

Supervisory Concurrence (if required per Step 5.2.3.) (print/signature) Date

ATTACHMENT 7.2
PAGE 1 OF 4

DESIGN VERIFICATION CHECKLIST*

Answer all questions. Attach copies of all comment forms and additional sheets as needed. Checklist questions that do not apply to the items being verified shall be noted as N/A, not applicable.

*Document No FEX-00050-02 Revision 02

Title: IP2 125VDC Battery Sizing Calculation

Project No.: N/A Mod No.: N/A Rev.: 0

Design Verifier: G. Wilkson Disc Engr.: W Keegan W.E. Keegan 11/30/00

	Item	Comments
1.	Were the inputs correctly selected and incorporated into the design?	YES
2.	Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverification when the detailed activities are completed?	YES
3.	Are the appropriate quality and quality assurance requirements specified?	YES
4.	Are the applicable codes, standards and regulatory requirements, including issue and addenda properly identified and are their requirements for design met?	YES

* Attachment 7.2 shall be completed if the Design Review method is being used for verification.

DESIGN VERIFICATION CHECKLIST

	Item	Comments
5.	Have applicable construction and operating experience been considered?	YES
6.	Have the design interface requirements been satisfied?	YES
7.	Was an appropriate design method used?	YES
8.	Is the output reasonable compared to the inputs?	YES
9.	Are the specified parts, equipment and processes suitable for the required application?	N/A
10.	Are the specified materials compatible with each other and the design environmental conditions to which the material will be exposed?	N/A
11.	Have adequate maintenance features and requirements been specified?	N/A
12.	Are accessibility and other design provisions adequate for performance of needed maintenance and repair?	N/A
13.	Has adequate accessibility been provided to perform the in- service inspection expected to be required during the plant life?	N/A

DESIGN VERIFICATION CHECKLIST

	Item	Comments
14.	Has the design properly considered radiation exposure to the public and plant personnel?	N/A
15.	Are the acceptance criteria incorporated in the design documents sufficient to allow verification that design requirements have been satisfactorily accomplished?	YES
16.	Have adequate pre-operational and subsequent periodic test requirements been appropriately specified?	N/A
17.	Are adequate handling, storage, cleaning and shipping requirements specified?	N/A
18.	Are adequate identification requirements specified?	YES
19.	Has ALARA been adequately considered using ADDENDUM 8.3 as a guide?	N/A
20.	Were the results of the EQ and SQ evaluation guidelines contained in DE-SQ-12.502 (Section 5.2 of OP-290-1) reviewed?	N/A
21.	Are the applicable standards for EQ and SQ listed in the equipment specification?	N/A
22.	Are the vendor qualification documents for EQ and SQ requested in the equipment specification?	N/A

DESIGN VERIFICATION CHECKLIST

	Item	Comments
23.	Have system/equipment electrical protection requirements been appropriately specified? (see EI-2028, "Protection Setting and Coordination Criteria")	N/A
24.	Have the corrosion effects of boric acid been considered?	N/A
25.	Are the necessary supporting calculations completed, checked and approved? Are all required calculations completed?*	YES
26.	Have all the affected design documents been identified?	YES
27.	Does the design satisfy the requirements of the initial request?	YES
28.	Have the impacts on all DBDs and UFSAR been considered?	YES
29.	Are the safety margins for the impacted systems for the proposed modification still adequate?	YES
30.	Have the requirements in the Cable Separation Checklist been considered? (See Exhibit K, EI-2031)	N/A

* The person verifying this item may be a different person than the person(s) who reviewed the calculations for correctness. In such situations, it is not necessary to do another check for the correctness of the calculations provided the "Calculation/ Analysis Summary Sheet" is properly signed off by the reviewer.

CON
EDISON MEMORANDUM

Date: 11-30-2000

To: Nuclear Services

From: Mark Entenberg
Section Manager

Subject: Non-Modification Related Calculations for Microfilming

Calculation No: FEX-00050-00 Rev No. 02

Class: [X] A [ ] FP [ ] MET [ ] Non-Class

Title/Subject: IP2 VDC Battery Sizing Calculation

Transmitted herewith, please find the original of the subject calculation, and design review documentation (if Class A, FP and/or MET). Please have them microfilmed in accordance with Company procedures. Upon completion of the microfilming, please return the calculation to me and indicate in the space provided below the Microfilm File Index Number for my records.

Section Manager

The above referenced calculation has been microfilmed and scanned into the computer system. The Microfilm File Index Number is indicated below:

Nuclear Services

CON
EDISON MEMORANDUM

Date 11/30/00

To: Distribution

From: Mark Entenberg
Section Manager

Subject: Calculation # FEX-00050 Rev 02
Description IP2 125 VDC Battery Sizing Calculation

Transmitted herewith, please find a copy of the subject calculation without attachments for your use in determining whether the results of this calculation may affect Plant procedures. If you have any questions please call W. Keegan/W.E. Keegan Telephone # 788 - 3344.
Calculation Preparer

CC: Manager, Configuration Management & Control
Manager, Design Engineering
Manager, Generation Support
Manager, Instrumentation & Control
Manager, Maintenace
Manager, Nuclear Safety & Licensing
Manager, Site Engineering
Manager, Test & Performance
System Engineer(s): _____
_____
_____
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