

TITLE SEISMIC QUALIFICATION FOR THE BREAKERS IN JB 7193 & 7196.		PLANT/UNIT BRNPT/2	
PREPARING ORGANIZATION BNAPC JOB 19106	KEY NOUNS (Consult RIMS DESCRIPTORS LIST) SEISMIC EQUIPMENT QUALIFICATION, BREAKERS, JUNCTION BOXES:		
BRANCH/PROJECT IDENTIFIERS CD-Q2253-883954		Each time these calculations are issued, preparers must ensure that the original (RO) RIMS accession number is filled in.	
Rev (for RIMS' use) (14)		RIMS accession number	
RO	880811E0028	B22 '88	0804 141
APPLICABLE DESIGN DOCUMENT(S) BRN-50-C-7105	R L 881019C0013 (10)	B22 '88	1016 157
	R 2	B22 '89	1216 125
SAR SECTION(S) N/A	UNID SYSTEM(S) 253	R -	
Revision 0	R1	R2	R3
ECN No. (or indicate Not Applicable) P0399 REV 1	F2304A	W6816A W6841/B	
Prepared <i>[Signature]</i> 7-14-88	<i>[Signature]</i> 9-22-88	10/23/89 K. WONG.	
Checked <i>[Signature]</i> 7/15/88	<i>[Signature]</i> 9-22-88	10-25-89 Andy T. Shea	
Reviewed <i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	
Approved <i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	
Date	7/18/88	9/28/88	12/02/89
List all pages added by this revision.	5	NONE	
	5, 6, 7, ATT. A	NONE	
	1, 3, 4, 5, 6, 8	2, 11, 11, 11, 11	1, 2, 3, 4, 5

Safety-related? Yes No

Statement of Problem

TO EVALUATE THE SEISMIC QUALIFICATION OF THE REPLACEMENT BREAKERS IN JB 7193 & 7196, PER CLASS I (CE) REQUIREMENTS

ORIGINAL

Abstract

These calculations contain an unverified assumption(s) that must be verified later. Yes No

Sheet ii thru
Sheet no. 5

Legibility evaluated, and accepted for issue.

[Signature] 12/16/89
Signature, for T. R. P. Date

THIS CALCULATION ADDRESSES THE SEISMIC QUALIFICATION OF THE REPLACEMENT BREAKERS AND THE IMPACT DUE TO THE REPLACEMENT ON THE SEISMIC QUALIFICATION OF THE BOXES. BOX SUPPORT NO. 48B2800-420 AND-421 ARE ALSO ADDRESSED.

REV. 1 REQUIRES NO REVISION TO ABSTRACT.

REV. 2. ONE BREAKER WAS ADDED TO JB'S 7193 & 7196. THE SEISMIC QUALIFICATION OF THE BOXES WILL NOT BE DEGRADED. - THE TEST REQUIREMENTS FOR SEISMIC QUALIFICATION OF THE ADDITION BREAKER WAS ALSO PROVIDED IN THE PR. NO. BEP9-892, RO (JB 7196) & PR. NO. BEP9-907, RO (JB 7193)

Direct Design Input

ENGINEERING RECORDS PROCESSING
CALCULATION CONTROL
ANNEX C BEN

Microfilm and store calculations in RIMS Service Center.

CALCULATION LIBRARY
EDB-F3-BFN

Microfilm and destroy.

Microfilm and return calculations to:
9810020125 980925
PDR ADDOCK 05000260
PDR

[Signature]
12-16-89

Address:

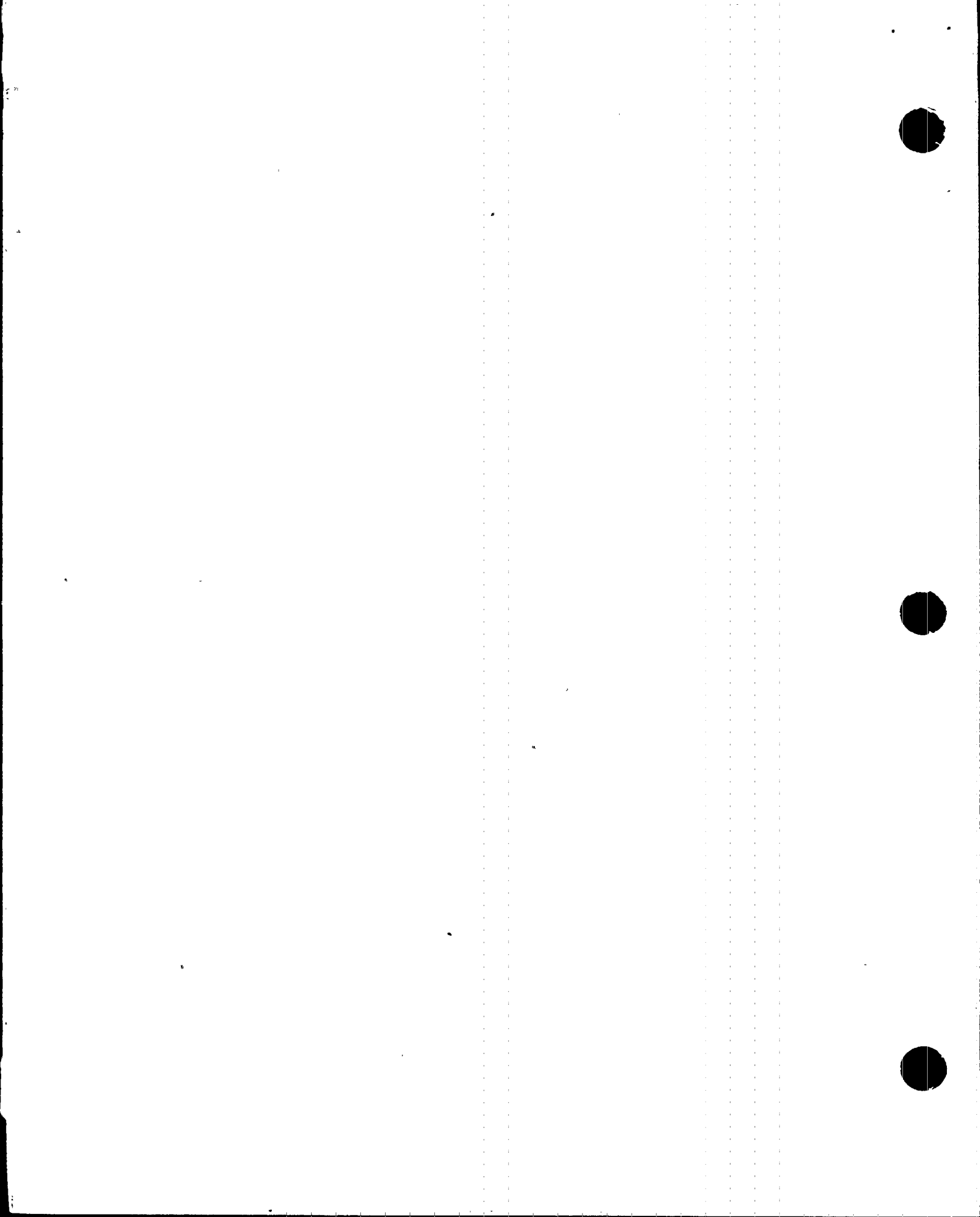


SEISMIC QUALIFICATION FOR THE BREAKERS
IN JB 7193 & 7196.

REVISION LOG
CD-Q 2253-883954

Title:

Revision No.	DESCRIPTION OF REVISION	Date Approved
0	ISSUED FOR ECN-P0399 Rev 0 <i>7.15.88</i>	7/18/88
1	ISSUED FOR FDCN NO. F2304 A (REPLACED SHEET 5 ; SHEETS 6, 7 AND ATT. A OF REV. 0 ARE DELETED ; SHEETS i, ii, iii, iv, 1, 3, 4 ARE REVISED)	9/23/88
2	ISSUED FOR DCN W6816 & W-6841 ^{MA} AB ¹¹⁻²⁻⁸⁸ (ADDITION OF BREAKER, ITEM ③ TO JB'S 7193 & 7196)	12/02/89







CALCULATION SHEET

DEPC-2706 Rev. 9/86 (ED-49)

JCS NO. 19106	CALC. NO. CD- Q 2253- 8839.54	REV. NO. 8/2	SHEET NO. iv
ORIGINATOR <i>Adrian Lopez</i>	DATE 7-14-88	CHECKED <i>[Signature]</i>	DATE 7-15-88

SUBJECT: SEISMIC QUALIFICATION FOR THE BREAKERS IN JB 7193 & 7196.

R1 | ORIGINATOR: *Adrian Lopez* 9-22-88
CHECKED: *Taimoney* 9-22-88

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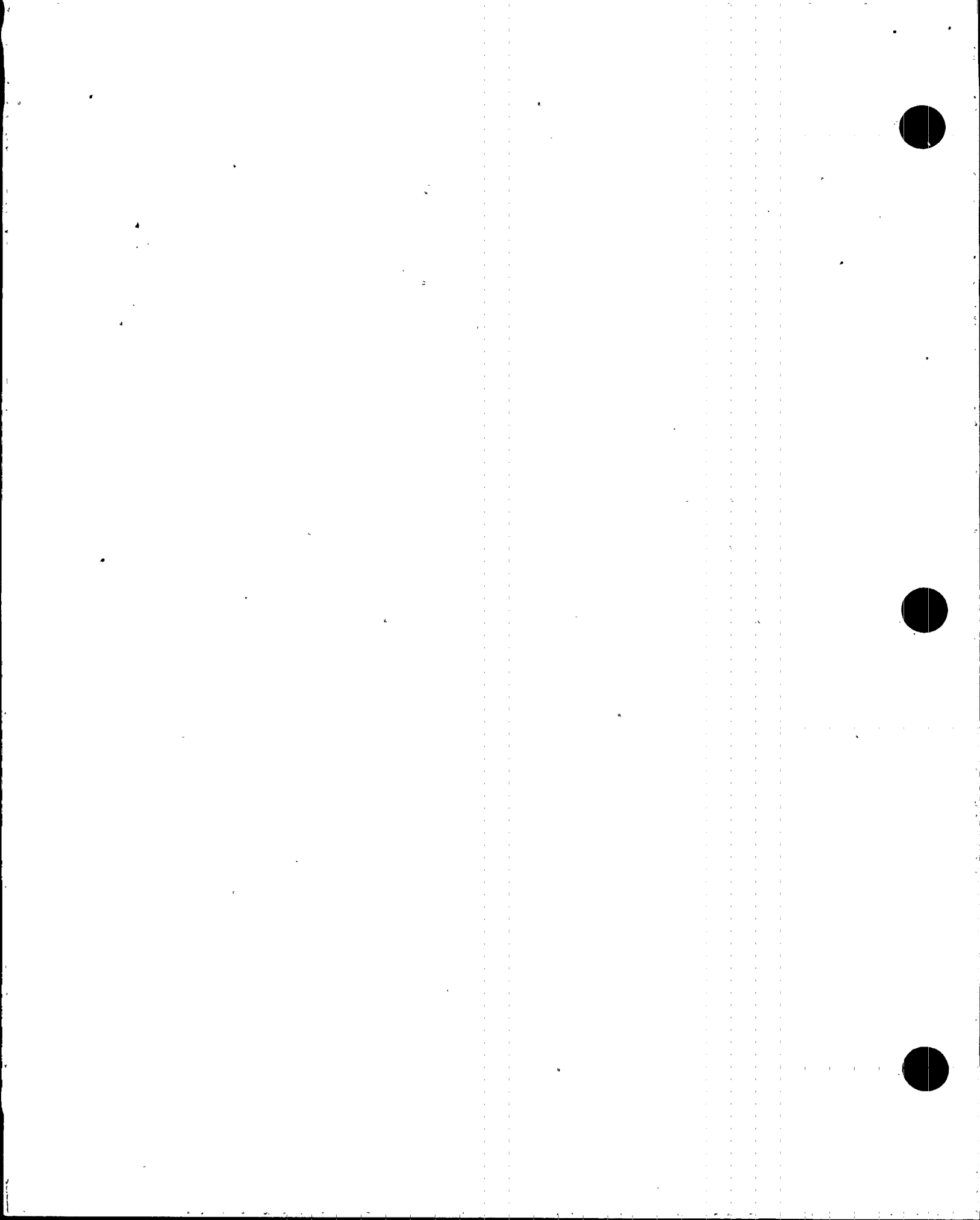
Rev	Origin	K. Lopez	Date	10/23/89
2	Chkd:	<i>B. S. L.</i>	Date	10/25/89

TOTAL NO. OF SHEETS PER SECT.

SHEET NO.

1.	COVER SHEET	1	i
2.	REVISION STATUS SHEET	1	ii
3.	REVISION LOG	1	iii
4.	TABLE OF CONTENTS	1	iv
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6.	ATTACHMENTS		
	ATTACHMENT NO. A	NONE	R1
	ATTACHMENT NO. B	NONE	

TOTAL NUMBER OF SHEETS : 9 | R2





CALCULATION SHEET

SEPC-2706 Rev. 8/86 (ED-89)

JOB NO.

19106

CALC. NO.

CD-Q2253-8839154

REV. NO.

2 ~~0~~X

SHEET NO.

1

ORIGINATOR

Alan [unclear]

DATE

7-14-88

CHECKED

[Signature]

DATE

7-15-88

ORIGINATOR: Alan [unclear] 9-21-88 CHECKED: Tom [unclear] 9-22-88 / R1

SUBJECT SEISMIC QUALIFICATION FOR THE BREAKERS IN JB 7193 & 7196

Rev	Origin	Drawn	Date
21	Chkd. A. [unclear]	[unclear]	10/25/89

5. BODY OF CALCULATIONS

5.1 PURPOSE

R1

~~THE FOUR EXISTING GE J600 CIRCUIT BREAKER, GE PART # TJH65 OR TVA MARK # 839272-BJZ-4 IN JB 7193 & 7196 (TWO BREAKERS ON EACH BOX) WILL BE REPLACED BY GE J600 CIRCUIT BREAKER GE PART # TJH35 WITH 225 AMP AND 300 AMP RATING.~~

THIS CALCULATION IS TO EVALUATE THE SEISMIC QUALIFICATION OF THE ~~REPLACEMENT~~^{R1} CIRCUIT BREAKERS AND THE IMPACT DUE TO THE MODIFICATION ON THE SEISMIC QUALIFICATION OF THE EXISTING PANELS.

5.2 ASSUMPTION

NONE

~~ONE OF TWO EXISTING GE J600 CIRCUIT BREAKER GE PART # TJH65 OR TVA MARK # 839272-BJZ-4 IN JB 7193 & 7196 WILL BE DELETED FROM EACH BOX.~~

R1

(SEE * BELOW) R2

* ADD ITEM @ GE 600 CIRCUIT BREAKER GE PART NO. TJH35 (TVA MARK NUMBER 839272-BJZ-4) IN JBS 7193 & 7196

R2





CALCULATION SHEET

SEPC-2706 Rev. 6/86 (ED-49)

JOB NO. 19106	CALC. NO. CD-Q2253-843954	REV. NO. 2	SHEET NO. 2
ORIGINATOR John K. Knapf	DATE 7-14-88	CHECKED A. K. Knapf	DATE 7-15-88

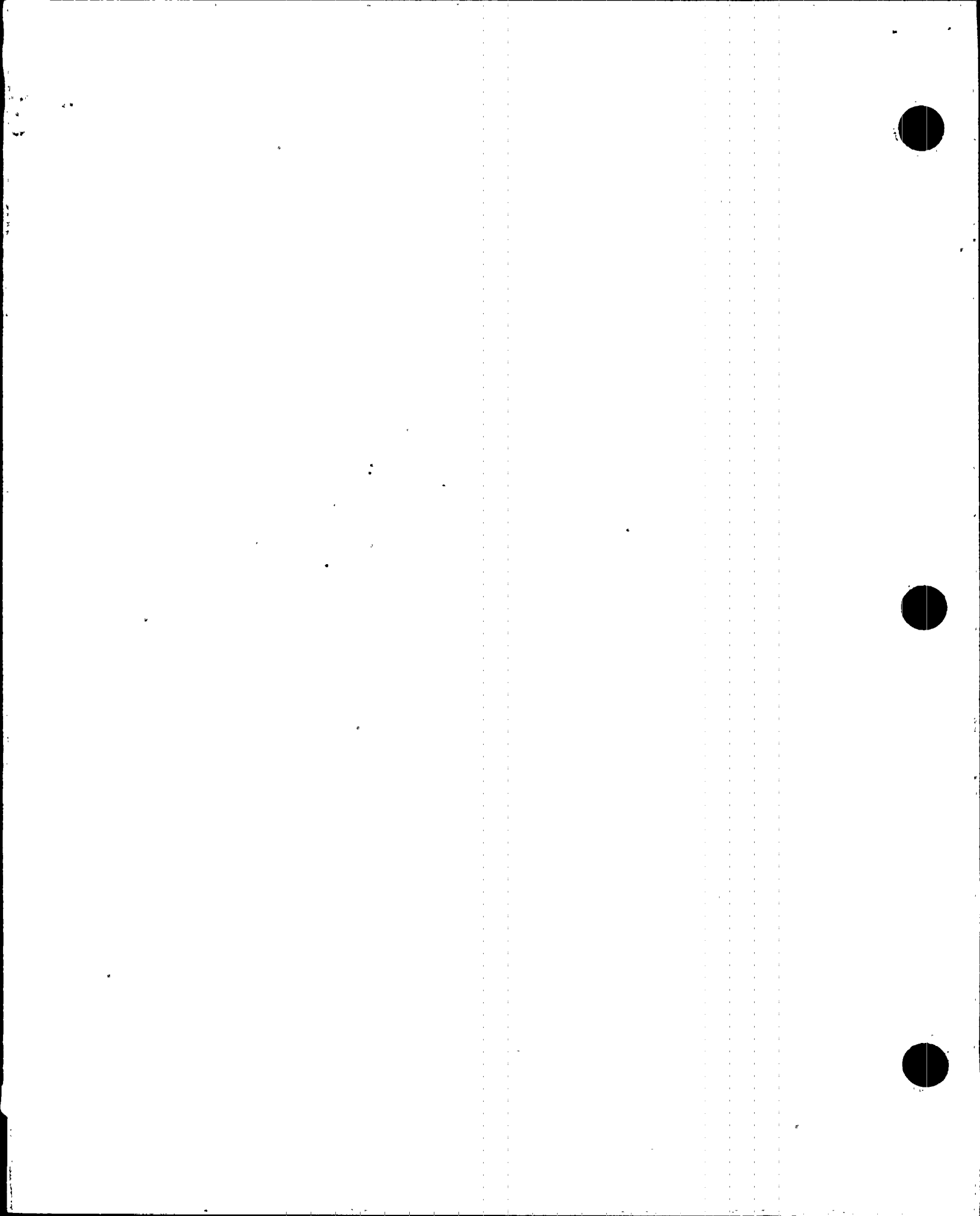
SUBJECT SEISMIC QUALIFICATION FOR THE BREAKERS IN 707193 & 7196.

Rev	Origin	K. Knapf	Date	10/25/89
2	Chkd.	A. K. Knapf	Date	10/25/89

5-3 REFERENCES

- 5-3.1 TVA DESIGN CRITERIA BEN-50-C-7105 ATT. A, REV. ² ~~F~~,
" SEISMIC QUALIFICATION OF CLASS I FLUID SYSTEM
COMPONENTS AND ELECTRICAL OR MECHANICAL EQUIPMENT
EXCEPT VALVES AND OTHER INLINE FLUID SYSTEM
COMPONENTS " (RMS NO. B41 ~~89078 003~~
890301004) /R2
- 5-3.2 TVA DNG 67-E-45N326B REV. 01 02 /R2
- 5-3.3 TVA DNG 67-E-45N327B REV. 01
- 5-3.4 NYLE LAB TEST REPORT NO. 17843-1, " SEISMIC
SIMULATION TEST PROGRAM ON A 460V SHUTDOWN BOARD ROOM
CIRCUIT BREAKER BOX " (RMS NO. B41 87 0608 011)

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CALCULATION SHEET

BEPC-2706 Rev. 0/16 LED-

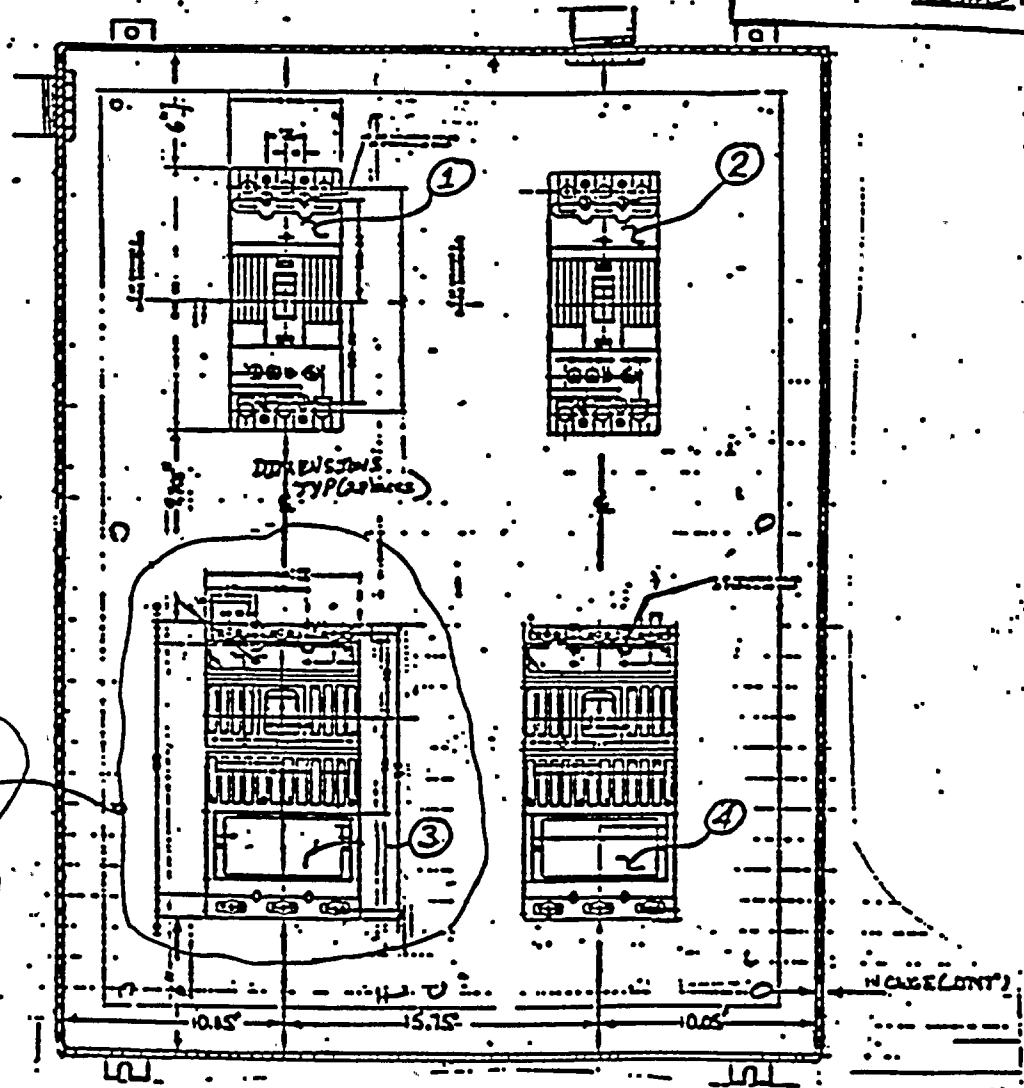
JOB NO. 19106	CALC. NO. CD-Q2253-883954	REV. NO. 201	SHEET NO. 3
ORIGINATOR <i>John H. ...</i>	DATE 7-14-88	CHECKED <i>[Signature]</i>	DATE 7-15-88

SUBJECT: SEISMIC QUALIFICATION FOR THE BREAKERS IN JB7193 & JB7196.

5-4 DATA

R1 / ORIGINATOR: John H. ... 9-4-88
CHANGED: ... 9-22-88

Rev#	Origin	Date
2	...	10/23/89
	Chkd.	Date
	...	10/25/89



INTERNAL DEVICE LAYOUT
CIRCUIT BREAKER BOX JB7193 & JB7196

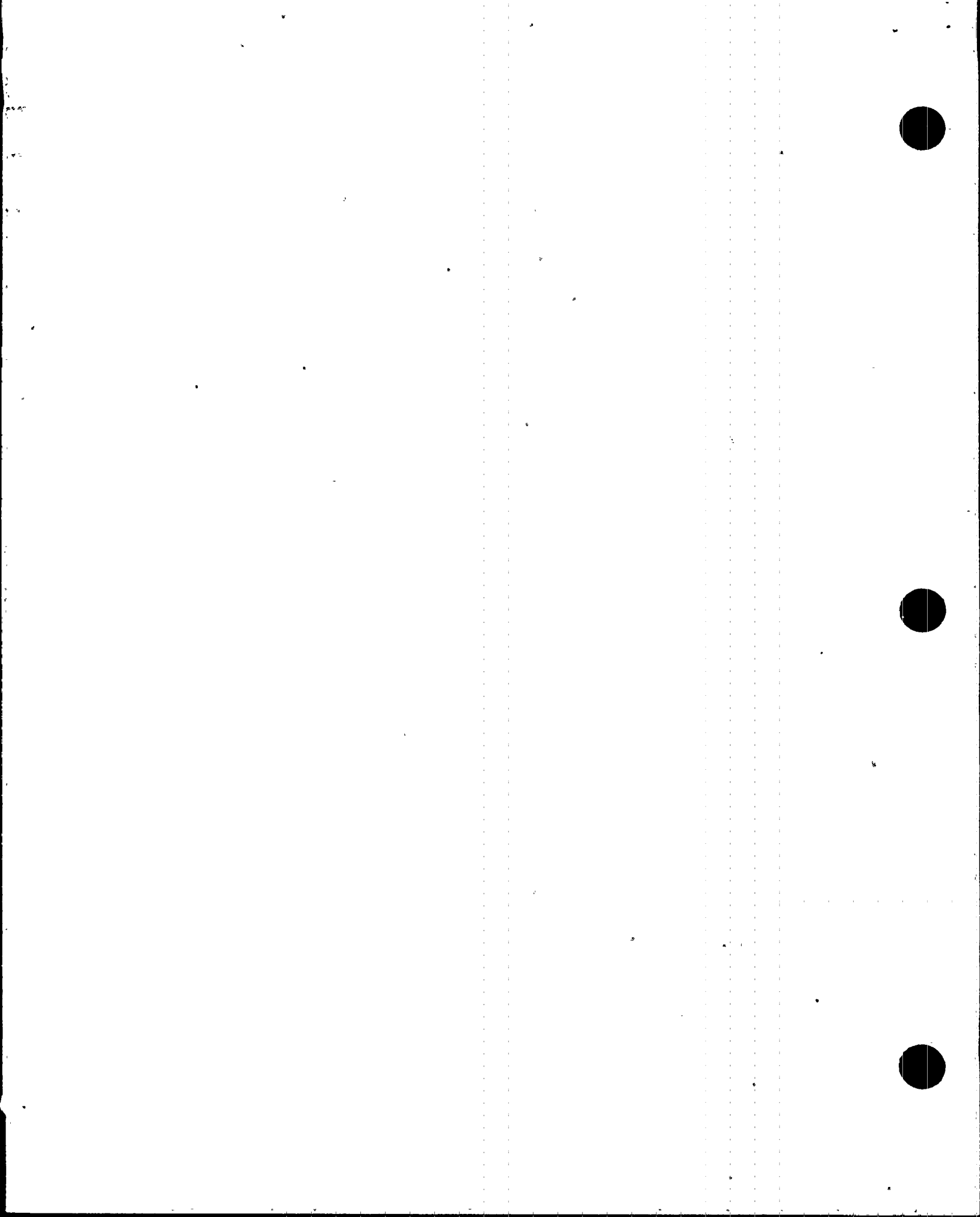
BREAKER IN ITEM (3) ABOVE WILL BE DELETED.

ADDED BREAKER, ITEM (3)

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CALCULATION SHEET

SEPC-2706 Rev. 8/86 (ED-49)

JOB NO. 19106	CALC. NO. CD-Q2253-883954	REV. NO. 2 <i>xy</i>	SHEET NO. 4
ORIGINATOR <i>John H. ...</i>	DATE 7-14-88	CHECKED <i>[Signature]</i>	DATE 7-15-88

SUBJECT SEISMIC QUALIFICATION FOR THE BREAKERS IN JB7193 & 7196.

ORIGINATOR: *John H. ...* 9-4-88 / R1
 CHECKED: *Tamm ...* 9-22-88

5-4 DATA (CONT.)

Rev#	Origin	KLW	Date
2.	Chkd. A. Shu		10/25/89

ITEMS	EXISTING	NEW	REF.
1 & 2	GE F225 CIRCUIT BREAKER GE PART # TFK2364225WL (TVA MARK # BJZ-3)	—	5.3.2 & 5.3.3
3	GE J600 CIRCUIT BREAKER GE PART # TJH3 ³ (TVA MARK # BJE-4)	DELETED / R1 TVA MARK ? BNW, BNW-1, BNX-1, BNY	"
4	GE J600 CIRCUIT BREAKER GE PART # TJHGS (TVA MARK # BJZ-4)	DELETED / R1 TVA MARK ? BNW, BNW-1, BNX, BNY	"

R1

NOTE:

TVA MARK	DESCRIPTION
BNW	GE CIRCUIT BREAKER, J600 FRAME CAT # TJH3S
BNX	J/K RATING PLUG (300A) GE CAT # TR3S300J
BNX-1	J/K RATING PLUG (225A) GE CAT # TR3S225J
BNY	MICRO VENSATH RMS-9 PROGRAMMER GE CAT # TS20LSIT1
BNW-1	LUGS FOR MOLDED CASE CIRCUIT BREAKER GE CAT # TCAL43

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CALCULATION SHEET

BEPC-2706 Rev. 8/86 (ED-89)

JOB NO. 19106	CALC. NO. CD-Q2253-883854	REV. NO. 2	SHEET NO. 5
ORIGINATOR <i>Adrian Lindrop</i>	DATE 9-21-88	CHECKED <i>Tanner</i>	DATE 9-21-88

SUBJECT SEISMIC QUALIFICATION FOR THE BREAKERS IN JOB 7193 & 7196.

Rev.	Origin	Date
2	E. Wong	10/25/89
	Chkd. A. SCL	10/25/89

5.5 COMPUTATION

R2 THE CIRCUIT BREAKER BOXES JB 7193 & JB 7196 ARE STILL SEISMICALLY QUALIFIED AS PER REF. 5.3.4 BECAUSE OF SAME LESS WEIGHT ON THE BOXES.

THE EXISTING BREAKERS WERE SEISMICALLY QUALIFIED PER TEST REPORT B 22870618701 FOR BREAKER TVA MARK BJ2-3 AND TEST REPORT B 22870924005 FOR BREAKER TVA MARK BJ2-4 (TJH3S) R2

R2 THE CG OF THE BOX WILL BE CHANGED BUT SINCE THE TOTAL CHANGES ARE SMALL WEIGHTS ARE SAME, THEREFORE THE ORIGINAL BOX SUPPORTS ARE CONSERVATIVE AND STILL VALID. BECAUSE OF THE REUSED LOCATION R2 OF BREAKERS

5.6 SUMMARY AND CONCLUSION

THE ORIGINAL WEIGHT AND CG OF BOX AND BREAKERS SHALL BE CONSERVATIVELY USED, THE CALC. NO. CD-Q2253-883859 FOR CG OF BOX & BREAKERS IS STILL VALID.

THE EXISTING BOXES JB 7193 & JB 7196 AND EXISTING BREAKERS TVA MARK BJ2-3 & BJ2-4 ARE ALREADY SEISMICALLY QUALIFIED. THE CALC. NO. CD-Q2253-8772122 FOR BOX SUPPORTS ARE STILL VALID. THE DWG'S NO. 45W326B FOR BOX 7193 AND NO. 45W327B FOR BOX 7196 WILL BE REVISED TO REFLECT THE CHANGE OF BREAKERS IN THE BOX. R2

THE TEST REQUIREMENTS FOR SEISMIC QUALIFICATION OF THE BREAKER GE PART NO. TJH3S WAS INCORPORATED IN PR. NO. BFP9-892, R0 (JB7196) & PR. NO. BFP9-907, R0 (JB7193)

R2 THE BREAKER GE PART NO. TJH3S SHALL BE TESTED USING SINE-BEAT INPUTATION OF 10 CYCLES / BEAT FOR MIN. OF 3 BEATS WITH A MIN. MAGNITUDE OF 3G (HOR.) AND 2G (VERT). THE TEST SHALL BE PERFORMED UNDER THE GUIDANCE IN REF 5.3.1.

