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ACCESSION NBR: 8304210315 DOC. DATE: 83/04/19 NOTARIZED: NO DOCKET #
 FACIL: 50-361 San Onofre Nuclear Station, Unit 2, Southern Californ 05000361
 50-362 San Onofre Nuclear Station, Unit 3, Southern Californ 05000362
 AUTH. NAME AUTHOR AFFILIATION
 BASKIN, K.P. Southern California Edison Co.
 RECIP. NAME RECIPIENT AFFILIATION
 KNIGHTON, G.W. Licensing Branch 3

see RFS

SUBJECT: Forwards addl documentation & info packages provided to
 A Cnafee on 830329 & 0415 re GE Type AK-2-25 reactor trip
 breakers (RTB), per 830317 & 21 commitments. WC Moody 830415
 ltr transmitting RTB surveillance procedures encl.

DISTRIBUTION CODE: B001S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 2 + 4,899
 TITLE: Licensing Submittal: PSAR/FSAR Amnts & Related Correspondence

NOTES: J Hanchett 1cy PDR Documents. ELD Chandler 1cy. 05000361
 NRR Scaletti 1cy.
 J Hanchett 1cy PDR Documents. ELD Chandler 1cy. 05000362

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NRR/DE/CEB 11	1	NRR/DE/EHEB	1
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NRR/DE/HGEB 30	1	NRR/DE/MEB 18	1
NRR/DE/MTEB 17	1	NRR/DE/SAB 24	1
NRR/DE/SGEB 25	2	NRR/DHFS/HFEB40	1
NRR/DHFS/LGB 32	1	NRR/DL/SSPB	1
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EXTERNAL: ACRS 41	6	BNL (AMDTs ONLY)	1 0
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NOTES: 3 3

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3 Encls

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Southern California Edison Company



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ROSEMEAD, CALIFORNIA 91770

K. P. BASKIN
MANAGER OF NUCLEAR ENGINEERING,
SAFETY, AND LICENSING

TELEPHONE
(213) 572-1401

April 19, 1983

Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

SCE's letters of March 17 and 21, 1983 provided you with copies of ten documentation and information packages that were transmitted to the NRC Resident Inspector (Mr. A. E. Chaffee) from March 13 to 18, 1983 relative to the March 1 and 3, 1983 surveillance testing of the General Electric Type AK-2-25 reactor trip breakers (RTB's) installed at San Onofre Units 2 and 3. The letters also indicated that SCE would continue to provide you with copies of all additional information relative to the San Onofre Units 2 and 3 RTB's as it is developed and transmitted to Mr. Chaffee.

Consistent with this commitment, enclosed please find copies of three additional documentation and information packages which were provided to Mr. Chaffee on March 29, 1983 and April 15, 1983. SCE will continue to provide you with copies of all additional information which will be developed and transmitted to Mr. Chaffee relative to the RTB's for San Onofre Units 2 and 3.

If you have any questions or comments, please let me know.

Very truly yours,

RW Krieger for KP Baskin

Enclosure

cc: Mr. J. B. Martin, Regional Administrator
U.S. Nuclear Regulatory Commission, Region V
Mr. H. Rood, Project Manager (Open by addressee only - 2 sets)

8304210315 830419
PDR ADDCK 05000361
P PDR

*Boal
1/1
Limited
Post*

April 15, 1983

MR. H. ROOD

SUBJECT: San Onofre Nuclear Generating Station, Units 2&3
Reactor Trip Breaker Surveillance Procedures

Attached per your request are copies of the Reactor Trip Breaker (RTB) Surveillance Procedures discussed at our meeting with you on April 12, 1983:

1. S023-II-11.161, Revision 2, Surveillance Requirements Reactor Breakers Undervoltage and Shunt Trip Device Circuit Test, performs a functional check of the undervoltage and shunt trip circuits for the RTB's.
2. S023-II-11.162, Revision 0, Reactor Breaker Response Time Testing, verifies the shunt and undervoltage tripping devices are able to separately cause the breaker to trip within a specified time.

Since the original surveillance procedure, S023-II-11.161, is now redundant to the response time procedure, S023-II-11.162, SCE may elect in the future to combine these procedures.

A formal transmittal of these procedures to the NRC will be provided next week.

Wim

W. C. MOODY
Deputy Station Manager

MPShort:mls
Attachments

cc: A. Chaffee, NRC Resident
bcc: M. P. Short *mp*
M. Price
F. Nandy

TEMPORARY CHANGE NOTICE

ENCODE: AC10AC
60
(When form filled out)

PAGE 1 OF 3

NOTE: Technical Specification Violation if not processed within the stated time limits.

Proc. No. SO23-II-11.161 Revision No. 2 TCN No. 2
Procedure Title SURV. REQ. REACTOR BREAKERS UNDERVOLTAGE AND SHUNT TRIP DEVICE CIR. TEST
Procedure Author R.L. CLIFT PAX 59-144 (If known, Writer) PAX

1. The following change shall be in effect. Attach a copy of the effected page(s), if applicable

SEE THE ATTACHED SHEETS

2. Reason

PER R.N. SANTOSUOSSO LETTER OF 23 MARCH 83 TO B. KATZ TO ANSWER
NRC QUESTIONS, COMMENTS AND RECOMMENDATIONS.

- Date originated 4-12-83 4. Issuance Date 4-12-83 (For CDV Use Only)
5. Does this change affect FSAR or Tech. Spec. commitments? Yes No X
 6. Does this change affect the nonradiological environment of any offsite area previously undisturbed during site preparation and plant construction? Yes No X
 7. Is the intent of the original document altered? Yes No X
 8. Is the document to be changed an Emergency and Abnormal Operating Instruction? Yes No X
(If the answer to 5, 6, 7 or 8 is YES, a TCN is NOT Authorized.)
 9. Does this change affect licensing commitment requirements as stated in the Reference Section? Yes No X
 10. Originator R.L. Clift 4/12/83 1816
DATE / TIME
 11. Is the TCN to be incorporated into next permanent revision within 60 days of issuance date? Yes X No
* One time change only against Procedure/Station Order No. Rev. No.
 12. Copy sent to the Nuclear Safety Group CDV SIGNATURE DATE
 13. Signatures Required

Approved by: (at least one (1) SRO)

1) Charles R. Homan

2) W. B. Gilder

Final approval by:

3)
ELECTRICITY DIVISION STATION MANAGER

DATE - MUST BE WITHIN 14 DAYS

RECEIVED

APR 12 1983

CDM SITE

SITE FILE COPY

Approval must be by two members of the plant management staff at least one of whom holds an IRO license on the unit affected.
If for TCN approval, members of the plant management staff must be defined as any Station Supervisor, including the level of foreman, exercising responsibility in the specific

8303210680

1. Change the first sentence of 6.2 to read:

Verify proper plant status and CEDM lineup with Operations personnel.

2. Change 6.3.1 to read:

Observe that the selected breaker is closed. Verify that the Control Room indication shows a red light and the mimic bus on the PPS panel indicates a closed breaker. Initial the Data Record, Attachment 9.4.

3. Change 6.3.3 to read:

Observe that the selected breaker opens. Verify that the Control Room indication shows a green light and the mimic bus on the PPS panel indicates an open breaker. Verify the correct Alarm has been initiated. Initial the Data Record, Attachment 9.4.

4. Change 6.3.5 to read:

Verify Control Room indication shows a red light and the mimic bus on the PPS panel indicates a closed breaker. Verify that the Alarm has been reset. Initial the Data Record, Attachment 9.4.

5. Change 6.4.1 to read:

Observe that the selected breaker is closed. Verify that the Control Room indication shows a red light and the mimic bus on the PPS panel indicates a closed breaker. Initial the Data Record, Attachment 9.4.

6. Change 6.4.3 to read:

Observe that the selected breaker opens. Verify that the Control Room indication shows a green light and the mimic bus on the PPS panel indicates an open breaker. Verify that the correct Alarm has been initiated. Initial the Data Record, Attachment 9.4.

7. Change 6.4.5 to read:

Verify Control Room indication shows a red light and that the mimic bus on the PPS panel indicates a closed breaker. Verify that the Alarm has been reset. Initial the Data Record, Attachment 9.4.

8. Change 6.6.1 to read:

At the completion of the test, all fuses will be checked installed and the Reactor Trip Breakers and PPS system restored to "AS FOUND" or "NORMAL STATUS".

9. Change 7.1 to read:

All TCB's function per design. The two trips, Shunt and Under-voltage, independent of each other, trip the Reactor Trip Breakers.

10. Add to Reference Section 2.0:

2.0 Procedure S023-II-11.162, Reactor Breakers Response Time Testing.

11. Add Note under 6.0 to read:

If the Reactor Breaker Response Time Testing Procedure No. S023-II-11.162, is to be implemented concurrently with this procedure, the following guidelines will apply.

1. Complete Procedure No. S023-II-11.162.
2. Complete the Data Record of Procedure No. S023-II-11.161, taking the information during the first timed test of each reactor breaker using Procedure No. S023-II-11.162.
3. Note in the Remarks section of Procedure No. S023-II-11.161 that Procedure No. S023-II-11.162 was completed concurrently.

SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 AND 3
COMPLETE REVISION
EFFECTIVE DATE FEB 10 1983 CDM

INSTRUMENT AND TEST PROCEDURE S023-II-11.161
REVISION 2
PAGE 1

SURVEILLANCE REQUIREMENT
REACTOR BREAKERS UNDERVOLTAGE AND SHUNT TRIP DEVICE CIRCUIT TEST

(18 MONTH INTERVAL)

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PAGES CHANGED WITH THIS REVISION: ALL

RECEIVED

FEB 10 1982

EDM-SITE

PREPARED BY: Richard L Clift 1-25-83
PROCEDURE WRITER DATE

SITE FILE COPY

APPROVED BY: Brian Katz 2-2-83
B. KATZ
MANAGER, TECHNICAL DATE

1096b/ryh

SURVEILLANCE REQUIREMENTS
REACTOR BREAKERS UNDERVOLTAGE AND SHUNT TRIP DEVICE CIRCUIT TEST

(18 MONTH INTERVAL)

1.0 OBJECTIVE

- 1.1 To perform a functional check of the undervoltage and shunt trip circuits on TCBs 1 through 9.
- 1.2 To satisfy Surveillance Requirements 4.3.1.1 (18 month interval), Table 4.3-1, item 13 for Modes 1, 2, 3, 4 and 5 of the Unit 2 and 3 Technical Specifications.
- 1.3 To provide data documenting system capabilities.

2.0 REFERENCES

- 2.1 Applicable elementary diagrams
- 2.2 Applicable wiring diagrams
- 2.3 Applicable manufacturers' diagrams and manuals
- 2.4 Vendor elementary diagrams S023-944-328 through 336
- 2.5 Vendor wiring diagrams S023-944-340 through 344
- 2.6 Operating Instruction S023-0-23
- 2.7 Operating Instruction S023-0-13
- 2.8 SCE Accident and Fire Prevention Manual
- 2.9 Station Safety Program S0123-A-138

3.0 PREREQUISITES

- 3.1 An Equipment Control form SO(123) 562, or a Minor PM/Surveillance Request form, SO(123) 97, may need to be submitted and approved prior to commencing work using this procedure. See Operating Instructions S023-0-23 for instruction on the use of these forms.
- 3.2 The applicable Work Authorization per Operating Instruction S023-0-13 must be obtained from the Control Operator prior to beginning work.

3.0 PREREQUISITES (Continued)

- 3.3 Check the applicable radiation and contamination survey information BEFORE entering job area. Use this survey information to assist in maintaining your exposure ALARA.
- 3.4 Verify that this procedure is current by checking this revision against a controlled copy and any Temporary Change Notices.
- 3.5 The steps under Section 6.0 must be completed in order.
- 3.6 All data must be recorded during each particular step of this procedure.
- 3.7 These Prerequisites are to be reverified at the beginning of each new work period not to exceed 24 hours. Signatures are not required for these reverifications.
- 3.8 Communications between the Test Technician, Operator at the CEDM control panels, and the Control Room must be established prior to the start of the test, and maintained throughout the duration of the test.
- 3.9 If the Unit is shut down and a SCRAM signal is present, contact the Instrument Department and have them remove the trip by simulating a running condition at the Plant Protection Cabinets to allow operation of the Reactor Breakers.

4.0 PRECAUTIONS

- 4.1 In the event any unanticipated conditions occur during testing, the technician shall immediately notify the Control Operator.
- 4.2 Receiving approval to begin testing does not, in any way, obviate the responsibility of the technician to determine for himself that it is prudent and safe to begin work.
- 4.3 In the event the test data does not meet the acceptance criteria, the Control Operator and the applicable Supervisor shall be notified immediately. Under no circumstances shall the device be returned to service without the Control Operator's approval.
- 4.4 Observe the Work Authorization Holders' responsibilities under Operating Instruction S023-0-13.
- 4.5 In conducting the activities of the procedure, various levels of circuit voltages will be energized. Exercise caution and conform to the guidelines specifies in references 2.8 and 2.9 concerning maintenance activities on energized electrical circuits.
- 4.6 If the technician cannot start this test as scheduled or is prevented from completing this test for any reason, a TECHNICAL SPECIFICATION VIOLATION may occur. The responsible Supervisor must be notified immediately.

4.0 PRECAUTIONS (Continued)

4.7 ONLY ONE BREAKER AT A TIME MAY BE TRIPPED. THE BREAKER UNDER TEST MUST BE RECLOSED AND RETURNED TO NORMAL BEFORE TESTING MAY PROCEED ON ANY OTHER REACTOR BREAKER.

4.8 The tie breaker (TCB-9) shall not be tested if only one CEDM MG set is in service.

4.9 Necessary steps shall be taken to prevent any unscheduled trips or damage to equipment.

5.0 CHECK-OFF/DATA SHEET(S)

5.1 See Attachment 9.4.

6.0 INSTRUCTIONS

6.1 Verify communications as set forth in step 3.9. Enter the verification signature on the Data Record, Attachment 9.4.

6.2 Verify plant status and CEDM system lineup. Any deviation from normal plant status and CEDM lineup will be noted in the Remarks section of the Data Record.

6.3 Undervoltage Trip Device Circuit Test

CAUTION
=====

ONLY ONE BREAKER AT A TIME MAY BE TRIPPED. THE BREAKER UNDER TEST MUST BE RECLOSED AND RETURNED TO NORMAL BEFORE TESTING MAY PROCEED ON ANY OTHER REACTOR BREAKER.

6.3.1 Observe that the selected breaker is closed and verify that the Control Room indication shows a red light. Initial Data Record, Attachment 9.4.

6.3.2 With an insulated fuse puller, momentarily remove the 30 amp fuse as shown on Attachment 9.1.

NOTE: The complete designation and location for each fuse is set forth on Attachment 9.2.

6.3.3 Observe that the breaker opens and verify that the Control Room indication shows a green light and that the correct Alarm has been initiated. Initial Data Record, Attachment 9.4.

6.3.4 Have operations close the breaker under test.

6.0 INSTRUCTIONS (Continued)

- 6.3.5 Verify Control Room indication shows a red light, and that the Alarm has been reset. Initial Data Record, Attachment 9.4.

CAUTION ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.
===== THE BREAKER UNDER TEST MUST BE RECLOSED
AND RETURNED TO NORMAL BEFORE TESTING MAY
PROCEED ON ANY OTHER REACTOR BREAKER.

6.4 Shunt Trip Device Circuit Test

- 6.4.1 Observe that the breaker is closed and verify that the Control Room indication shows a red light. Initial Data Record, Attachment 9.4.
- 6.4.2 Momentarily place a jumper across the terminals identified in Attachment 9.2.
- 6.4.3 Observe that the breaker opens and verify that the Control Room indication shows a green light and that the correct Alarm has been initiated. Initial Data Record, Attachment 9.4.
- 6.4.4 Have Operations close the breaker under test.
- 6.4.5 Verify that the Control Room indication shows a red light and that the Alarm has been reset. Initial Data Record, Attachment 9.4.

CAUTION ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.
===== THE BREAKER UNDER TEST MUST BE RECLOSED
AND RETURNED TO NORMAL BEFORE TESTING MAY
PROCEED ON ANY OTHER REACTOR BREAKER.

- 6.5 Complete steps 6.3 and 6.4 for all Reactor Trip Breakers TCB-1 through TCB-9. Use Attachment 9.2 for terminal locations and fuse designation and location.

6.0 INSTRUCTIONS (Continued)

6.6 Restoration

- 6.6.1 At the completion of the test, all fuses will be checked installed and the system restored to "As Found" or "Normal Status".
- 6.6.2 Restore all connections, switches and devices that were altered in the performance of this procedure.
- 6.6.3 A second qualified person shall verify the restoration (safety related equipment only). Sign verification on Data Record, Attachment 9.4.
- 6.6.4 Release any Work Authorization obtained for this procedure back to the Control Operator per Operating Instruction S023-0-13.
- 6.6.5 When applicable, complete the required portions of the Return To Service section of Equipment Control Form SO(123) 562.

7.0 ACCEPTANCE CRITERIA

- 7.1 All TCBs function per the applicable drawings and meet the procedure sections requirements.

8.0 RECORDS

- 8.1 Upon completion of this procedure the Data Record, Attachment 9.4 shall be signed by the Technician and responsible Electrical Test Supervisor. The Supervisor of Electrical Test and I&C Engineering Representative shall review and approve the test data.
- 8.2 A copy of the Data Record, Attachment 9.4, of this procedure will be made for retention in the Test Shop files.
- 8.3 Transfer the original copy of the Data Record, Attachment 9.4, to the CDM Center.

9.0 ATTACHMENTS

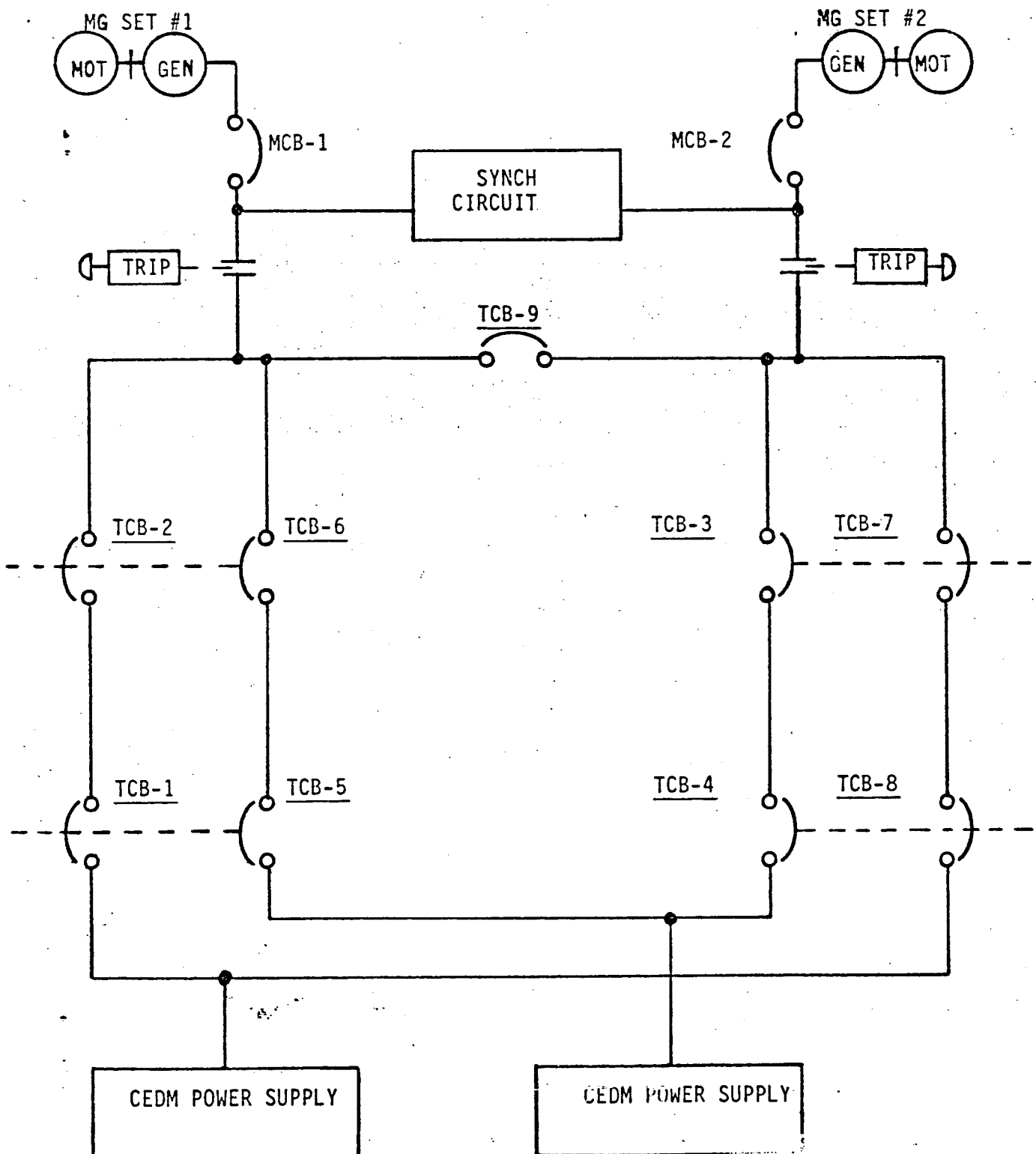
- 9.1 Elementary Diagram for Breaker Control (1 page)
- 9.2 Terminal and Fuse Designation and Location (1 page)
- 9.3 TCB Bus Arrangement (1 page)
- 9.4 Data Record (2 pages)



TERMINAL AND FUSE DESIGNATION AND LOCATION

UNDervOLTAGE TEST		SHUNT TEST	LOCATION
BREAKER	FUSE NO.	JUMPER TERMINALS	
TCB-1	FU1T (POS)	OTB2-3 to OTB2-4	TOP SECT. 1 REAR-RIGHT
TCB-2	FU2T (POS)	OTB11-3 to OTB11-4	TOP SECT. 2 REAR-RIGHT
TCB-3	FU3T (POS)	OTB23-3 to OTB23-4	TOP SECT. 4 REAR-RIGHT
TCB-4	FU4T (POS)	OTB32-3 to OTB32-4	TOP SECT. 5 REAR-RIGHT
TCB-5	FU5T (POS)	OTB2-9 to OTB2-10	SECT. 1 REAR-RIGHT
TCB-6	FU6T (POS)	OTB11-9 to OTB11-10	TOP SECT. 2 REAR-RIGHT
TCB-7	FU7T (POS)	OTB23-9 to OTB23-10	TOP SECT. 4 REAR-RIGHT
TCB-8	FU8T (POS)	OTB32-9 to OTB32-10	TOP SECT. 5 REAR-RIGHT
TCB-9	FU9T (POS)		TOP SECT. 3 REAR-RIGHT
TCB-9		BC3 to BC4	TRIP PB ON DOOR SECT. 3 FRONT

TCB BUS ARRANGEMENT



REACTOR BREAKERS UNDERVOLTAGE AND SHUNT TRIP DEVICE CIRCUIT TEST

PMO NUMBER _____

DATA RECORD

UNIT _____

Test Shop File No. _____

6.1 Communications verified, (prerequisite).

_____/_____
Technician Date

6.2 Plant status and CEDM system lineup verified,
(prerequisite).

_____/_____
Technician Date

UNDER VOLTAGE TRIP DEVICE

Reactor Breaker	Closed Indication	Trip	Open Indication	Alarm In	Breaker Closed	Alarm Reset
TCB-1						
TCB-2						
TCB-3						
TCB-4						
TCB-5						
TCB-6						
TCB-7						
TCB-8						
TCB-9						

SHUNT TRIP DEVICE

Reactor Breaker	Closed Indication	Trip	Open Indication	Alarm In	Breaker Closed	Alarm Reset
--------------------	----------------------	------	--------------------	-------------	-------------------	----------------

TCB-1

TCB-2

TCB-3

TCB-4

TCB-5

TCB-6

TCB-7

TCB-8

TCB-9

6.6 Restoration

6.6.1 Restoration Completed

Technician

Date

Second Qualified Person / Date

6.8 REMARKS

TECHNICIAN(S)

DATE

DATE

DATE

DATE

ELECTRICAL TEST SUPERVISOR

DATE

SUPERVISOR OF ELECTRICAL TEST

DATE

NO ENGINEERING REPRESENTATIVE

DATE

TEMPORARY CHANGE NOTICE

NOTE: TECHNICAL SPECIFICATION VIOLATION IF NOT PROCESSED WITHIN THE STATED TIME LIMITS.

Procedure No. SO23-II-11.162 Revision No. 0 TCN No. 1

Procedure Title REACTOR BREAKER RESPONSE TIME TESTING

Procedure Author R. L. CLIFT PAX 59144 (If known, Writer) PAX

1. The following change shall be in effect: [Attach a copy of the effected page(s), if applicable]

SEE ATTACHED

2. Reason:

TO CLARIFY INTENT OF PROCEDURE

3. (a) Is this change a result of a facility design change? (PFC, MCR, or Temporary Modification, etc.)

YES NO ☒

If yes, provide the facility design change identifier _____

(b) Completion of the facility design change has been verified. (Need only be completed if (a) is YES)

YES NO NO

(If the answer to 3. (b) is NO, a TCN is NOT authorized.)

4. Date originated 4/14/83 5. Issuance date APR 14 1983 CDM (For CDM Use Only)

6. Does this change affect FSAR or Tech. Spec. commitments? YES NO ☒

7. Does this change affect the nonradiological environment of any offsite area previously undisturbed during site preparation and plant construction? YES NO ☒

8. Is the intent of the original document altered? YES NO ☒

9. Is the document to be changed an Emergency and Abnormal Operating Instruction? YES NO ☒

(If the answer to 6, 7, 8 or 9 is YES, a TCN is NOT authorized)

10. Does this change affect licensing commitment requirements as stated in the Reference Section?
YES NO ☒

11. Originator T. H. GRAHAM Rtc 4/14/83 1030
(Signature) Date/Time

12. Is the TCN to be incorporated into next permanent revision within 60 days of issuance date?
YES NO ☒

*One time change only against Procedure/Station Order No. _____ Rev. No. _____

13. Copy sent to the Nuclear Safety Group _____

CDM Signature

Date

14. Signatures Required:

Approved by: (at least one (1) SRO)	
1) <u>T. H. Graham</u>	
2) <u>[Signature]</u>	
Final approval by:	
3) <u>[Signature]</u>	
Cognizant Functional Station Manager	
Date - must be within 14 days	

SITE FILE COPY

RECEIVED

APR 14 1983

8304210320 830419
PDR ADDCK 05000361
PDR

Approval must be by two members of the plant management staff at least one of whom holds a CDM site on the unit affected. (For TCN approval, members of the plant management staff are defined as any Station Supervisor, including the level of foreman, exercising responsibility in the specific area and unit addressed by the change).

TCN 1

1. Change the first sentence of 4.6 to read:

WITH THE UNIT IN SERVICE ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.

2. Change the first sentence of CAUTION after 6.4 to read:

WITH THE UNIT IN SERVICE ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.

3. Change the first sentence of CAUTION after 6.4.4 to read:

WITH THE UNIT IN SERVICE ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.

4. After CAUTION after 6.4 add the following:

NOTE: Attachments 8.1 and 8.2 list convenient attachment locations.

5. Change 6.4.2 to read:

Use the selected auxiliary contacts (pallets) to time opening of the breaker. Connect test leads to the appropriate terminal blocks on the rear of the switchgear.

6. Change 6.5.2 to read:

Use the selected auxiliary contacts (pallets) to time opening of the breaker. Connect test leads to the appropriate terminal blocks on the rear of the switchgear.

7. Change the first sentence of CAUTION after 6.5.4 to read:

WITH THE UNIT IN SERVICE ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.

8. Change heading on Attachment 8.2 to read:

TERMINAL LOCATIONS OF AUXILIARY CONTACTS (PALLETES).

REACTOR BREAKER RESPONSE TIME TESTING

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PAGES CHANGED WITH THIS REVISION: NEW

PREPARED BY:

Richard L Clift
PROCEDURE WRITER

4/12/83
DATE

APPROVED BY:

Brian Katz
B. KATZ
MANAGER, TECHNICAL

4-12-83
DATE

2575b/daj

RECEIVED
APR 12 1983
CDM SITE

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REACTOR BREAKER RESPONSE TIME TESTING

1.0 OBJECTIVE

- 1.1 To perform a response time test on each Reactor Breaker to prove that the Shunt and Undervoltage tripping devices are able to separately cause the breaker to trip within a specified time.
- 1.2 To provide data that will document the response time of each Reactor Breaker.

2.0 REFERENCES

- 2.1 Applicable elementary diagrams
- 2.2 Applicable wiring diagrams
- 2.3 Applicable manufacturers' diagrams and manuals
- 2.4 Vendor elementary diagrams S023-944-328 through 336
- 2.5 Vendor wiring diagrams S023-944-340 through 344
- 2.6 Operating Instruction S023-0-23
- 2.7 Operating Instruction S023-0-13
- 2.8 SCE Accident and Fire Prevention Manual
- 2.9 Station Safety Program S0123-A-138
- 2.10 Procedure S023-II-11.161 Surv. Req. Reactor Breakers Undervoltage and Shunt Trip Device Circuit Test

3.0 PREREQUISITES

- 3.1 An Equipment Control Form SO(123) 562, or a Minor PM/Surveillance Request Form, SO(123) 97, may need to be submitted and approved prior to commencing work using this procedure. See Operating Instruction S023-0-23 for instructions on the use of these forms.
- 3.2 The applicable Work Authorization per Operating Instruction S023-0-13 must be obtained from the Control Operator prior to beginning work.
- 3.3 Check the applicable radiation and contamination survey information BEFORE entering job area. Use this survey information to assist in maintaining your exposure ALARA.
- 3.4 Verify that this procedure is current by checking this revision against a controlled copy and any Temporary Change Notices.
- 3.5 All data must be recorded during each particular step of this procedure.

3.0 PREREQUISITES (Continued)

- 3.6 These Prerequisites are to be re-verified at the beginning of each new work period not to exceed 24 hours. Signatures are not required for these re-verifications.
- 3.7 Communications between the Test Technician, Operator at the CEDM control panels, and the Control Room must be established prior to the start of the test, and maintained throughout the duration of the test.
- 3.8 If the Unit is shut down and a SCRAM signal is present, contact the Instrument Department and have them remove the trip by simulating a running condition at the Plant Protection Cabinets to allow operation of the Reactor Breakers.
- 3.9 Test Equipment
 - 3.9.1 Electronic Timer or Oscillograph Recorder
 - 3.9.2 DMM (Digital Multimeter)
 - 3.9.3 Switches, leads, hand tools, etc.
- 3.10 Measuring and Test Equipment (M&TE) to be used for this test shall have a current calibration history, have an accuracy better than the allowable accuracy of the device to be calibrated, and be NBS traceable.
- 3.11 This test will normally be performed with the breaker in the "racked in" position, but can be performed in the "In Test" position. This will keep the circuitry intact to the undervoltage coil with the diode in the coil circuit.

4.0 PRECAUTIONS

- 4.1 In the event any unanticipated conditions occur during testing, the technician shall immediately notify the Control Operator.
- 4.2 Receiving approval to begin testing does not, in any way, obviate the responsibility of the technician to determine for himself that it is prudent and safe to begin work.
- 4.3 In the event the test data does not meet the acceptance criteria, the Control Operator and the applicable Supervisor shall be notified immediately. Under no circumstances shall the device be returned to service without the Control Operator's approval.
- 4.4 Observe the Work Authorization Holders' responsibilities under Operating Instruction S023-0-13.
- 4.5 In conducting the activities of the procedure, various levels of circuit voltages will be energized. Exercise caution and conform to the guidelines specified in References 2.8 and 2.9 concerning maintenance activities on energized electrical circuits.

4.0 PRECAUTIONS (Continued)

- 4.6 ONLY ONE BREAKER AT A TIME MAY BE TRIPPED. THE BREAKER UNDER TEST MUST BE RECLOSED AND RETURNED TO NORMAL BEFORE TESTING MAY PROCEED ON ANY OTHER REACTOR BREAKER.
- 4.7 The tie breaker (TCB-9) shall not be tested if only one CEDM MG set is in service.
- 4.8 Necessary steps shall be taken to prevent any unscheduled trips or damage to equipment.

5.0 CHECK-OFF LIST(S)

- 5.1 None

6.0 PROCEDURE

- 6.1 Verify communications as set forth in step 3.7. Enter the verification signature on the Data Record, Attachment 8.3.
- 6.2 Verify the proper plant status and CEDM lineup with Operations personnel. Any deviation from normal plant status and CEDM lineup will be noted in the Remarks section of the Data Record, Attachment 8.3.
- 6.3 Acceptance Criteria
- 6.3.1 With timing leads connected to the auxiliary switch (pallets) contacts and the breaker installed in the cubicle, the maximum time response shall be 100 msec, per CE guidelines.
- 6.3.2 If the time is >82 msec and ≤ 100 msec, the Supervisor of I&C Electrical Engineering shall be notified immediately for the purpose of investigating possible degradation of the tripping devices or breaker.
- 6.3.3 If the time is >100 msec, the breaker shall be declared inoperable and the Cognizant Supervisor and Control Operator shall be notified immediately.

NOTE:

The 82 msec time is based upon the maximum average test time that was noted during testing by SCE Apparatus Division in concert with GE. This time includes the extra time added using the auxiliary contacts.

6.0 PROCEDURE (Continued)

6.4 Response Time Testing - Undervoltage Trip Device

CAUTION

ONLY ONE BREAKER AT A TIME MAY BE TRIPPED. THE BREAKER UNDER TEST MUST BE RECLOSED AND RETURNED TO NORMAL BEFORE TESTING MAY PROCEED ON ANY OTHER REACTOR BREAKER.

- 6.4.1 Set up the timing device to be able to time upon loss of the Reactor Breaker control power, and indicate the interval between the loss of power and the opening of the breaker.
- 6.4.2 Use the auxiliary contacts (pallets) to time opening of the breaker. Connect test leads to the terminal blocks on the rear of the switchgear per Attachment 8.2.
- 6.4.3 With the timing device connected, remove the power to the undervoltage circuit for the selected breaker, and time from loss of voltage to the breaker opening. Have the breaker closed and repeat the trip twice more. Record the three times on the Data Record, Attachment 8.3.
- 6.4.4 Return the breaker to the closed or "As Found" condition.

CAUTION

ONLY ONE BREAKER AT A TIME MAY BE TRIPPED. THE BREAKER UNDER TEST MUST BE RECLOSED AND RETURNED TO NORMAL BEFORE TESTING MAY PROCEED ON ANY OTHER REACTOR BREAKER.

6.5 Response Time Testing - Shunt Trip Device

- 6.5.1 Set up the timing device to be able to time from the initiation of the signal to the shunt trip device to the breaker tripping (opening).
- 6.5.2 Use the auxiliary contacts (pallets) to time opening of the breaker. Connect test leads to the terminal blocks on the rear of the switchgear per Attachment 8.2.
- 6.5.3 Initiate a trip signal to just the shunt trip device by closing the circuit, identified in Attachment 8.1 for the selected breaker, and time the interval between initiation of the trip signal and the breaker tripping (opening). Have the breaker closed and repeat the trip twice more. Record the three times on the Data Record, Attachment 8.3.

6.0 PROCEDURE (Continued)

- 6.5.4 Return the breaker to the closed or "As Found" condition.

CAUTION

ONLY ONE BREAKER AT A TIME MAY BE TRIPPED.
THE BREAKER UNDER TEST MUST BE RECLOSED AND
RETURNED TO NORMAL BEFORE TESTING MAY PROCEED ON
ANY OTHER REACTOR BREAKER.

- 6.6 Complete steps 6.4 and 6.5 for all Reactor Trip Breakers TCB-1 through TCB-9. Use Attachments 8.1, 8.2 for terminal locations and fuse designation and location.

6.7 Restoration

- 6.7.1 Remove all test leads and test equipment.
- 6.7.2 At the completion of the test, all fuses will be checked installed and the Reactor Trip Breakers and PPS system restored to "As Found" or "Normal Status."
- 6.7.3 Restore all connections, switches and devices that were altered in the performance of this procedure.
- 6.7.4 A second qualified person shall verify the restoration (safety-related equipment only). Sign verification on Data Record, Attachment 8.3.
- 6.7.5 Release any Work Authorization obtained for this procedure back to the Control Operator per Operating Instruction S023-0-13.
- 6.7.6 When applicable, complete the required portions of the Return To Service section of Equipment Control Form SO(123) 562.

7.0 RECORDS

- 7.1 Upon completion of this procedure, the Data Record, Attachment 9.4, shall be signed by the Technician and responsible Electrical Test Supervisor. The Supervisor of Electrical Test and I&C Engineering Representative shall review and approve the test data.
- 7.2 A copy of the Data Record, Attachment 8.3, of this procedure will be made for retention in the Test Shop files.
- 7.3 Transfer the original copy of the Data Record, Attachment 8.3 to the CDM Center.

8.0 ATTACHMENTS

- 8.1 Terminal and Fuse Designation and Location For Trips
- 8.2 Test Lead Connections
- 8.3 Reactor Breaker Response Time Test Data Record

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TERMINAL AND FUSE DESIGNATION AND LOCATION
FOR TRIPS

BREAKER	UNDERVOLTAGE TEST	SHUNT TEST	LOCATION
	FUSE NO.	TRIP TERMINALS	
TCB-1	FU1T (POS)	OTB2-3 to OTB2-4	TOP SECT. 1 REAR-RIGHT
TCB-2	FU2T (POS)	OTB11-3 to OTB11-4	TOP SECT. 2 REAR-RIGHT
TCB-3	FU3T (POS)	OTB23-3 to OTB23-4	TOP SECT. 4 REAR-RIGHT
TCB-4	FU4T (POS)	OTB32-3 to OTB32-4	TOP SECT. 5 REAR-RIGHT
TCB-5	FU5T (POS)	OTB2-9 to OTB2-10	SECT. 1 REAR-RIGHT
TCB-6	FU6T (POS)	OTB11-9 to OTB11-10	TOP SECT. 2 REAR-RIGHT
TCB-7	FU7T (POS)	OTB23-9 to OTB23-10	TOP SECT. 4 REAR-RIGHT
TCB-8	FU8T (POS)	OTB32-9 to OTB32-10	TOP SECT. 5 REAR-RIGHT
TCB-9	FU9T (POS)		TOP SECT. 3 REAR-RIGHT
TCB-9		BC3 to BC4	TRIP PB ON DOOR SECT. 3 FRONT

TEST LEAD CONNECTIONS

BREAKER	TERMINALS	CONTACT TYPE	LOCATION
TCB-1	OTB5-9 to OTB5-10 OTB5-11 to OTB5-12	NO(a) NC(b)	TOP SECT. 1 REAR-LEFT
TCB-2	OTB14-9 to OTB14-10 OTB14-11 to OTB14-12	NO(a) NC(b)	TOP SECT. 2 REAR-LEFT
TCB-3	OTB26-9 to OTB26-10 OTB26-11 to OTB26-12	NO(a) NC(b)	TOP SECT. 4 REAR-LEFT
TCB-4	OTB35-9 to OTB35-10 OTB35-11 to OTB35-12	NO(a) NC(b)	TOP SECT. 5 REAR-LEFT
TCB5	OTB8-9 to OTB8-10 OTB3-11 to OTB8-12	NO(a) NC(b)	TOP SECT. 1 REAR-LEFT
TCB6	OTB17-9 to OTB17-10 OTB17-11 to OTB17-12	NO(a) NC(b)	TOP SECT. 2 REAR-LEFT
TCB7	OTB29-9 to OTB29-10 OTB29-11 to OTB29-12	NO(a) NC(b)	TOP SECT. 4 REAR-LEFT
TCB8	OTB38-9 to OTB38-10 OTB38-11 to OTB38-12	NO(a) NC(b)	TOP SECT. 5 REAR-LEFT
TCB9	OTB21-9 to OTB21-10 OTB21-11 to OTB21-12	NO(a) NC(b)	TOP SECT. 3 REAR-LEFT

REACTOR BREAKERS RESPONSE TIME TEST

PMO NUMBER _____

DATA RECORD

UNIT _____

Test Shop File No. _____

6.1 Communications verified, (prerequisite).

Technician / Date

6.2 Plant status and CEDM system lineup verified,
(prerequisite).

Technician / Date

UNDER VOLTAGE TRIP DEVICE

Reactor Breaker	Breaker "As Found"	Trip * Time 1	Trip * Time 2	Trip * Time 3	Breaker Closed Or "As Found"
TCB-1					
TCB-2					
TCB-3					
TCB-4					
TCB-5					
TCB-6					
TCB-7					
TCB-8					
TCB-9					

*Time is in msec.

Test Shop File No. _____

SHUNT TRIP DEVICE

Reactor Breaker	Breaker "As Found"	Trip * Time 1	Trip * Time 2	Trip * Time 3	Breaker Closed Or "As Found"
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TCB-1

TCB-2

TCB-3

TCB-4

TCB-5

TCB-6

TCB-7

TCB-8

TCB-9

*Time is in msec.

6.6 Restoration

6.6.1 Restoration Completed

Technician / Date

Second Qualified Person / Date

DATA RECORD

Measuring and Test Equipment

TEST SHOP FILE NUMBER _____

Record all instruments used in this procedure

TYPE INSTRUMENT	MANUFACTURER	MODEL-STYLE NUMBER	RANGE	SERIAL NUMBER	ACCURACY	DATE CALIB. DUE

Remarks:

TECHNICIAN(S) _____

DATE _____

DATE _____

ELECTRICAL TEST SUPERVISOR _____

DATE _____

SUPERVISOR OF ELECTRICAL TEST _____

DATE _____

I&C ENGINEERING REPRESENTATIVE _____

DATE _____