07-26-91

(AP-2.2, Form 1, Rev 03)

NIAGARA MOHAWK | **PROCEDURE CHANGE EVALUATION (PCE)** | PCE No.

1. Initiation

Procedure No.	Rev. No.	Title
N2-ESP-RPS-JA@714	03	RPS ~~and~~ Vital Bus Power Monitoring Instrument Functional Test

Describe Change:

Add DER as a reference, correct order of steps 8.11 and 8.12

Add steps to control drywell cooling and recirc pump cooling

Reason for Change:

☐ NCTS No. _____ ☐ DER No. _____ ☐ Mod/SDC No. _____

☒ Other (Explain): To be more accurate.

FOR INFORMATION ONLY

2. Method of Change

☒ Immediate Change

Change Is: ☒ Permanent ☐ One Time Only

☒ Technical Change to TSR Procedure ☐ NTSR Procedure OR Editorial Change

Pages Affected: 5, 11, 14, 24, 28, 32, 35, 45 Added 11A, 32A

Initiator (Print & Initial)	Date
S Doty SD	8-17-91

RPO App'l: (Both if Site) ☒ Accept ☐ Reject ☐ Redirect to Future

Date: 8-19-91	Date:
S Doty	

Safety Review Req'd ☒ Yes TSR or Temp Alteration ☐ No NTSR or Editorial

☐ Future Change

Initiator (Print)		
Mail Location	Phone	Date

Disposition

RPO Name _____ PPU

☐ Redirect to IMMEDIATE Change (To RPO)
☐ Inactivate Procedure (To PPU)
☐ Future Revision or New Procedure (To PPU)
☐ Reject (To PPU)

PPU

RPO Approval	Date

Interim Approval (Technical TSR Changes Only)

Add'l Technical Review: ~~☐ Accept~~ ☐ Reject ~~☐ N/A~~

	Date

SRO: ~~☐ Accept~~ ☐ Reject

	Date
A Evans	8-17-91

SRO (Site Only): ☐ Accept ☐ Reject ~~☐ N/A~~

	Date

Plant Manager (Technical TSR Changes Only)

Signature	Date

Signature (Site Only)	Date

Implementation

☐ Incorp'd Rev. _____, Proc No.: _____

☐ Cancel, ☐ Transfer to Proc. No.: _____

PPU Closeout	Date

9304290247

07-26-91

MASTER

WTS/LAS No. S74201
S74202
S74203
S74204

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT 2

ELECTRICAL SURVEILLANCE PROCEDURE

N2-ESP-RPS-SA@744

REVISION 03

RPS VITAL BUS POWER MONITORING
INSTRUMENT FUNCTIONAL TEST

CONTROLLED WORKING COPY
VERIFIED BY [redacted]
NOT TO BE USED AFTER 5.20.91 / 13:30 DATE/TIME

FOR INFORMATION ONLY

****
THIS PROCEDURE IS SAFETY-RELATED
****

Approved By:
R. B. Abbott

John T. Conway for RBA
Plant Manager, Unit 2

12/31/90
Date

THIS REVISION IS A GENERAL REWRITE

THIS REVISON SUPERSEDES TCN-6 AND TCN-7

Effective Date: 1/4/91

NOT TO BE USED AFTER JANUARY 1993
SUBJECT TO PERIODIC REVIEW

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6.0	PREREQUISITES	N/A
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1.0 PURPOSE

To verify the operability of Electrical Protection Assemblies 2VBS*ACB1A, 2VBS*ACB1B, 2VBS*ACB2A, and 2VBS*ACB2B by performance of an instrument functional test.

To satisfy the Surveillance Requirements of Technical Specification 4.8.4.4.a.

1.1 Operational Conditions When Equipment is Required to be Operable

The equipment removed from service during the performance of this procedure is to be operable at all times, or may be inoperable provided the applicable Limiting Conditions for Operation (LCOs) are satisfied.

1.2 Frequency

Technical Specifications require performance of this procedure each time the plant is in Cold Shutdown for a period of more than 24 hours, unless performed within the previous 6 months.

1.3 Instrument/Equipment List

Component ID Number	Safety Class	Division	EQ	Location Bldg.	Elev.	Col/line
• 2VBS*ACB1A	SR	I	None	CTR	237'	010.70/AG
• 2VBS*ACB2A	SR	I	None	CTR	237'	010.70/AG
• 2VBS*ACB1B	SR	II	None	CTR	237'	014.00/AD
• 2VBS*ACB2B	SR	II	None	CTR	237'	014.00/AD

1.4 Discussion

1.4.1 This procedure shall be performed by the Meter & Test Group and the Operations Department.

1.4.2 The approximate UPS running voltage for the settings in this procedure should be 124 volts at the UPS.

1.4.3 This procedure may be performed in conjunction with N2-ESP-RPS-R742.

1.4.4 This procedure is divided into two attachments for testing the EPAs; Attachment 1 performs testing of EPAs in Division I, and Attachment 2 performs testing of EPAs in Division II. Each attachment provides for the testing of either or both EPAs of the same division. Each attachment is written to test the downstream EPA (2VBS*ACB2A or 2VBS*ACB2B) prior to the upstream EPA (2VBS*ACB1A or 2VBS*ACB1B) in order to verify the breaker trip circuit.

1.4.5 Testing of 2VBS*ACB1A and 2VBS*ACB2A will de-energize Panel 2VBS*PNLA100, located in Control Building, west, elevation 237, which feeds the following panels:

a.	2VBS*PNLA110	D4	Blue/White RPS Trip Channel B2
b.	2VBS*PNLA105	D1	Green Outboard MSLIV Logic and Trip Solenoid A Channel 1
c.	2VBS*PNLA103	D1	Green Control Room Division 1 Area RPS, NS4, and NMS
d.	2VBS*PNLA106	D2	Yellow/White Inboard MSLIV Logic and Trip Solenoid B Channel 2 and Yellow/White RPS Trip Channel B1
e.	2VBS*PNLA104	D3	Orange Control Room Division 2 Area RPS, NS4, and NMS

1.4.6 Testing of 2VBS*ACB1B and 2VBS*ACB2B will de-energize Panel 2VBS*PNLB100, located in Control Building, west, elevation 237, which feeds the following panels:

a.	2VBS*PNLB110	D3	Orange/White RPS Trip Channel A2
b.	2VBS*PNLB105	D1	Green/White Outboard MSLIV Logic and Trip Solenoid B Channel 2 and Green/White RPS Trip Channel A1
c.	2VBS*PNLB103	D2	Yellow Control Room Division 2 Area RPS, NS4, and NMS
d.	2VBS*PNLB106	D2	Yellow Inboard MSLIV Logic and Trip Solenoid A Channel 1
e.	2VBS*PNLB104	D4	Blue Control Room Division 1 Area RPS, NS4, and NMS

2.0 REFERENCES AND COMMITMENTS

NOTE: The revision numbers listed below do not necessarily reflect the latest revision issued, but were the revisions used for procedural development/revision.

2.1 Technical Specifications

Section 4.8.4.4.a

2.2 Licensee Documentation

None

2.3 Standards, Regulations, and Codes

None

2.4 Policies, Programs, and Procedures

2.4.1 AP-3.3.2, Radiation Work Permit

2.4.2 AP-4.2, Control of Equipment Markups

2.4.3 AP-5.4.1, Station Housekeeping and Inspections

2.4.4 AP-5.5.1, Work Request

2.4.5 AP-6.1, Control of Equipment Temporary Modification

2.4.6 AP-10.2.2, Occurrence Reporting

2.4.7 NMPC Accident Prevention Rules

2.4.8 N2-ESP-RPS-R742, 18 Month RPS Vital Bus Power Monitoring Instrument Channel Calibration

2.4.9 N2-OP-52, Reactor Building Ventilation System

2.4.10 N2-OP-53A, Control Building Ventilation System

2.4.11 N2-OP-61B, Standby Gas Treatment System

2.5 Technical Information

2.5.1 Drawings

a. 12177-EE-M001D, Plant Master One Line Diagram, Normal 600V & 120VAC, Revision 08

b. 12177-ER-006-SK, EPA (Electrical Protection Assembly) General Electric MG Sets, Revision 01

2.5.2 Instruction Manuals

File Sequence Number N20343, Operations and Maintenance Instructions, Electrical Protection Assembly 914E175, (442X780-005), GEK-83433A, NMPC Number N2G08000MISE008

2.6 Supplemental References

2.6.1 Deficiency Report 14939

2.6.2 Deficiency Report 20493

2.6.3 Problem Report 01529

2.6.4 LER 87-51

2.6.5 LER 90-11

2.7 Commitments

Sequence Number	NCTS Number	Description
1	501166-05	LER 87-51
2	503673-01	LER 90-11

3.0 TEST EQUIPMENT, SPECIAL TOOLS, AND MATERIALS

NOTE: Vendor Manual Specification Sheets or calibration records contain the stated accuracy that must be used to determine "equivalent" test equipment.

3.1 Test Equipment

Doble Test Set, Model F2500, or Model F2200

3.2 Special Tools

None

3.3 Materials

None

4.0 PRECAUTIONS

4.1 Only one instrument channel is to be tested at a time. Prior to testing EPAs in one division, EPAs from the opposite division shall be operational/returned to operation, and any Half-Scrams reset.

4.2 Applicable radiological precautions shall be observed. Radiation Protection shall be contacted for guidance as required.

4.3 ALARA practices shall be observed to minimize personnel exposure and spread of contamination.

4.4 Shutdown Cooling (SDC) isolations will be defeated for the duration of this test which constitutes an operation with the potential for draining the Reactor Pressure Vessel (RPV).

5.0 LIMITATIONS AND ACTIONS

5.1 This procedure shall be followed directly at the job site.

5.2 A (__) indicates a checkmark should be used to signify an action is completed or determination that a specific condition has been met.

5.3 For any step in this procedure that cannot be completed as stated, the Station Shift Supervisor (SSS), THEN Electrical Department Supervision shall be contacted immediately.

5.4 Procedure steps are to be marked N/A only if the procedure specifically allows for use of the annotation OR where only a portion of the procedure is performed (such as PMT, a retest to verify questionable data, or other testing). Reason for marking a step N/A shall be documented in Remarks Section.

5.5 Markups shall be placed in accordance with AP-4.2.

5.6 Cleanup of equipment and space within the work area shall be performed in accordance with AP-5.4.1.

5.7 Steps in Section 6.0 may be performed in any order.

5.8 Steps in Sections 7.0 and 8.0 shall be performed in sequence.

5.9 The external surface of the component and the surrounding area should be free of foreign materials, rags, loose objects, and debris prior to testing.

5.10 IF the equipment does not meet any of the test critera in this procedure, THEN the equipment shall be restored to a safe condition, AND the SSS shall be informed immediately of the failure. The SSS will determine if ~~an Occurrence Report~~ OER should be initiated.

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5.11 Temporary modifications shall be performed in accordance with AP-6.1.

5.12 Work Requests (WR) shall be initiated in accordance with AP-5.5.1.

5.13 Active Half-Scram times are to be kept to a minimum.

Initials

Attachment 1 N/A, Division I EPAs NOT required to be tested... (__) _____

6.0 PREREQUISITES

6.1 Plant/System Conditions

6.1.1 Plant Conditions

Ensure plant in Operational Condition 4.

6.1.2 System Conditions

Ensure power available to 2VBS*ACB1A and 2VBS*ACB2A.

6.2 Administrative

6.2.1 Specify reason for procedure performance below:

(✓) Routine Scheduled
(__) Corrective Maintenance
(__) Post Maintenance Testing
(__) Other, (Specify reason)_____

Work Request Number_____

NOTE: The following step is to be performed by all personnel performing this procedure.

6.2.2 Read this procedure. IF there is any information contained within this procedure which you do NOT understand, THEN contact supervision for clarification. When the information contained within this procedure is understood, acknowledge your understanding by printing your name and signing your initials below:

PRINTED NAME	INITIALS
LESTER TYO	L.T
BRIAN H. BECKWITH	BHB
EL CONAWAL	ELC
Steven J. Davis	SJD
Dragomer	
Jim GRAFF	JG

Initials

NOTE: Markups provided are recommendations:

- Blue Markup on 2VBS*ACB1A
- Blue Markup on 2VBS*ACB2A
- Blue Markup as listed in Steps 7.1.3, 7.1.4 and 7.1.6

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6.2.3 Obtain markups as necessary, and record numbers below:

Markup Number: P-91-50813
Markup Number: _____
Markup Number: _____
Markup Number: _____

N/A, Markups NOT required..... (__)

NOTE: The ranges used may be recorded after the work has been performed.

6.2.4 Ensure calibration dates of test equipment have not expired. Record M&TE nomenclature, M&TE numbers, and calibration due dates for test equipment to be used.

M&TE Nomenclature	M&TE Number	Range(s) Used	Calibration Due Date
Doble Test Set	9665	0-150VAC 56-60HZ 0-5SEC.	8-20-91
DOBLE TEST SET	9662		8-20-91

6.3 Notifications

Notify I&C Department of intent to perform procedure.

LES HART 1715 8-17-91 L.T
Person Contacted Time Date

L.T 8-17-91

Initials

7.0 PROCEDURE

7.1 Preliminary Actions

(NCTS 1) (NCTS 2) NOTES:

1. Operations Department shall perform Steps 7.1.1 through 7.1.8.

2. Shutdown Cooling (SDC) isolations will be defeated for the duration of this test which constitutes an operation with the potential for draining the Reactor Pressure Vessel (RPV). The potential for draining the RPV may be negated provided an Operator is stationed at the appropriate divisional isolation valves power supply breakers, in direct communications with the Control Room, and ready to re-energize the valves if necessary.

7.1.1 EITHER station Operators at appropriate divisional isolation valves power supply breakers, in direct communication with the Control Room, and ready to re-energize valves if necessary..... (✓)

OR

Review the operability requirements of the following Technical Specification sections to ensure Technical Specification compliance during an operation with a potential for draining the RPV..... (__) SSS

a. 3.3.7.4 Remote Shutdown System Instrumentation and Control SSS

b. 3.4.9.2 Residual Heat Removal - Cold Shutdown SSS

c. 3.5.2 ECCS - Shutdown SSS

d. 3.5.3 Suppression pool level greater than 199'-6" SSS

e. 3.6.5.1 Secondary Containment Integrity SSS

Initials

7.1.1 (Cont)

f.	3.6.5.2 (3.3.2-1.1.a.2 * (c))	Secondary Containment Automatic Isolation Damper		SSS
g.	3.6.5.3 (3.3.2-1.1.a.2 * (d))	Standby Gas Treatment System		SSS
h.	Table 3.3.2-1, 1.a.2	Isolation Actuation Instrumentation for Level 2 (2ISC*LT11A through 2ISC*LT11D)		SSS
i.	3.7.1.2	Two independent plant Service Water System Loops operable with one loop in operation. Each loop shall be comprised of:		
		1. Two operable plant service water pumps capable of transferring the water to the associated safety-related equipment.		
		2. Service water supply header discharge water temperature is 81°F or less.		
		3. If intake tunnel temperature is less than 38°F, then intake deicing heater system shall be operable.		SSS
j.	3.7.3	Control Room Special Filter Train System		SSS
k.	3.8.1.2	AC Electrical Power Sources - Shutdown		SSS
l.	3.8.2.2	DC Electrical Power Sources - Shutdown		SSS
m.	3.8.3.2	On Site Power Distribution Systems - Shutdown		SSS

Initials

7.1.2 Manually shutdown normal HVR and start GTS Train A in accordance with N2-OP-52 and N2-OP-61B, in anticipation of Reactor Building isolation and auto-start of GTS Train A.

CSO

Indep.Ver.

NOTES: 1. The following valves will receive an isolation signal.

2. Valves and breakers should be tagged as directed by the SSS according to existing plant conditions.

7.1.3 Place a Blue Markup tag on the following RHS SDC isolation valves and motor control center supply breakers to defeat Group 5 SDC Isolation:

a. 2RHS*MOV112: valve open, breaker open

CSO

b. 2RHS*MOV113: valve open, breaker open

CSO

c. IF RHS "A" is in the SDC Mode with WCS controlling Reactor water level, THEN the following conditions apply:

1. 2RHS*MOV40A: valve throttled, breaker open. (__)

2. 2RHS*MOV40B: valve closed, breaker open.... (__)

Step N/A, RHS "A" NOT in SDC Mode..... (✓)

CSO

d. IF RHS "B" is in the SDC Mode with WCS controlling Reactor water level, THEN the following conditions apply:

1. 2RHS*MOV40A: valve closed, breaker open.... (✓)

2. 2RHS*MOV40B: valve throttled, breaker open. (✓)

Step N/A, RHS "B" NOT in SDC Mode..... (__)

CSO

Initials

7.1.3 (Cont)

e. IF the following valves are required to be open for plant conditions, THEN de-energize the valves in the open position, AND station an Operator at the associated MCCs, in direct communication with the Control Room, and ready to re-energize the valve motor operators if a valid isolation signal occurs:

1. 2RHS*MOV142: valve open, breaker open

   Step N/A, valve closed..... (✓) CSO 8-17-91

2. 2RHS*MOV149: valve open, breaker open

   Step N/A, valve closed..... (✓) CSO 8-17-91

3. 2RHS*MOV67A: valve open, breaker open

   Step N/A, valve closed..... (✓) CSO

4. 2RHS*MOV67B: valve open, breaker open

   Step N/A, valve closed..... (✓) CSO

f, g See page 11A

7.1.4 ~~Place Division I and II Drywell unit cooler cooling water LOCA override keylock switches to the OVERRIDE position at P873.~~ IF Drywell Cooling is required, THEN the following conditions apply: CSO

Step N/A if drywell cooling secured (—) ~~Indep.Ver.~~

2R 8-17-91 8-17-91

7.1.5 Notify I&C to place Division I H2/O2 Monitoring in Standby. CSO

1. 2 CCP * MOV 124 ; valve open, breaker open — Indep.Ver.
2. 2 CCP * MOV 122 ; valve open, breaker open. — CSO
3. 2 CCP * MOV 265 ; valve open, breaker open — CSO
4. 2 CCP * MOV 273 ; valve open, breaker open — CSO

f. If the following valves are required to be open for plant conditions, THEN de-energize the valves in the open position: Step N/A if 2RCS-P1A secured (—)

1. 2CCP*MOV15A: valve open, breaker open — CSO
2. 2CCP*MOV16A: valve open, breaker open — CSO
3. 2CCP*MOV17A: valve open, breaker open — CSO
4. 2CCP*MOV94A: valve open, breaker open. — CSO

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SP 8-17-91

g. If the following valves are required to be open for plant conditions, THEN de-energize the valves in the open position: Step N/A if 2RCS-P1B secured (✓)

1. 2CCP*MOV15B; valve open, breaker open — CSO
2. 2CCP*MOV16B: valve open, breaker open — CSO
3. 2CCP*MOV17B: valve open, breaker open — CSO
4. 2CCP*MOV94B: valve open, breaker open — CSO

Initials

7.1.6 Place a Blue Markup tag on 2WCS*MOV112 motor breaker to allow Reactor Water Cleanup System to remain in operation throughout the performance of this test.

2WCS*MOV112: Valve open, breaker open.

CSO

7.1.7 Enter the following equipment into the ESL, as directed by the SSS:

Inoperable Component/System	Technical Specification	Plant Impact
• TIP System	3.3.7.7	None in Mode 4 or 5
• H2/O2 Analyzers	3.3.7.5-1	None in Mode 4 or 5
• HCS System	3.6.6.1	None in Mode 4 or 5
• 2CMS-RE10A and 2CMS-RE10B	3.4.3.1a & 3.4.3.1c	None in Mode 4 or 5
• Recirculation System - FCV HCU Isolation	3.4.9.2	Loss of FCV position control.
• Drywell Vacuum Breakers	3.6.4	None in Mode 4 or 5
• ADS Valve Accumulators	3.5.1	None in Mode 4 or 5
• WCS System	3.4.4.c (3.3.2-1.1.1.3	Partial loss of isolation capability. One valve inoperable. Both valves are required in Mode 5 with any control rod withdrawn
• HVR System	3.6.5.2 (3.3.2-1.1.a.2 * (c))	Reactor Building will be isolated. Secondary containment integrity will be maintained with GTS
• CCP to Drywell Coolers	3.6.3-1	Isolation signal overridden by use of keylock override switch

7.1.7 (Cont)

Inoperable Component/System	Technical Specification	Plant Impact
• CCP to Recirc Pump/Motors	3.6.3-1	Loss of cooling flow to RCS Pumps
• CPS System	3.6.1.7	None in Mode 4 or 5. Containment pressure control inoperable due to isolation signal.
• IAS to Testable Check Valves	3.5.2	Test function inoperable
• IAS to Safety/ Relief Valves	3.4.2	None in Mode 4 or 5
• RHR SDC Isolations	3.4.9.2 3.9.11.1 3.9.11.2	SDC Isolations defeated constitutes an operation with the potential for draining the RPV.
• FPW to Drywell	3.6.3-1	None in Mode 4 or 5
• DER to/from Drywell	3.6.3-1	None in Mode 4 or 5
• DFR to/from Drywell	3.6.3-1	None in Mode 4 or 5
• LMS to/from Drywell	3.6.3-1	None in Mode 4 or 5
• Off Normal Status Lights for Outboard Containment Isolation Valves	3.6.3-1	None in Mode 4 or 5
• MSL Radiation Monitors Circuit	3.3.1-1	None in Mode 4 or 5. Half-Scram and Half Group 1 Isolation
• APRMs	3.3.1-1	Half-Scram
• LDS System	3.3.2-1	Isolation Valve Groups 5, 6, 7, 10 on high temperature

Initials

7.1.7 (Cont)

Inoperable Component/System	Technical Specification	Plant Impact
• One Pilot Solenoid for MSIVs De-energized	3.6.3-1	Half-MSIV isolation

CSO

SD 8-17-91 | 7.1.8 Start Control Room Special Filter Train A or B in accordance with N2-OP-53A, in anticipation of auto-start.
Step N/A if train is IN-OP (→)

CSO

CSO

8-17-91 7.1.9 (NCTS 1) (NCTS 2) Discuss Plant Impact and resulting effects on plant due to performance of this procedure with Station Shift Supervisor (SSS) and Chief Shift Operator (CSO).

PLANT IMPACT:

1. HALF SCRAM FOR DURATION OF TEST.
2. LOSS OF RPS DIVISIONAL POWER RESULTING IN HALF MSIV CLOSURE SIGNAL FOR DURATION OF TEST.
3. PRIMARY CONTAINMENT ISOLATION OF OUTBOARD MAIN STEAM LINE DRAINS, AND GROUPS 2-4 AND 6-9.
4. ALL GROUP 5 VALVES RECEIVE AN ISOLATION SIGNAL (REGARDLESS OF DIVISION BEING TESTED).
5. ISOLATION OF SDC SUCTION VALVES (2RHS*MOV112 AND 2RHS*MOV113) WILL BE PREVENTED BY DE-ENERGIZING THE VALVES IN THE OPEN POSITION.
6. ISOLATION OF SDC INJECTION VALVES (2RHS*MOV40A AND 2RHS*MOV40B) WILL BE PREVENTED BY DE-ENERGIZING THE INJECTION VALVE OF THE SDC LOOP IN SERVICE IN THE OPEN POSITION.

Initials

7.1.9 (Cont)
(NCTS 1)
(NCTS 2) PLANT IMPACT: (Cont)

7. ISOLATION OF 2RHS*MOV104, HEAD SPRAY VALVE, 2RHS*MOV142 AND 2RHS*MOV149, REJECT TO RADWASTE VALVES, OR 2RHS*MOV67A AND 2RHS*MOV67B, INJECTION TESTABLE CHECK BYPASS VALVES, WILL BE PREVENTED IF THESE VALVES ARE REQUIRED TO BE OPEN FOR PLANT OPERATION.

8. SECONDARY CONTAINMENT ISOLATION.

9. AUTO INITIATION OF ENERGIZED RECIRC UNITS AND STANDBY GAS TREATMENT SYSTEM.

10. LOSS OF DIVISIONAL OFF-NORMAL STATUS LIGHT INDICATORS FOR MSIVS AND CONTAINMENT ISOLATION VALVES.

11. LOSS OF DIVISIONAL RESET CIRCUIT FOR MSIVS AND CONTAINMENT ISOLATION VALVES.

12. LOSS OF DIVISIONAL LEAK DETECTION MONITORING METER INDICATION.

13. LOSS OF INDICATING LIGHTS FOR THE DE-ENERGIZED RPS CHANNEL AT PANELS P609, P611, P622, AND P623.

14. LOSS OF GETARS CAPACITY FOR MSIVS MAIN STEAM LINE PRESSURE, 1/2 SCRAM, RX WATER LOW RANGE.

15. AUTO INITIATION OF CONTROL ROOM SPECIAL FILTER TRAINS.

16. RECIRC PUMP BREAKERS 3A, 3B, 4A, 4B WILL TRIP OPEN IF CLOSED WHEN EITHER UPS BUS IS DE-ENERGIZED.

17. LOSS OF POSITION INDICATION FOR SDV VENT AND DRAIN VALVES WHEN DIVISION I IS DE-ENERGIZED.

18. LOSS OF 120 VAC TO POWER RANGE NEUTRON MONITORING SYSTEM.

Equipment ID Number: 2VBS*ACB2A

Initials

7.1.9 (Cont)
(NCTS 1)
(NCTS 2) PLANT IMPACT: (Cont)

19. LOSS OF POWER TO MSL RADIATION MONITORS.

20. REMOTE SHUTDOWN PANEL SDC ISOLATION SIGNAL. L.T

7.1.10 Obtain SSS and CSO permission to perform procedure by obtaining their signatures below.

[signature] 8/17/91
SSS Signature Date

[signature] 8/17/91 L.T
CSO Signature Date

7.1.11 Confirm BOTH scram solenoid lights are illuminated, AND plant is NOT in a Half-Scram condition. L.T

7.1.12 Obtain EPA test key from SSS. L.T

7.1.13 Notify CSO of commencement and record start time and date below.

1725 8-17-91 L.T
Start Time Date

NOTE: Values shown in parenthesis are Technical Specification acceptance criteria. Values shown in brackets are calibration ranges.

7.2 Functional Test of 2VBS*ACB2A

Section 7.2 N/A, "As Found" data for 2VBS*ACB2A NOT required..... (__) _____

NOTES: 1. Supply power to the EPA is required to be present in order to perform the following step.

2. The following step will initiate the Plant Impact listed in Step 7.1.9.

7.2.1 (T/S) Place keylock switch on front of EPA to CAL/TEST position, and ensure EPA output breaker trips. L.T

Equipment ID Number: 2VBS*ACB2A

Initials

7.2.2 WHEN EPA has tripped, ensure the following:

a. Division I Half-Scram Condition..... (✓)

b. Division I Half-MSIV Isolation..... (✓)

c. CCP Supply to Drywell Coolers..... (✓)

d. GTS Train A maintaining Secondary Containment... (✓)*

e. Control Room Special Filter Train A operating... (✓)* 9/26 CSO

7.2.3 Connect test set to TEST JACK on front of EPA. L.T.

7.2.4 Adjust test set output to 120 volts AC at 60 hertz (HZ). L.T.

7.2.5 Ensure OVERVOLTAGE light on front of EPA is extinguished. LT

7.2.6 (T/S) Raise voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until OVERVOLTAGE light on front of EPA illuminates, and record voltage at which OVERVOLTAGE light remains illuminated.

"As Found" Overvoltage Trip 130.0 volts AC (≤ 132 volts AC) L.T

7.2.7 Lower voltage output of test set to 124 volts. L.T.

7.2.8 Ensure OVERVOLTAGE light on front of EPA is extinguished. L.T.

7.2.9 Adjust fault voltage of test set to 132 volts. L.T.

7.2.10 Adjust normal voltage of test set to 124 volts. L.T

7.2.11 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.2.12 Connect timer stop circuit to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

Equipment ID Number: 2VBS*ACB2A

Initials

7.2.13 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Overvoltage Trip Time 3.67 seconds [≤ 4.0 seconds] L.T.

7.2.14 Adjust voltage output of test set to 124 volts. L.T.

7.2.15 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.2.16 (T/S) Lower voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until UNDERVOLTAGE light on front of EPA illuminates, and record voltage at which UNDERVOLTAGE light remains illuminated.

"As Found" Undervoltage Trip 118.0 volts AC (≥ 117.1 volts AC) L.T.

7.2.17 Raise voltage output of test set to 124 volts. L.T.

7.2.18 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.2.19 Adjust fault voltage of test set to 117.1 volts AC. L.T

7.2.20 Adjust normal voltage of test set to 124 volts. L.T.

7.2.21 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.2.22 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

7.2.23 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Undervoltage Trip Time 3.56 seconds [≤ 4.0 seconds] L.T.

7.2.24 Adjust voltage output of test set to 124 volts. L.T.

7.2.25 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T

Equipment ID Number: 2VBS*ACB2A

Initials

7.2.26 (T/S) Lower frequency output of test set in 0.1 HZ increments, waiting at least 5 seconds between increment changes, until UNDERFREQUENCY light on front of EPA illuminates, and record frequency at which UNDERFREQUENCY light remains illuminated.

"As Found" Underfrequency Trip 57.2 HZ (≥ 57 HZ) — L.T.

7.2.27 Raise frequency output of test set to 60 HZ. — L.T.

7.2.28 Ensure UNDERFREQUENCY light on front of EPA is extinguished. — L.T.

7.2.29 Adjust fault frequency of test set to 57 HZ. — L.T.

7.2.30 Adjust normal frequency of test set to 60 HZ. — L.T.

7.2.31 Set test set timer such that timer will start when frequency output is switched from normal to fault frequency. — L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.2.32 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. — L.T.

7.2.33 Switch frequency output of test set from normal to fault frequency, and record time for EPA to trip as indicated on timer.

"As Found" Underfrequency Trip Time 3.36 seconds [≤ 4.0 seconds] — L.T.

7.2.34 IF any "As Found" data exceeds allowable Technical Specification limits shown, THEN notify SSS immediately.

N/A, All "As Found" Technical Specification data acceptable..... (✓) — L.T.

7.2.35 Remove all test equipment from EPA. — L.T.

7.2.36 Place keylock switch on front of EPA to NORMAL position. — L.T.

B.H.B.
Indep.Ver.

Equipment ID Number: 2VBS*ACB1A

Initials

NOTE: Values shown in parenthesis are Technical Specification acceptance criteria. Values shown in brackets are calibration ranges.

7.3 Functional Test of 2VBS*ACB1A

Section 7.3 N/A, "As Found" data for 2VBS*ACB1A NOT required..... (__) _____

NOTES: 1. Supply power to the EPA is required to be present in order to perform the following step.

2. The following step will initiate the Plant Impact listed in Step 7.1.9.

7.3.1 (T/S) Place keylock switch on front of EPA to CAL/TEST position, and ensure EPA output breaker trips. L.T

7.3.2 WHEN EPA has tripped, ensure the following:

a. Division I Half-Scram Condition..... (✓)

b. Division I Half-MSIV Isolation..... (✓)

c. CCP Supply to Drywell Coolers..... (✓)

d. GTS Train A maintaining Secondary Containment... (✓)*

e. Control Room Special Filter Train A operating... (✓)* JJe CSO

7.3.3 Connect test set to TEST JACK on front of EPA. L.T

7.3.4 Adjust test set output to 120 volts AC at 60 hertz (HZ). L.T.

7.3.5 Ensure OVERVOLTAGE light on front of EPA is extinguished. L.T.

7.3.6 (T/S) Raise voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until OVERVOLTAGE light on front of EPA illuminates, and record voltage at which OVERVOLTAGE light remains illuminated.

"As Found" Overvoltage Trip 129.8 volts AC (≤ 132 volts AC) L.T.

7.3.7 Lower voltage output of test set to 124 volts. L.T.

7.3.8 Ensure OVERVOLTAGE light on front of EPA is extinguished. L.T.

Equipment ID Number: 2VBS*ACB1A

Initials

7.3.9 Adjust fault voltage of test set to 132 volts. L.T.

7.3.10 Adjust normal voltage of test set to 124 volts. L.T.

7.3.11 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.3.12 Connect timer stop circuit to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

7.3.13 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Overvoltage Trip Time 3.58 seconds L.T.
[≤ 4.0 seconds]

7.3.14 Adjust voltage output of test set to 124 volts. L.T.

7.3.15 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.3.16 (T/S) Lower voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until UNDERVOLTAGE light on front of EPA illuminates, and record voltage at which UNDERVOLTAGE light remains illuminated.

"As Found" Undervoltage Trip 117.3 volts AC L.T.
(≥ 117.1 volts AC)

7.3.17 Raise voltage output of test set to 124 volts. L.T.

7.3.18 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.3.19 Adjust fault voltage of test set to 117.1 volts AC. L.T.

7.3.20 Adjust normal voltage of test set to 124 volts. L.T.

7.3.21 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.3.22 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

Equipment ID Number: 2VBS*ACB1A

Initials

7.3.23 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Undervoltage Trip Time 3.65 seconds [≤ 4.0 seconds] L.T.

7.3.24 Adjust voltage output of test set to 124 volts. L.T.

7.3.25 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T.

7.3.26 (T/S) Lower frequency output of test set in 0.1 HZ increments, waiting at least 5 seconds between increment changes, until UNDERFREQUENCY light on front of EPA illuminates, and record frequency at which UNDERFREQUENCY light remains illuminated.

"As Found" Underfrequency Trip 57.8 HZ (≥ 57 HZ) L.T

7.3.27 Raise frequency output of test set to 60 HZ. L.T.

7.3.28 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T.

7.3.29 Adjust fault frequency of test set to 57 HZ. L.T.

7.3.30 Adjust normal frequency of test set to 60 HZ. L.T.

7.3.31 Set test set timer such that timer will start when frequency output is switched from normal to fault frequency. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.3.32 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T

7.3.33 Switch frequency output of test set from normal to fault frequency, and record time for EPA to trip as indicated on timer.

"As Found" Underfrequency Trip Time 3.35 seconds [≤ 4.0 seconds] L.T.

Initials

7.3.34 IF any "As Found" data exceeds allowable Technical Specification limits shown, THEN notify SSS immediately.

N/A, All "As Found" Technical Specification data acceptable..... (✓) L.T

7.3.35 Remove all test equipment from EPA. L.T.

7.3.36 Place keylock switch on front of EPA to NORMAL position. L.T.

BHB
Indep.Ver.

8.0 RETURN TO NORMAL

8.1 Verify all test equipment removed from EPAs:

8.1.1 2VBS*ACB1A..... (✓)

8.1.2 2VBS*ACB2A..... (✓) L.T.

BHB
Indep.Ver.

8.2 Ensure no trip indicating lights are illuminated on front of 2VBS*ACB1A. L.T

8.3 Close 2VBS*ACB1A output breaker. L.T

BHB
Indep.Ver.

8.4 Ensure no trip indicating lights are illuminated on front of 2VBS*ACB2A. L.T

8.5 Close 2VBS*ACB2A output breaker. L.T

BHB
Indep.Ver.

8.6 Perform a general cleanup of all equipment and space within work area. L.T.

8.7 Record test equipment ranges used during performance of this attachment in Step 6.2.4. L.T.

8.8 Complete Calibration Log card for each piece of M&TE utilized. L.T

Initials

8.9 Return EPA test key to SSS. L.T

8.10 Notify CSO and SSS of test completion. Record stop time/date and have CSO and SSS acknowledge test completion by obtaining their initials.

22:00 / 8-17-91 / [CSO Initials] / [SSS Initials] L.T.

Stop Time Date CSO Initials SSS Initials

(NCTS 1) (NCTS 2) NOTE: Operations Department shall perform Steps 8.11 through 8.17.

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8.~~11~~ 12 Ensure SCRAM solenoid lights are illuminated. CSO

8.~~12~~ 11 Reset Half-Scram and Half-Containment Isolation. CSO

8.13 Ensure ALL Division I isolations have been reset. CSO

8.14 As directed by the SSS, secure GTS and HVC special filter trains and restore normal building ventilation systems. CSO

8.15 As directed by the SSS, place Division I and II Drywell unit cooler cooling water LOCA override keylock switches that were placed in the OVERRIDE position in Step 7.1.4 to the RESET position

N/R CSO

N/R Indep.Ver.

8.16 As directed by the SSS, clear markups placed in support of this test.

CSO

Indep.Ver.

8.17 As directed by the SSS, clear ESL entries made due to performance of this test.

N/R CSO 8-18-91

Initials

9.0 ACCEPTANCE CRITERIA

NOTE: Acceptance criteria listed below with (T/S) designator are actual Technical Specification values.

9.1 (T/S) EPA output breaker trips when keylock switch placed in CAL/TEST position.

9.1.1 2VBS*ACB1A (Step 7.3.1)..... (✓)

9.1.2 2VBS*ACB2A (Step 7.2.1)..... (✓) L.T

9.2 (T/S) "As Found" Overvoltage Trip ≤ 132 volts AC.

9.2.1 2VBS*ACB1A (Step 7.3.6)..... (✓)

9.2.2 2VBS*ACB2A (Step 7.2.6)..... (✓) L.T

9.3 "As Found" Overvoltage Trip Time ≤ 4.0 seconds.

9.3.1 2VBS*ACB1A (Step 7.3.13)..... (✓)

9.3.2 2VBS*ACB2A (Step 7.2.13)..... (✓) L.T

9.4 (T/S) "As Found" Undervoltage Trip ≥ 117.1 volts AC.

9.4.1 2VBS*ACB1A (Step 7.3.16)..... (✓)

9.4.2 2VBS*ACB2A (Step 7.2.16)..... (✓) L.T

9.5 "As Found" Undervoltage Trip Time ≤ 4.0 seconds.

9.5.1 2VBS*ACB1A (Step 7.3.23)..... (✓)

9.5.2 2VBS*ACB2A (Step 7.2.23)..... (✓) L.T.

9.6 (T/S) "As Found" Underfrequency Trip ≥ 57 HZ.

9.6.1 2VBS*ACB1A (Step 7.3.26)..... (✓)

9.6.2 2VBS*ACB2A (Step 7.2.26)..... (✓) L.T.

9.7 "As Found" Underfrequency Trip Time ≤ 4.0 seconds.

9.7.1 2VBS*ACB1A (Step 7.3.33)..... (✓)

9.7.2 2VBS*ACB2A (Step 7.2.33)..... (✓) L.T

10.0 RECORD REVIEW AND DISPOSITION

10.1 Record remarks concerning procedure performance including ORs, WRs, problems that occurred and method of resolution, or recommended resolution, as applicable. Attach a copy of any ORs or WRs generated as a result of this procedure.

Remarks: 8-17-91 (grc) * 7.2.2.d 2GTS*FN1B IS ~~RUNNING~~ MARKED UP A TRAIN MARKED UP
(grc) * 7.2.2.e 2NUC*FN2B IS RUNNING, A TRAIN IS MARKED UP
8-17-91 (grc) * 7.3.2.d 2GTS*FN1B IS ~~RUNNING~~ MARKED UP, A TRAIN MARKED UP
(grc) * 7.3.2.E 2NUC*FN2B IS RUNNING A TRAIN IS MARKED UP
NOTE THAT GTS (BOTH TRAINS) MARKED UP & HVR SECURED. CONTAINMENT RELATED NOT REQUIRED 8-17-91
W.R. 190227 - BROKEN INDICATING LIGHT ON 2VBS*ACB2 (POWER OUT RPS BUS); REPLACED & CHECKED OPERABLE BEFORE PRO. N2-ESP-RPS SA 1424 LT 8-17-91 SIGNED OFF

10.2 Personnel who performed portions of this procedure shall sign initials, print name, and sign name below:

	Initials	Printed Name	Signature
Performed by	L.T	LESTER TYO	Lester Tyo
Performed by	RWB	Robert W. Bellinck	Robert W. Bellinck
Performed by	"	Dragoner	"
Performed by			

10.3 Maintenance supervisor shall review data resulting from performance of this procedure for completeness, accuracy, and acceptability. (Check one)

(X) Satisfactory (__) Unsatisfactory

S.G Hoey / 8-18-91
Supervisor Date

10.4 Maintenance Supervision shall ensure completed records (maintenance or test data) are included in the Work Request Package and sent to Records Management for permanent plant file retention.

Initials

Attachment 2 N/A, Division II EPAs NOT required to be tested.. (_) _____

6.0 PREREQUISITES

6.1 Plant/System Conditions

6.1.1 Plant Conditions

Ensure plant in Operational Condition 4. L.T

6.1.2 System Conditions

Ensure power available to 2VBS*ACB1B and 2VBS*ACB2B. L.T

6.2 Administrative

6.2.1 Specify reason for procedure performance below:

(✓) Routine Scheduled
(__) Corrective Maintenance
(__) Post Maintenance Testing
(__) Other, (Specify Reason)_____

_____

Work Request Number_____ L.T.

NOTE: The following step is to be performed by all personnel performing this procedure.

6.2.2 Read this procedure. IF there is any information contained within this procedure which you do NOT understand, THEN contact supervision for clarification. When the information contained within this procedure is understood, acknowledge your understanding by printing your name and signing your initials below.

PRINTED NAME	INITIALS
LESTER TYO	L.T
BRIAN H. BECKWITH	BHB

L.T.

Initials

NOTE: Markups provided are recommendations:

- Blue Markup on 2VBS*ACB1B
- Blue Markup on 2VBS*ACB2B
- Blue Markup as listed in Steps 7.1.3, 7.1.4 and 7.1.6

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6.2.3 Obtain markups as necessary, and record numbers below:

Markup Number: P-91-50814
Markup Number: _____
Markup Number: _____
Markup Number: _____

N/A, Markups NOT required..... (__) L.T.

NOTE: The ranges used may be recorded after the work has been performed.

6.2.4 Ensure calibration dates of test equipment have not expired. Record M&TE nomenclature, M&TE numbers, and calibration due dates for test equipment to be used.

M&TE Nomenclature	M&TE Number	Range(s) Used	Calibration Due Date
Doble Test Set	9665	0-150VAC 56-50HZ 3-5SEC	8-20-91
	9562		8-26-91

6.3 Notifications

Notify I&C Department of intent to perform procedure.

LES HART , 13:21 , 8-18-91 L.T.
Person Contacted Time Date

Initials

7.0 PROCEDURE

7.1 Preliminary Actions

(NCTS 1) (NCTS 2) NOTES:

1. Operations Department shall perform Steps 7.1.1 through 7.1.8.
2. Shutdown Cooling (SDC) isolations will be defeated for the duration of this test which constitutes an operation with the potential for draining the Reactor Pressure Vessel (RPV). The potential for draining the RPV may be negated provided an Operator is stationed at the appropriate divisional isolation valves power supply breakers, in direct communications with the Control Room, and ready to re-energize the valves if necessary.

7.1.1 EITHER station Operators at appropriate divisional isolation valves power supply breakers, in direct communication with the Control Room, and ready to re-energize valves if necessary..... (__)

OR

Review the operability requirements of the following Technical Specification sections to ensure Technical Specification compliance during an operation with a potential for draining the RPV..... (__) SSS

a. 3.3.7.4 Remote Shutdown System Instrumentation and Control SSS

b. 3.4.9.2 Residual Heat Removal - Cold Shutdown SSS

c. 3.5.2 ECCS -Shutdown SSS

d. 3.5.3 Suppression pool level greater than 199'-6" SSS

e. 3.6.5.1 Secondary Containment Integrity SSS

Initials

7.1.1 (Cont)

f.	3.6.5.2 (3.3.2-1.1.a.2 * (c))	Secondary Containment Automatic Isolation Damper		SSS
g.	3.6.5.3 (3.3.2-1.1.a.2 * (d))	Standby Gas Treatment System		SSS
h.	Table 3.3.2-1, 1.a.2	Isolation Actuation Instrumentation for Level 2 (2ISC*LT11A through 2ISC*LT11D)		SSS
i.	3.7.1.2	Two independent plant Service Water System Loops operable with one loop in operation. Each loop shall be comprised of:		
		1. Two operable plant service water pumps capable of transferring the water to the associated safety-related equipment.		
		2. Service water supply header discharge water temperature is 81°F or less.		
		3. If intake tunnel temperature is less than 38°F, then intake deicing heater system shall be operable.		SSS
j.	3.7.3	Control Room Special Filter Train System		SSS
k.	3.8.1.2	AC Electrical Power Sources - Shutdown		SSS
ℓ.	3.8.2.2	DC Electrical Power Sources - Shutdown		SSS
m.	3.8.3.2	On Site Power Distribution Systems - Shutdown		SSS

Initials

7.1.2 Manually shutdown normal HVR and start GTS Train B in accordance with N2-OP-52 and N2-OP-61B, in anticipation of Reactor Building isolation and auto-start of GTS Train B.

8/18/89 N/A CSO 8/18/89 N/A Indep.Ver.

NOTES:
1. The following valves will receive an isolation signal.
2. Valves and breakers should be tagged as directed by the SSS according to existing plant conditions.

7.1.3 Place a Blue Markup tag on the following RHS SDC isolation valves and motor control center supply breakers to defeat Group 5 SDC Isolation:

a. 2RHS*MOV112: valve open, breaker open — CSO

b. 2RHS*MOV113: valve open, breaker open — CSO

c. IF RHS "A" is in the SDC Mode with WCS controlling Reactor water level, THEN the following conditions apply:

1. 2RHS*MOV40A: valve throttled, breaker open. (__)

2. 2RHS*MOV40B: valve closed, breaker open.... (__)

Step N/A, RHS "A" NOT in SDC Mode..... (✓) N/A CSO

d. IF RHS "B" is in the SDC Mode with WCS controlling Reactor water level, THEN the following conditions apply:

1. 2RHS*MOV40A: valve closed, breaker open.... (✓)

2. 2RHS*MOV40B: valve throttled, breaker open. (✓)

Step N/A, RHS "B" NOT in SDC Mode..... (__) CSO

Initials

7.1.3 (Cont)

e. IF the following valves are required to be open for plant conditions, THEN de-energize the valves in the open position, AND station an Operator at the associated MCCs, in direct communication with the Control Room, and ready to re-energize the valve motor operators if a valid isolation signal occurs:

1. 2RHS*MOV142: valve open, breaker open

   Step N/A, valve closed..... (__) N/A CSO

2. 2RHS*MOV149: valve open, breaker open

   Step N/A, valve closed..... (__) N/A CSO

3. 2RHS*MOV67A: valve open, breaker open

   Step N/A, valve closed..... (__) N/A CSO

4. 2RHS*MOV67B: valve open, breaker open

   Step N/A, valve closed..... (__) N/A CSO

f,g see page 32A

7.1.4 ~~Place Division I and II Drywell unit cooler cooling water LOCA override keylock switches to the OVERRIDE position at P873.~~

If Drywell Cooling is required, THEN the following conditions apply;

Step N/A if drywell cooling secured (__) ~~Indep. Ver.~~ CSO

3.17.91

7.1.5 Notify I&C to place Division II H2/O2 Monitoring in Standby.

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CSO

1. 2CCP * MOV 124; valve open, breaker open (__) Indep. Ver.
2. 2CCP * MOV 122; valve open, breaker open CSO
3. 2CCP * MOV 265: valve open, breaker open CSO
4. 2CCP * MOV 273: valve open, breaker open CSO

f. If the following valves are required to be open for plant conditions, THEN de-energize the valves in the open position: Step N/A if 2RCS-P1A secured (✓)

1. 2CCP *MOV 15A: valve open, breaker open — CSO
2. 2CCP * MOV 16A: valve open, breaker open — CSO
3. 2CCP * MOV 17A: valve open, breaker open — CSO
4. 2CCP * MOV 94A: valve open, breaker open. — CSO

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g. If the following valves are required to be open for plant conditions, THEN de-energize the valves in the open position: Step N/A if 2RCS-P1B secured (✓)

1. 2CCP *MOV15B; valve open, breaker open — CSO
2. 2CCP *MOV16B: valve open, breaker open — CSO NA
3. 2CCP * MOV17B: valve open, breaker open — CSO NA
4. 2CCP * MOV 94B: valve open, breaker open — CSO NA

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Initials

7.1.6 Place a Blue Markup tag on 2WCS*MOV102 motor breaker to allow Reactor Water Cleanup System to remain in operation throughout the performance of this test.

2WCS*MOV102: Valve open, breaker open.

CSO

7.1.7 Enter the following equipment into the ESL, as directed by the SSS.

Inoperable Component/System	Technical Specification	Plant Impact
• TIP System	3.3.7.7	None in Mode 4 or 5
• H2/O2 Analyzers	3.3.7.5-1	None in Mode 4 or 5
• HCS System	3.6.6.1	None in Mode 4 or 5
• 2CMS-RE10A and 2CMS-RE10B	3.4.3.1a & 3.4.3.1c	None in Mode 4 or 5
• Recirculation System - FCV HCU Isolation	3.4.9.2	Loss of FCV position control.
• Drywell Vacuum Breakers	3.6.4	None in Mode 4 or 5
• ADS Valve Accumulators	3.5.1	None in Mode 4 or 5
• WCS System	3.4.4.c (3.3.2-1.1.1.3	Partial loss of isolation capability. One valve inoperable. Both valves are required in Mode 5 with any control rod withdrawn
• HVR System	3.6.5.2 (3.3.2-1.1.a.2 * (c))	Reactor Building will be isolated. Secondary containment integrity will be maintained with GTS
• CCP to Drywell Coolers	3.6.3-1	Isolation signal overridden by use of keylock override switch

7.1.7 (Cont)

Inoperable Component/System	Technical Specification	Plant Impact
• CCP to Recirc Pump/Motors	3.6.3-1	Loss of cooling flow to RCS Pumps
• CPS System	3.6.1.7	None in Mode 4 or 5. Containment pressure control inoperable due to isolation signal.
• IAS to Testable Check Valves	3.5.2	Test function inoperable
• IAS to Safety/ Relief Valves	3.4.2	None in Mode 4 or 5
• RHR SDC Isolations	3.4.9.2 3.9.11.1 3.9.11.2	SDC Isolations defeated constitutes an operation with the potential for draining the RPV.
• FPW to Drywell	3.6.3-1	None in Mode 4 or 5
• DER to/from Drywell	3.6.3-1	None in Mode 4 or 5
• DFR to/from Drywell	3.6.3-1	None in Mode 4 or 5
• LMS to/from Drywell	3.6.3-1	None in Mode 4 or 5
• Off Normal Status Lights for Outboard Containment Isolation Valves	3.6.3-1	None in Mode 4 or 5
• MSL Radiation Monitors Circuit	3.3.1-1	None in Mode 4 or 5. Half-Scram and Half Group 1 Isolation
• APRMs	3.3.1-1	Half-Scram
• LDS System	3.3.2-1	Isolation Valve Groups 5, 6, 7, 10 on high temperature

Initials

7.1.7 (Cont)

Inoperable Component/System	Technical Specification	Plant Impact
• One Pilot Solenoid for MSIVs De-energized	3.6.3-1	Half-MSIV isolation

SSS for CSO
CSO

DD 8-17-91
8-17-91

7.1.8 Start Control Room Special Filter Train A or B in accordance with N2-OP-53A, in anticipation of auto-start.
Step N/A if train is IN-OP (—)

CSO
N/A
CSO

7.1.9 (NCTS 1) (NCTS 2) Discuss Plant Impact and resulting effects on plant due to performance of this procedure with Station Shift Supervisor (SSS) and Chief Shift Operator (CSO).

PLANT IMPACT:

1. HALF SCRAM FOR DURATION OF TEST.
2. LOSS OF RPS DIVISIONAL POWER RESULTING IN HALF MSIV CLOSURE SIGNAL FOR DURATION OF TEST.
3. PRIMARY CONTAINMENT ISOLATION OF INBOARD MAIN STEAM LINE DRAINS, AND GROUPS 2-4 AND 6-9.
4. ALL GROUP 5 VALVES RECEIVE AN ISOLATION SIGNAL (REGARDLESS OF DIVISION BEING TESTED).
5. ISOLATION OF SDC SUCTION VALVES (2RHS*MOV112 AND 2RHS*MOV113) WILL BE PREVENTED BY DE-ENERGIZING THE VALVES IN THE OPEN POSITION.
6. ISOLATION OF SDC INJECTION VALVES (2RHS*MOV40A AND 2RHS*MOV40B) WILL BE PREVENTED BY DE-ENERGIZING THE INJECTION VALVE OF THE SDC LOOP IN SERVICE IN THE OPEN POSITION.

Initials

7.1.9 (Cont)
(NCTS 1)
(NCTS 2) PLANT IMPACT: (Cont)

7. ISOLATION OF 2RHS*MOV104, HEAD SPRAY VALVE, 2RHS*MOV142 AND 2RHS*MOV149, REJECT TO RADWASTE VALVES, OR 2RHS*MOV67A AND 2RHS*MOV67B, INJECTION TESTABLE CHECK BYPASS VALVES, WILL BE PREVENTED IF THESE VALVES ARE REQUIRED TO BE OPEN FOR PLANT OPERATION.

8. SECONDARY CONTAINMENT ISOLATION.

9. AUTO INITIATION OF ENERGIZED RECIRC UNITS AND STANDBY GAS TREATMENT SYSTEM.

10. LOSS OF DIVISIONAL OFF-NORMAL STATUS LIGHT INDICATORS FOR MSIVS AND CONTAINMENT ISOLATION VALVES.

11. LOSS OF DIVISIONAL RESET CIRCUIT FOR MSIVS AND CONTAINMENT ISOLATION VALVES.

12. LOSS OF DIVISIONAL LEAK DETECTION MONITORING METER INDICATION.

13. LOSS OF INDICATING LIGHTS FOR THE DE-ENERGIZED RPS CHANNEL AT PANELS P609, P611, P622, AND P623.

14. LOSS OF GETARS CAPACITY FOR MSIVS MAIN STEAM LINE PRESSURE, 1/2 SCRAM, RX WATER LOW RANGE.

15. AUTO INITIATION OF CONTROL ROOM SPECIAL FILTER TRAINS.

16. RECIRC PUMP BREAKERS 3A, 3B, 4A, 4B WILL TRIP OPEN IF CLOSED WHEN EITHER UPS BUS IS DE-ENERGIZED.

17. LOSS OF 120 VAC TO POWER RANGE NEUTRON MONITORING SYSTEM.

18. LOSS OF POWER TO MSL RADIATION MONITORS.

19. REMOTE SHUTDOWN PANEL SDC ISOLATION SIGNAL. L.T

Initials

7.1.10 Obtain SSS and CSO permission to perform procedure by obtaining their signatures below.

Demetrius Bland — SSS Signature — Date: 8/18/91

Don Hoff — CSO Signature — Date: 8/18/91 — L.T

7.1.11 Confirm BOTH scram solenoid lights are illuminated, AND plant is NOT in a Half-Scram condition. L.T.

7.1.12 Obtain EPA test key from SSS. L.T

7.1.13 Notify CSO of commencement and record start time and date below.

13:47 — Start Time; 8-18-91 — Date — L.T

NOTE: Values shown in parenthesis are Technical Specification acceptance criteria. Values shown in brackets are calibration limits.

7.2 Functional Test of 2VBS*ACB2B

Section 7.2 N/A, "As Found" data for 2VBS*ACB2B NOT required..... (__) _____

NOTES:
1. Supply power to the EPA is required to be present in order to perform the following step.
2. The following step will initiate the Plant Impact listed in Step 7.1.9.

7.2.1 (T/S) Place keylock switch on front of EPA to CAL/TEST position, and ensure EPA output breaker trips. L.T

7.2.2 WHEN EPA has tripped, ensure the following:

a. Division II Half-Scram Condition..... (✓)

b. Division II Half-MSIV Isolation..... (✓)

c. CCP Supply to Drywell Coolers..... (✓)

d. GTS Train B maintaining Secondary Containment... (N/A) GTS Train B in PTC

e. Control Room Special Filter Train B operating... (✓) Don Hoff CSO

Equipment ID Number: 2VBS*ACB2B

		Initials
7.2.3	Connect test set to TEST JACK on front of EPA.	L.T.
7.2.4	Adjust test set output to 120 volts AC at 60 hertz (HZ).	L.T
7.2.5	Ensure OVERVOLTAGE light on front of EPA is extinguished.	L.T.
7.2.6 (T/S)	Raise voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until OVERVOLTAGE light on front of EPA illuminates, and record voltage at which OVERVOLTAGE light remains illuminated.	
	"As Found" Overvoltage Trip 131.3 volts AC (≤ 132 volts AC)	L.T
7.2.7	Lower voltage output of test set to 124 volts.	L.T
7.2.8	Ensure OVERVOLTAGE light on front of EPA is extinguished.	L.T
7.2.9	Adjust fault voltage of test set to 132 volts.	L.T.
7.2.10	Adjust normal voltage of test set to 124 volts.	L.T
7.2.11	Set test set timer such that timer will start when voltage output is switched from normal to fault voltage.	L.T
	NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.	
7.2.12	Connect timer stop circuit to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1.	L.T
7.2.13	Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.	
	"As Found" Overvoltage Trip Time 3.88 seconds [≤ 4.0 seconds]	L.T
7.2.14	Adjust voltage output of test set to 124 volts.	L.T
7.2.15	Ensure UNDERVOLTAGE light on front of EPA is extinguished.	L.T.

Equipment ID Number: 2VBS*ACB2B

Initials

7.2.16 (T/S) Lower voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until UNDERVOLTAGE light on front of EPA illuminates, and record voltage at which UNDERVOLTAGE light remains illuminated.

"As Found" Undervoltage Trip 116.1 volts AC (≥ 115.75 volts AC) L.T.

7.2.17 Raise voltage output of test set to 124 volts. L.T.

7.2.18 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.2.19 Adjust fault voltage of test set to 115.75 volts AC. L.T.

7.2.20 Adjust normal voltage of test set to 124 volts. L.T.

7.2.21 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.2.22 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

7.2.23 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Undervoltage Trip Time 3.81 seconds [≤ 4.0 seconds] L.T.

7.2.24 Adjust voltage output of test set to 124 volts. L.T.

7.2.25 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T.

7.2.26 (T/S) Lower frequency output of test set in 0.1 HZ increments, waiting at least 5 seconds between increment changes, until UNDERFREQUENCY light on front of EPA illuminates, and record frequency at which UNDERFREQUENCY light remains illuminated.

"As Found" Underfrequency Trip 57.5 HZ (≥ 57 HZ) L.T.

Equipment ID Number: 2VBS*ACB2B

Initials

7.2.27 Raise frequency output of test set to 60 HZ. L.T.

7.2.28 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T.

7.2.29 Adjust fault frequency of test set to 57 HZ. L.T.

7.2.30 Adjust normal frequency of test set to 60 HZ. L.T.

7.2.31 Set test set timer such that timer will start when frequency output is switched from normal to fault frequency. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.2.32 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

7.2.33 Switch frequency output of test set from normal to fault frequency, and record time for EPA to trip as indicated on timer.

"As Found" Underfrequency Trip Time 3.28 seconds [≤ 4.0 seconds] L.T.

7.2.34 IF any "As Found" data exceeds allowable Technical Specification limits shown, THEN notify SSS immediately.

N/A, All "As Found" Technical Specification data acceptable..... (✓) L.T.

7.2.35 Remove all test equipment from EPA. L.T.

7.2.36 Place keylock switch on front of EPA to NORMAL position. L.T.

RHB
Indep.Ver.

NOTE: Values shown in parenthesis are Technical Specification acceptance criteria. Values shown in brackets are calibration ranges.

7.3 Functional Test of 2VBS*ACB1B

Section 7.3 N/A, "As Found" data for 2VBS*ACB1B NOT required..... (__) _____

Equipment ID Number: 2VBS*ACB1B

Initials

NOTES: 1. Supply power to the EPA is required to be present in order to perform the following step.

2. The following step will initiate the Plant Impact listed in Step 7.1.9.

7.3.1 (T/S) Place keylock switch on front of EPA to CAL/TEST position, and ensure EPA output breaker trips. L.T.

7.3.2 WHEN EPA has tripped, ensure the following:

a. Division II Half-Scram Condition..... (✓)

b. Division II Half-MSIV Isolation..... (✓)

c. CCP Supply to Drywell Coolers..... (✓)

d. GTS Train B maintaining Secondary Containment... (GT Point GTS B in PTL)

e. Control Room Special Filter Train B operating... (✓) CSO

7.3.3 Connect test set to TEST JACK on front of EPA. L.T.

7.3.4 Adjust test set output to 120 volts AC at 60 hertz (HZ). L.T.

7.3.5 Ensure OVERVOLTAGE light on front of EPA is extinguished. L.T.

7.3.6 (T/S) Raise voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until OVERVOLTAGE light on front of EPA illuminates, and record voltage at which OVERVOLTAGE light remains illuminated.

"As Found" Overvoltage Trip 129.9 volts AC (≤ 132 volts AC) L.T.

7.3.7 Lower voltage output of test set to 124 volts. L.T.

7.3.8 Ensure OVERVOLTAGE light on front of EPA is extinguished. L.T

7.3.9 Adjust fault voltage of test set to 132 volts. L.T.

7.3.10 Adjust normal voltage of test set to 124 volts. L.T.

7.3.11 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T.

Equipment ID Number: 2VBS*ACB1B

Initials

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.3.12 Connect timer stop circuit to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

7.3.13 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Overvoltage Trip Time 3.28 seconds L.T.
[≤ 4.0 seconds]

7.3.14 Adjust voltage output of test set to 124 volts. L.T.

7.3.15 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.3.16 (T/S) Lower voltage output of test set in 0.1 volt increments, waiting at least 5 seconds between increment changes, until UNDERVOLTAGE light on front of EPA illuminates, and record voltage at which UNDERVOLTAGE light remains illuminated.

"As Found" Undervoltage Trip 115.8 volts AC L.T.
(≥ 115.75 volts AC)

7.3.17 Raise voltage output of test set to 124 volts. L.T.

7.3.18 Ensure UNDERVOLTAGE light on front of EPA is extinguished. L.T.

7.3.19 Adjust fault voltage of test set to 115.75 volts AC. L.T.

7.3.20 Adjust normal voltage of test set to 124 volts. L.T.

7.3.21 Set test set timer such that timer will start when voltage output is switched from normal to fault voltage. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.3.22 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

Equipment ID Number: 2VBS*ACB1B

Initials

7.3.23 Switch voltage output of test set from normal to fault voltage, and record time for EPA to trip as indicated on timer.

"As Found" Undervoltage Trip Time 3.22 seconds [≤ 4.0 seconds] L.T.

7.3.24 Adjust voltage output of test set to 124 volts. L.T.

7.3.25 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T.

7.3.26 (T/S) Lower frequency output of test set in 0.1 HZ increments, waiting at least 5 seconds between increment changes, until UNDERFREQUENCY light on front of EPA illuminates, and record frequency at which UNDERFREQUENCY light remains illuminated.

"As Found" Underfrequency Trip 57.1 HZ (≥ 57 HZ) L.T.

7.3.27 Raise frequency output of test set to 60 HZ. L.T.

7.3.28 Ensure UNDERFREQUENCY light on front of EPA is extinguished. L.T.

7.3.29 Adjust fault frequency of test set to 57 HZ. L.T.

7.3.30 Adjust normal frequency of test set to 60 HZ. L.T.

7.3.31 Set test set timer such that timer will start when frequency output is switched from normal to fault frequency. L.T.

NOTE: Voltage on terminals 4 and 5 of TB1 to be 14 volts DC.

7.3.32 Verify timer stop circuit connected to terminals 4 and 5 of TB1 such that timer will stop when voltage changes state on terminals 4 and 5 of TB1. L.T.

7.3.33 Switch frequency output of test set from normal to fault frequency, and record time for EPA to trip as indicated on timer.

"As Found" Underfrequency Trip Time 3.75 seconds [≤ 4.0 seconds] L.T.

Equipment ID Number: 2VBS*ACB1B

		Initials
7.3.34	IF any "As Found" data exceeds allowable Technical Specification limits shown, THEN notify SSS immediately.	
	N/A, All "As Found" Technical Specification data acceptable..... (✓)	L.T.
7.3.35	Remove all test equipment from EPA.	L.T.
7.3.36	Place keylock switch on front of EPA to NORMAL position.	L.T.
		BHB Indep.Ver.
8.0	RETURN TO NORMAL	
8.1	Verify all test equipment removed from EPAs:	
8.1.1	2VBS*ACB1B..... (✓)	
8.1.2	2VBS*ACB2B..... (✓)	L.T.
		BHB Indep.Ver.
8.2	Ensure no trip indicating lights are illuminated on front of 2VBS*ACB1B.	L.T.
8.3	Close 2VBS*ACB1B output breaker.	L.T.
		BHB Indep.Ver.
8.4	Ensure no trip indicating lights are illuminated on front of 2VBS*ACB2B.	L.T.
8.5	Close 2VBS*ACB2B output breaker.	L.T.
		BHB Indep.Ver.
8.6	Perform a general cleanup of all equipment and space within work area.	L.T.
8.7	Record test equipment ranges used during performance of this attachment in Step 6.2.4.	L.T
8.8	Complete Calibration Log card for each piece of M&TE utilized.	L.T

		Initials
8.9	Return EPA test key to SSS.	L.T
8.10	Notify CSO and SSS of test completion. Record stop time/date and have CSO and SSS acknowledge test completion by obtaining their initials. 14:59 (Stop Time) 8-18-91 (Date) (CSO Initials) (SSS Initials)	L.T
(NCTS 1) (NCTS 2)	NOTE: Operations Department shall perform Steps 8.11 through 8.17.	
8.~~11~~ 12	Ensure SCRAM solenoid lights are illuminated.	CSO
8.~~12~~ 11	Reset Half-Scram and Half-Containment Isolation.	CSO
8.13	Ensure ALL Division II isolations have been reset.	CSO
8.14	As directed by the SSS, secure GTS and HVC special filter trains and restore normal building ventilation systems.	CSO
8.15	As directed by the SSS, place Division I and II Drywell unit cooler cooling water LOCA override keylock switches that were placed in the OVERRIDE position in Step 7.1.4 to the RESET position	CSO Indep.Ver.
8.16	As directed by the SSS, clear markups placed in support of this test.	CSO Indep.Ver.
8.17	As directed by the SSS, clear ESL entries made due to performance of this test.	CSO

MD 8.12.91 & 8/17/91

Initials

9.0 ACCEPTANCE CRITERIA

NOTE: Acceptance criteria listed below with (T/S) designator are actual Technical Specification values.

9.1 (T/S) EPA output breaker trips when keylock switch placed in CAL/TEST position.

9.1.1 2VBS*ACB1B (Step 7.3.1)..... (✓)

9.1.2 2VBS*ACB2B (Step 7.2.1)..... (✓) L.T.

9.2 (T/S) "As Found" Overvoltage Trip ≤ 132 volts AC.

9.2.1 2VBS*ACB1B (Step 7.3.6)..... (✓)

9.2.2 2VBS*ACB2B (Step 7.2.6)..... (✓) L.T.

9.3 "As Found" Overvoltage Trip Time ≤ 4.0 seconds.

9.3.1 2VBS*ACB1B (Step 7.3.13)..... (✓)

9.3.2 2VBS*ACB2B (Step 7.2.13)..... (✓) L.T.

9.4 (T/S) "As Found" Undervoltage Trip ≥ 115.75 volts AC.

9.4.1 2VBS*ACB1B (Step 7.3.16)..... (✓)

9.4.2 2VBS*ACB2B (Step 7.2.16)..... (✓) L.T.

9.5 "As Found" Undervoltage Trip Time ≤ 4.0 seconds.

9.5.1 2VBS*ACB1B (Step 7.3.23)..... (✓)

9.5.2 2VBS*ACB2B (Step 7.2.23)..... (✓) L.T

9.6 (T/S) "As Found" Underfrequency Trip ≥ 57 HZ.

9.6.1 2VBS*ACB1B (Step 7.3.26)..... (✓)

9.6.2 2VBS*ACB2B (Step 7.2.26)..... (✓) L.T.

9.7 "As Found" Underfrequency Trip Time ≤ 4.0 seconds.

9.7.1 2VBS*ACB1B (Step 7.3.33)..... (✓)

9.7.2 2VBS*ACB2B (Step 7.2.33)..... (✓) L.T

10.0 RECORD REVIEW AND DISPOSITION

10.1 Record remarks concerning procedure performance including ORs, WRs, problems that occurred and method of resolution, or recommended resolution, as applicable. Attach a copy of any ORs or WRs generated as a result of this procedure.

Remarks: _____

10.2 Personnel who performed portions of this procedure shall sign initials, print name, and sign name below:

	Initials	Printed Name	Signature
Performed by	LT	LESTER TVO	
Performed by	RJB	R. BERGENSTOCK	
Performed by		J. GRAFF	
Performed by			

10.3 Maintenance supervisor shall review data resulting from performance of this procedure for completeness, accuracy, and acceptability. (Check one)

(X) Satisfactory (__) Unsatisfactory

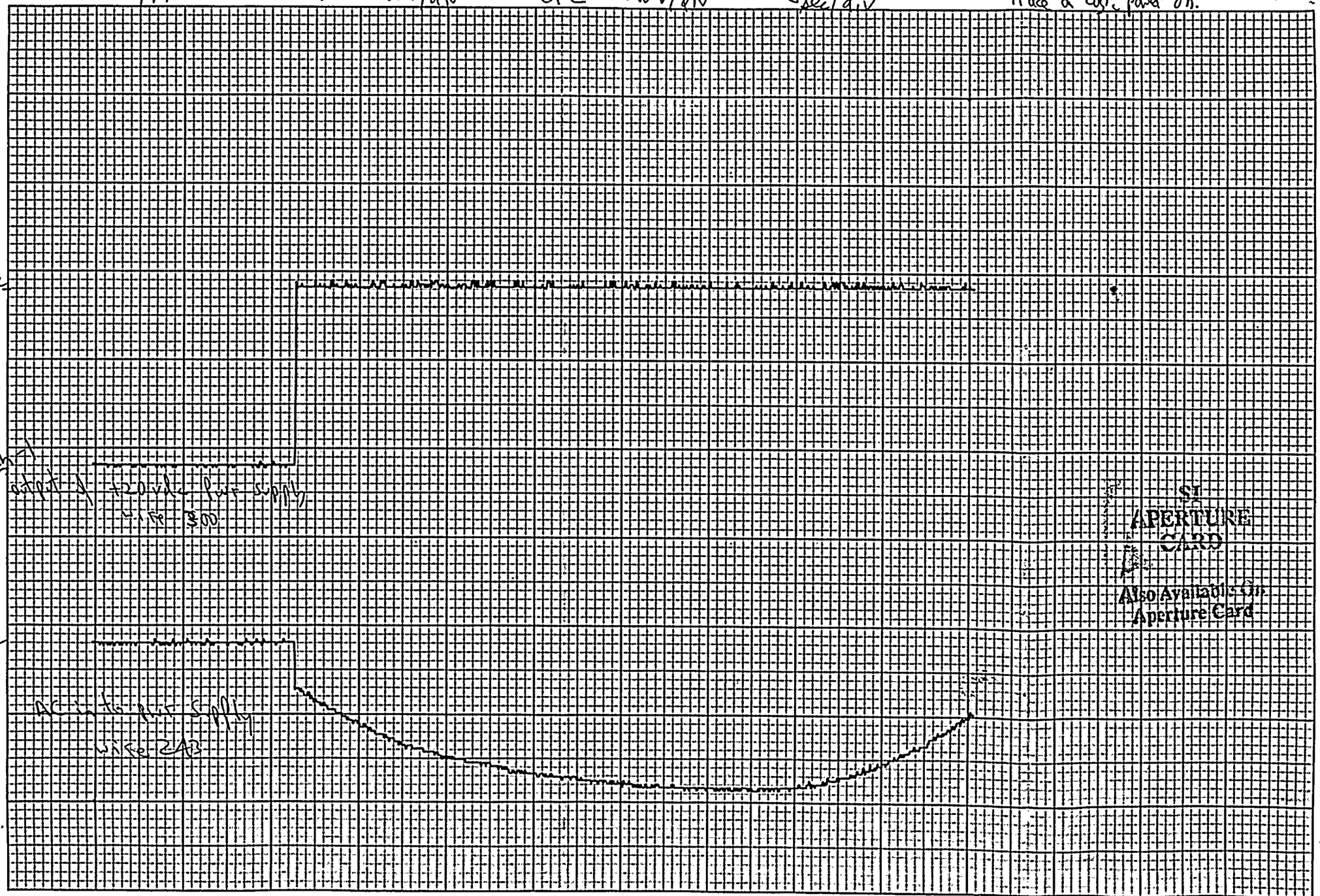
_____ 1·8·20·91
Supervisor Date

10.4 Maintenance Supervision shall ensure completed records (maintenance or test data) are included in the Work Request Package and sent to Records Management for permanent plant file retention.

PLEASE SIGN DOCUMENT CONTROL LOG

BEFORE REMOVING ANY DOCUMENTS

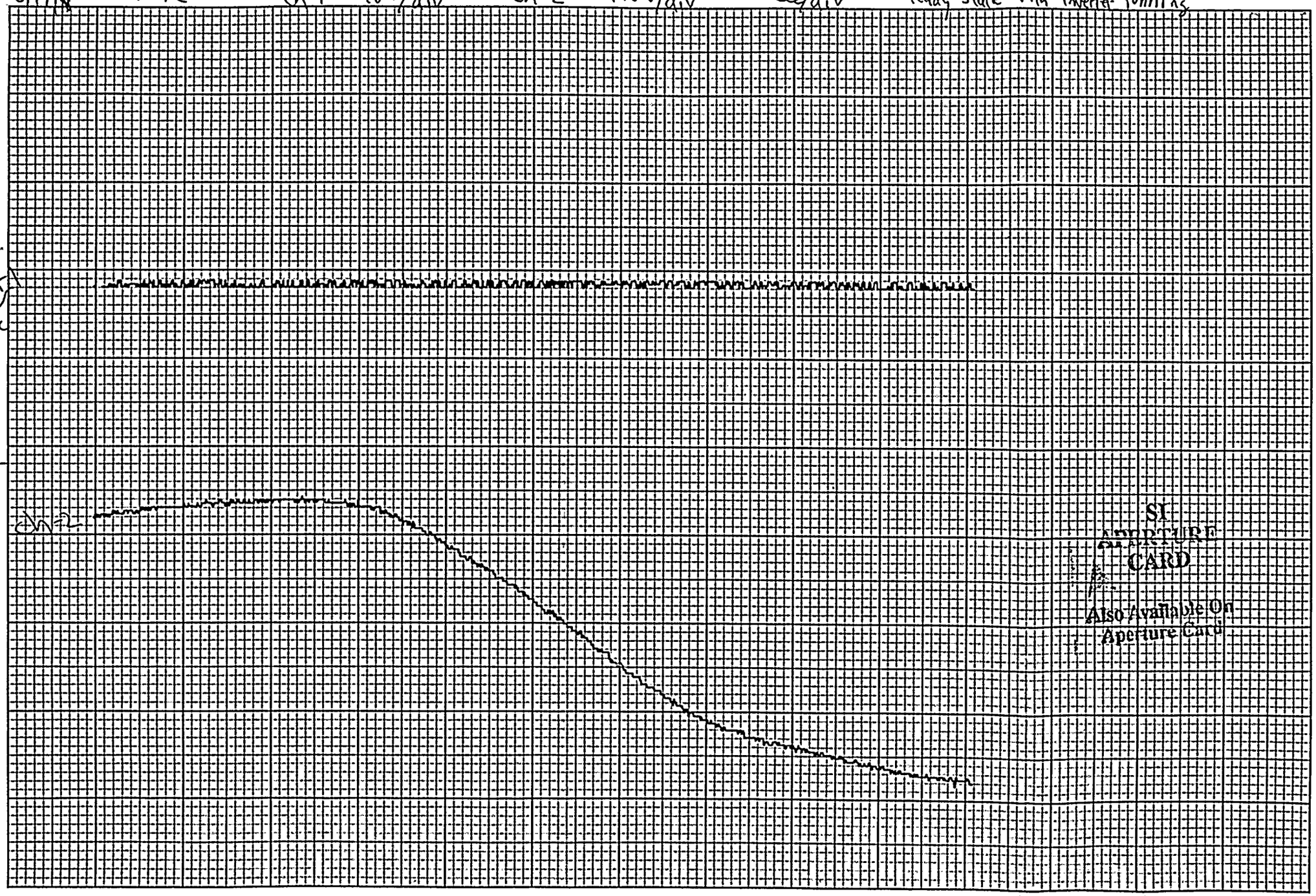
w-1 : UPSIC 8/19/91 ch-1 10 v/div ch-2 100 v/div 5sec/div Trace a Logic power on.



HEWLETT-PACKARD 8270-1004

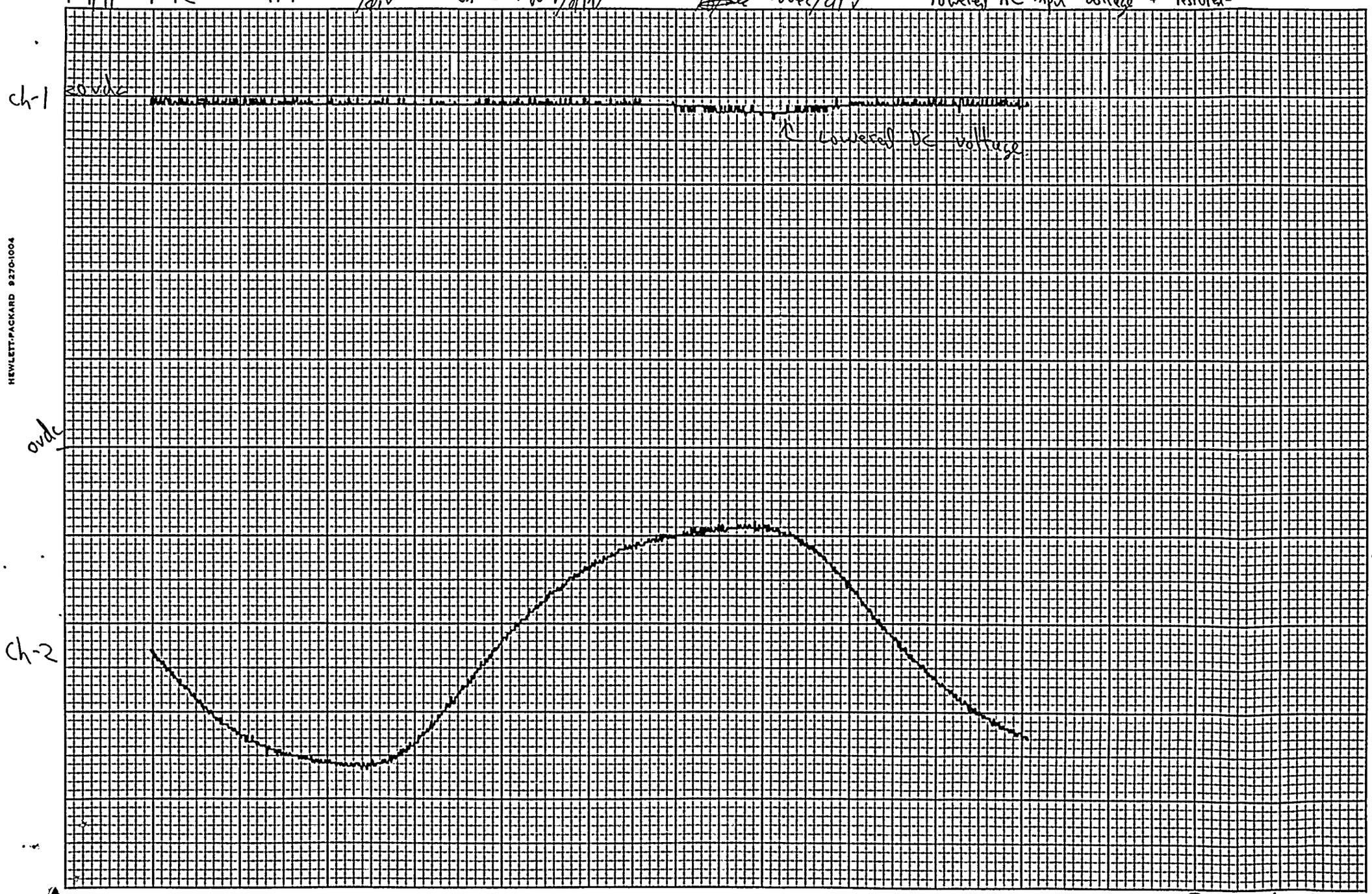
9304290247-01

iw-2: 8/19/91 UPS 1C ch-1 10 v/div ch-2 100 v/div 5 sec/div Steady State with inverter running



9304290247-02

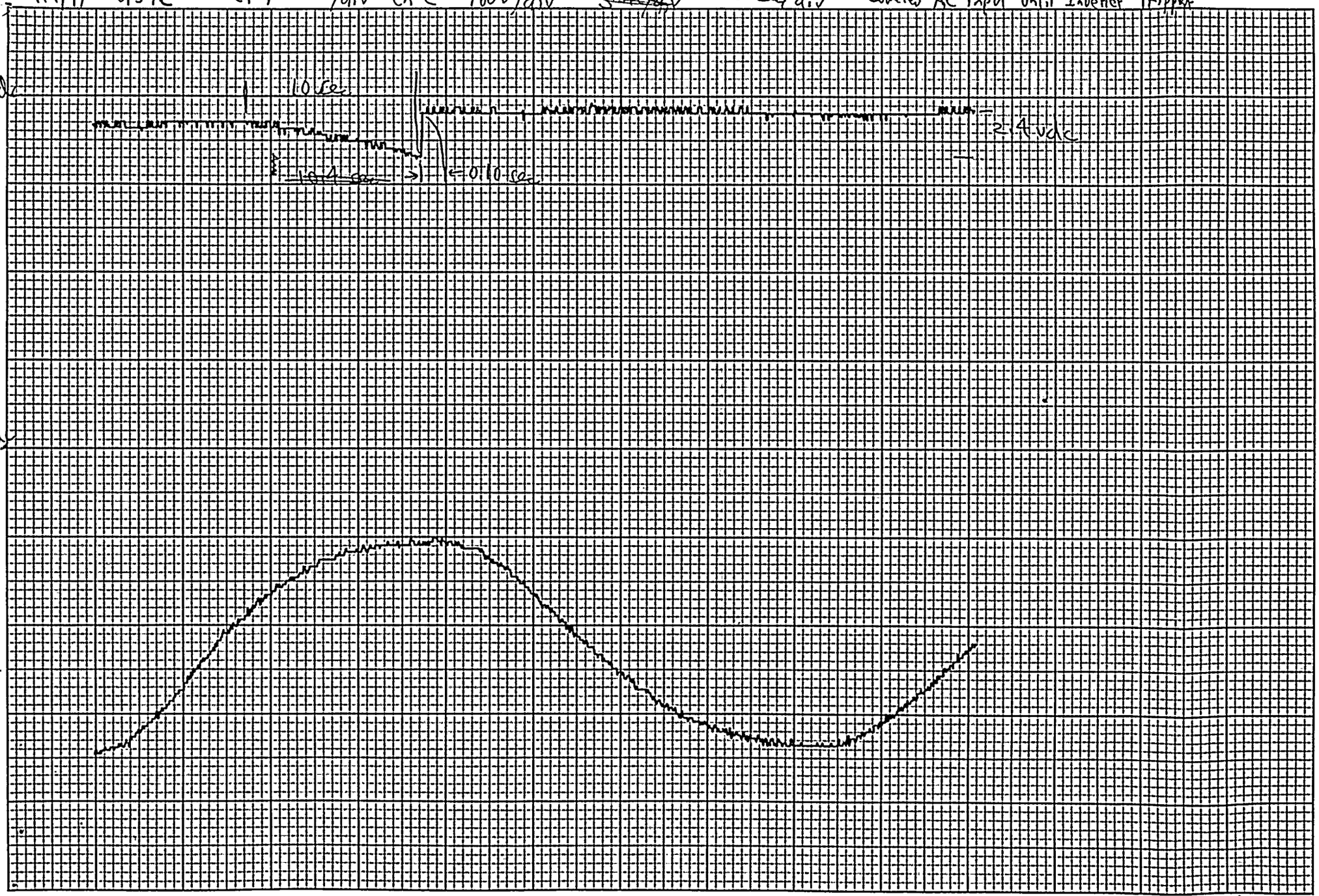
W-5 8/19/91 UPS 1C ch-1 5v/div ch-2 100 v/div ~~10sec~~ 10sec/div lowered AC input voltage + restored-



HEWLETT-PACKARD 9270-1004

9304290247-03

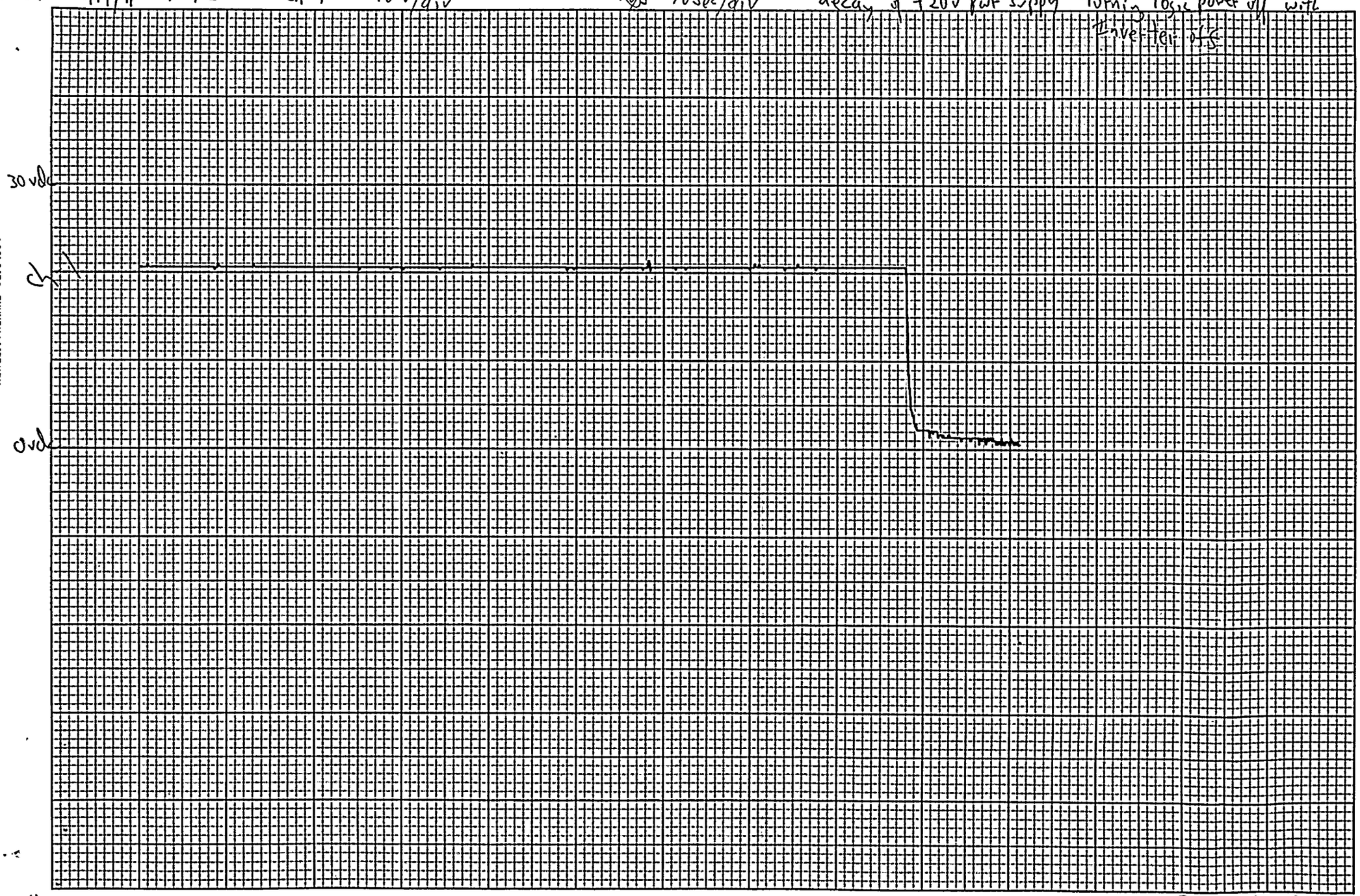
w-4. 8/19/91 UPS 12 ch-1 5v/div ch-2 100v/div ~~5v/div~~ 5 sec/div Lowered AC input until Inverter tripped



HEWLETT-PACKARD 9270-1004

9304290247-04

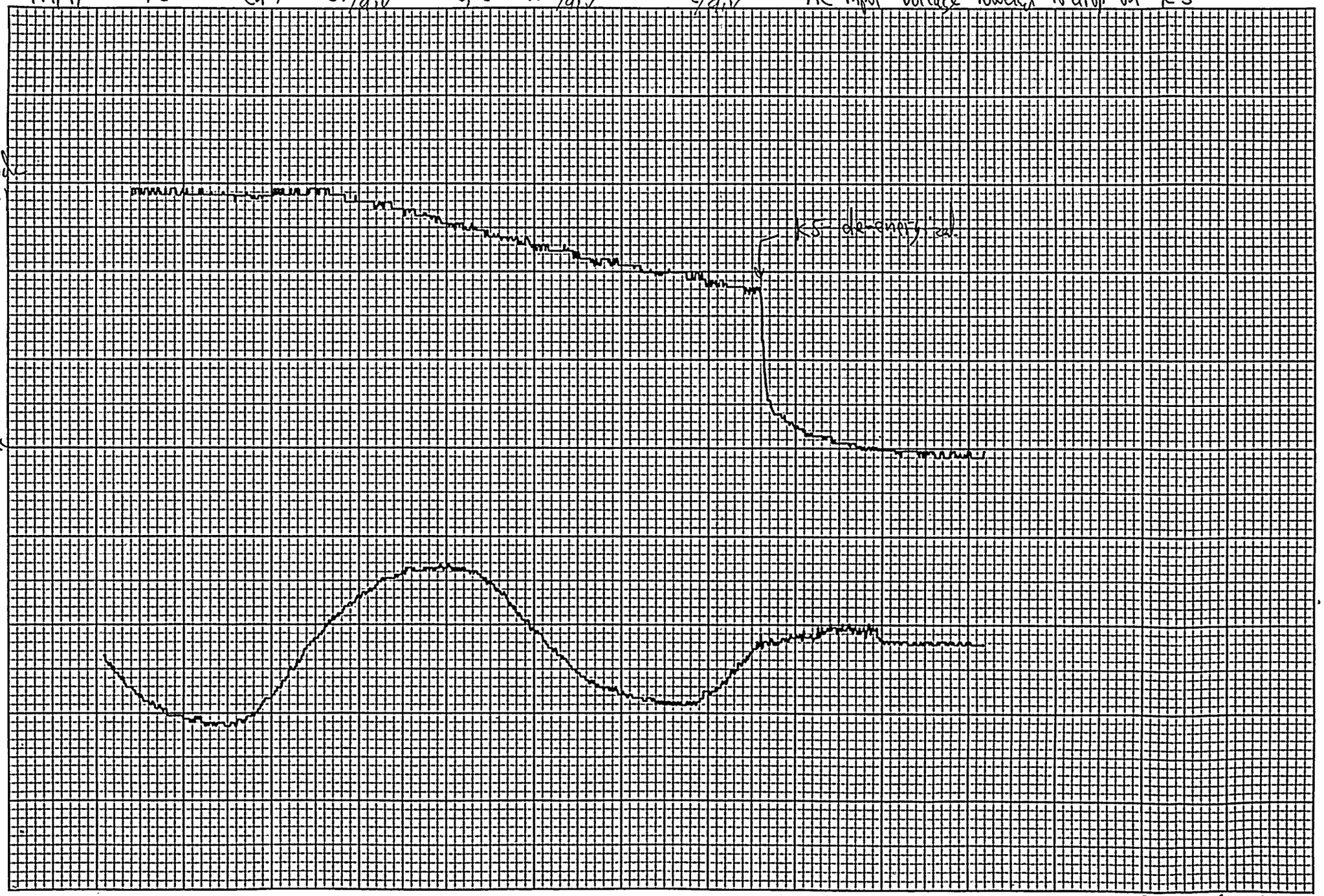
w-5 8/19/91 VPS IC ch-1 10 v/div 10sec/div decay of +20V pwr supply - turning logic power off with live-tek DVS



HEWLETT-PACKARD 9270-1004

9304290247-05

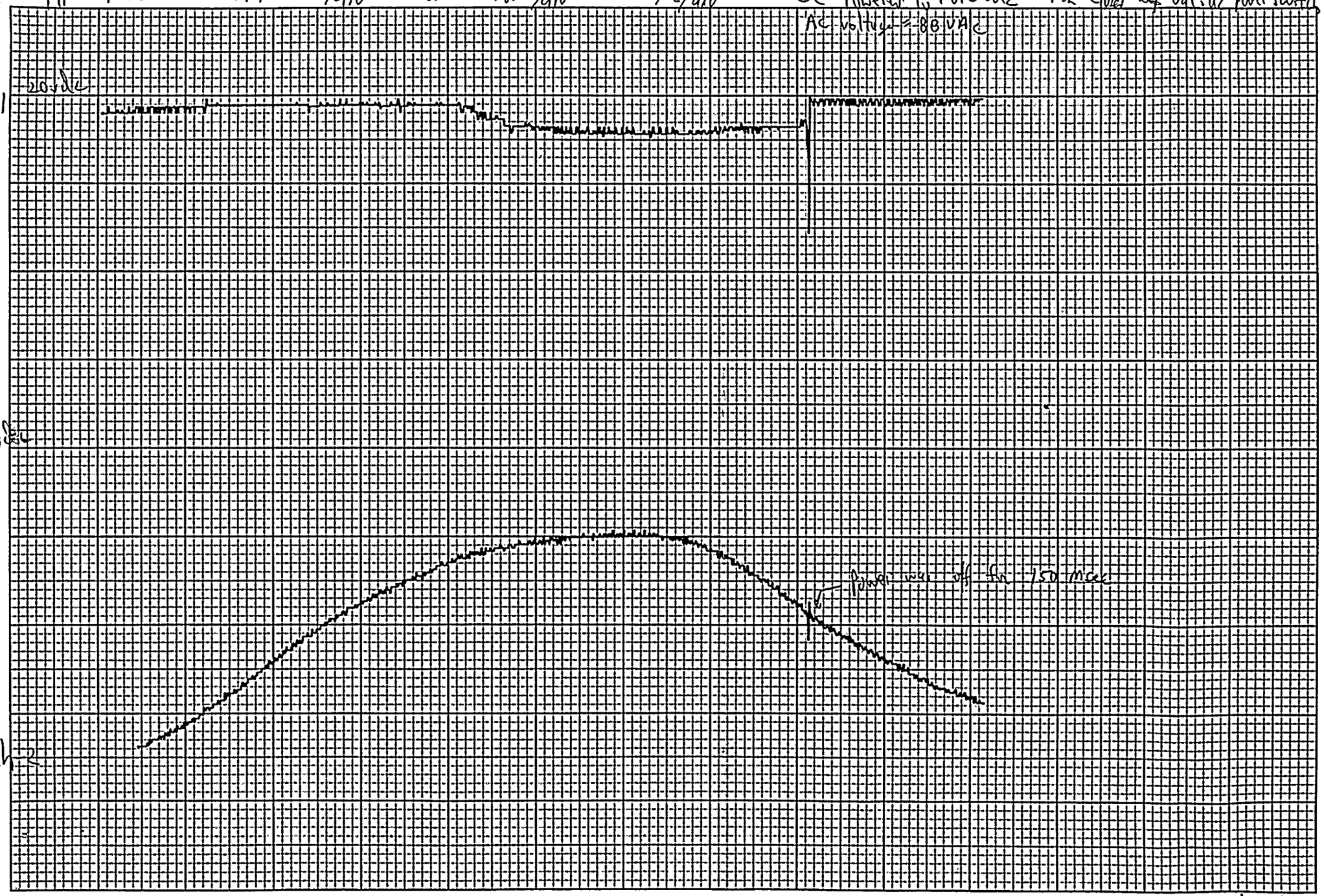
-6 - 8/19/91 UPS1C ch-1 5v/div ch-2 - 100 v/div 5sec/div Ac input voltage lowered to drop out K-5



HEWLETT-PACKARD 9270-1004

9304290247-06

W-7 8/19/91 UPS IC ch-1 5v/div ch-2 100v/div 5ms/div DC lowered to 18.5 vdc then closed to vary ac power with AC voltage = 88 vac



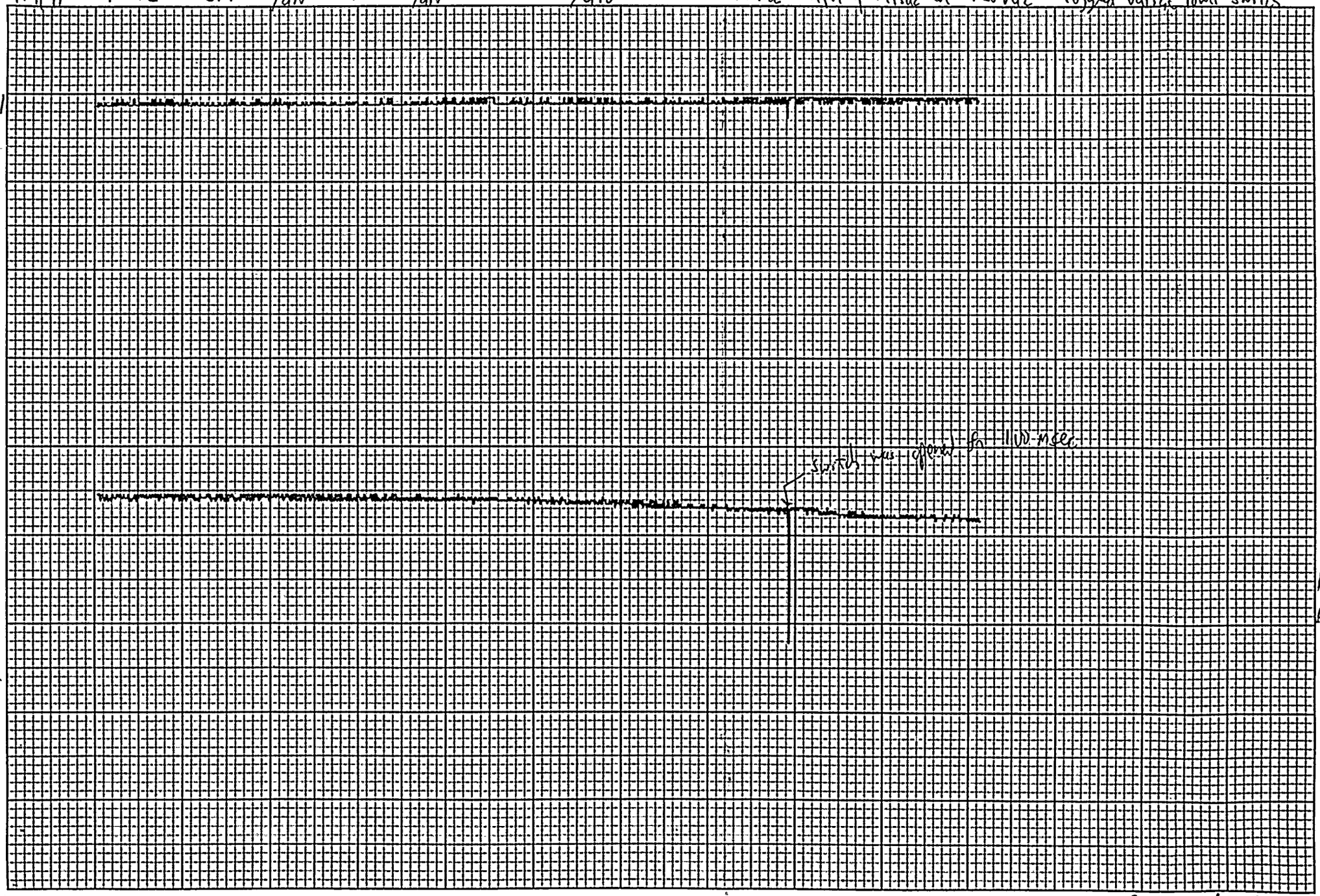
HEWLETT-PACKARD 9270-1004

SI APERTURE CARD

Also Available On Aperture Card

9304290247-07

w-8. 4/9/91 VPS IC ch-1 5v/div ch-2 100v/div 5sec/div with output of varise at 120vac toggled varise power switch



HEWLETT-PACKARD 9270-1004

2VBB- UPS1C

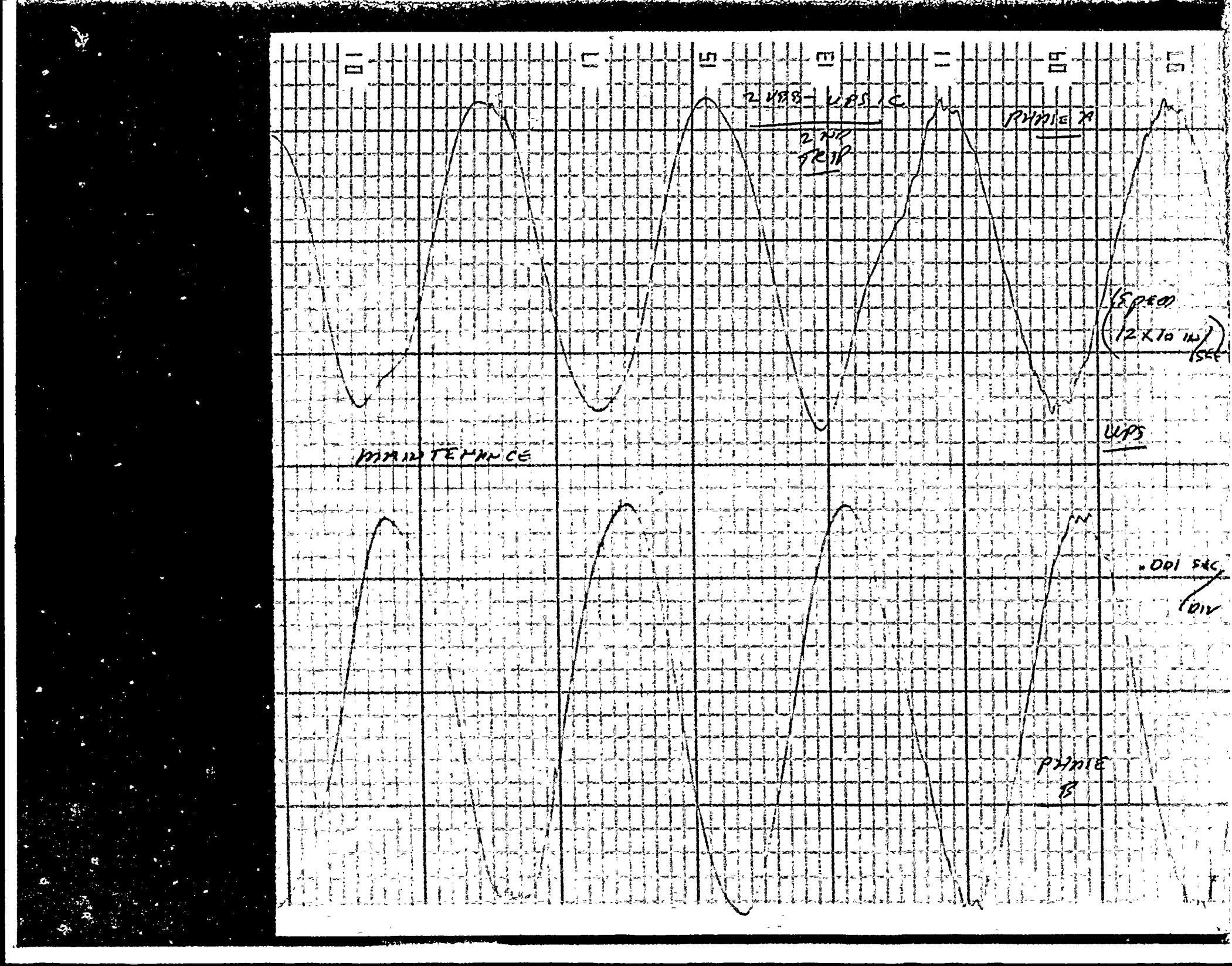
1ST TRIP

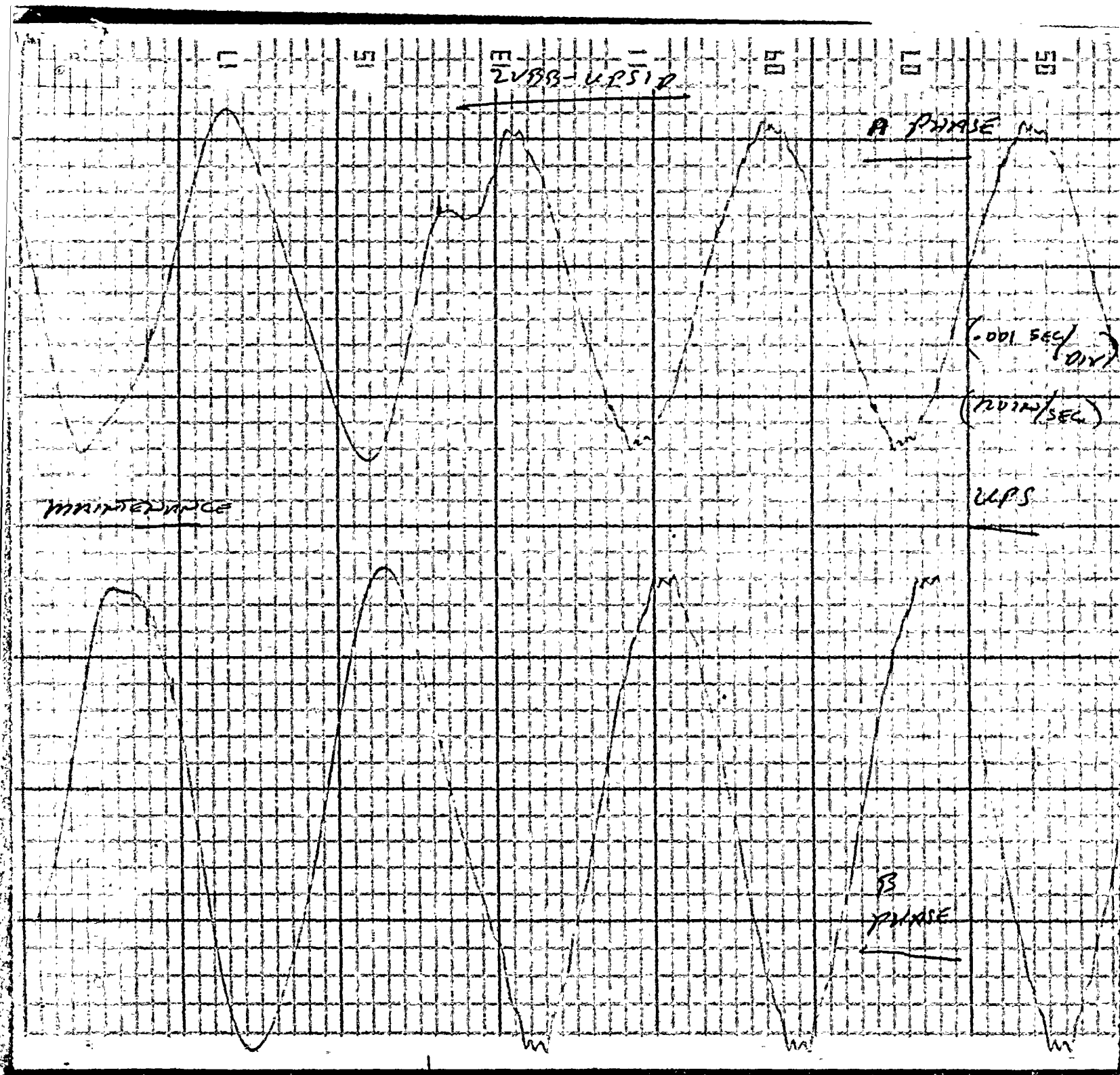
A PHASE

UPS

MAINTENANCE

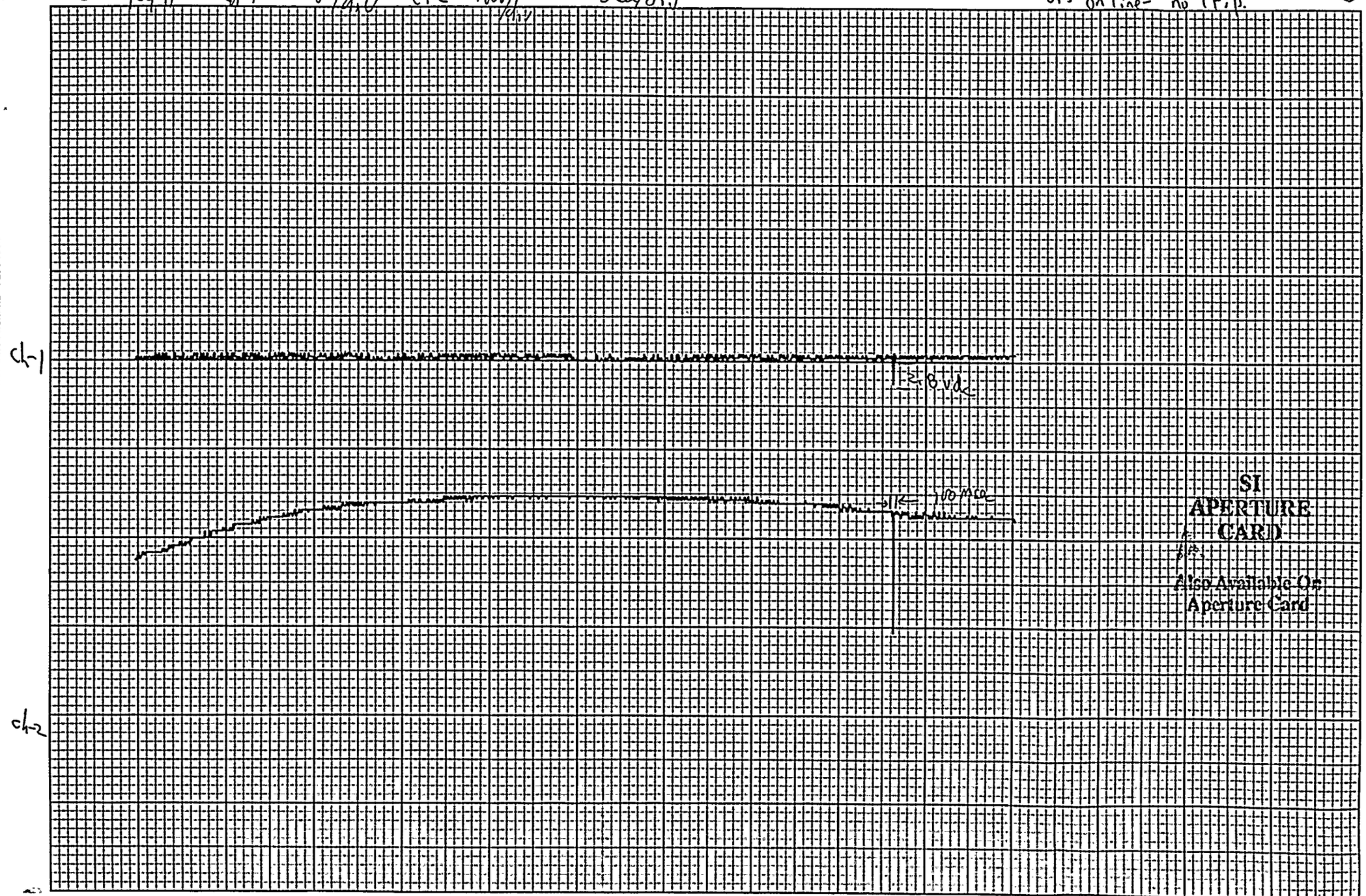
B PHASE


D
C
B
A
PHASE A
PHASE B
MAINTENANCE
(SPEED
12 X 10 IN)
1 SEC
VOLTS
.001 SEC
/DIV


2VBB-UPSID
A PHASE
(.001 SEC/DIV)
(MIN/SEC)
MAINTENANCE
UPS
B PHASE

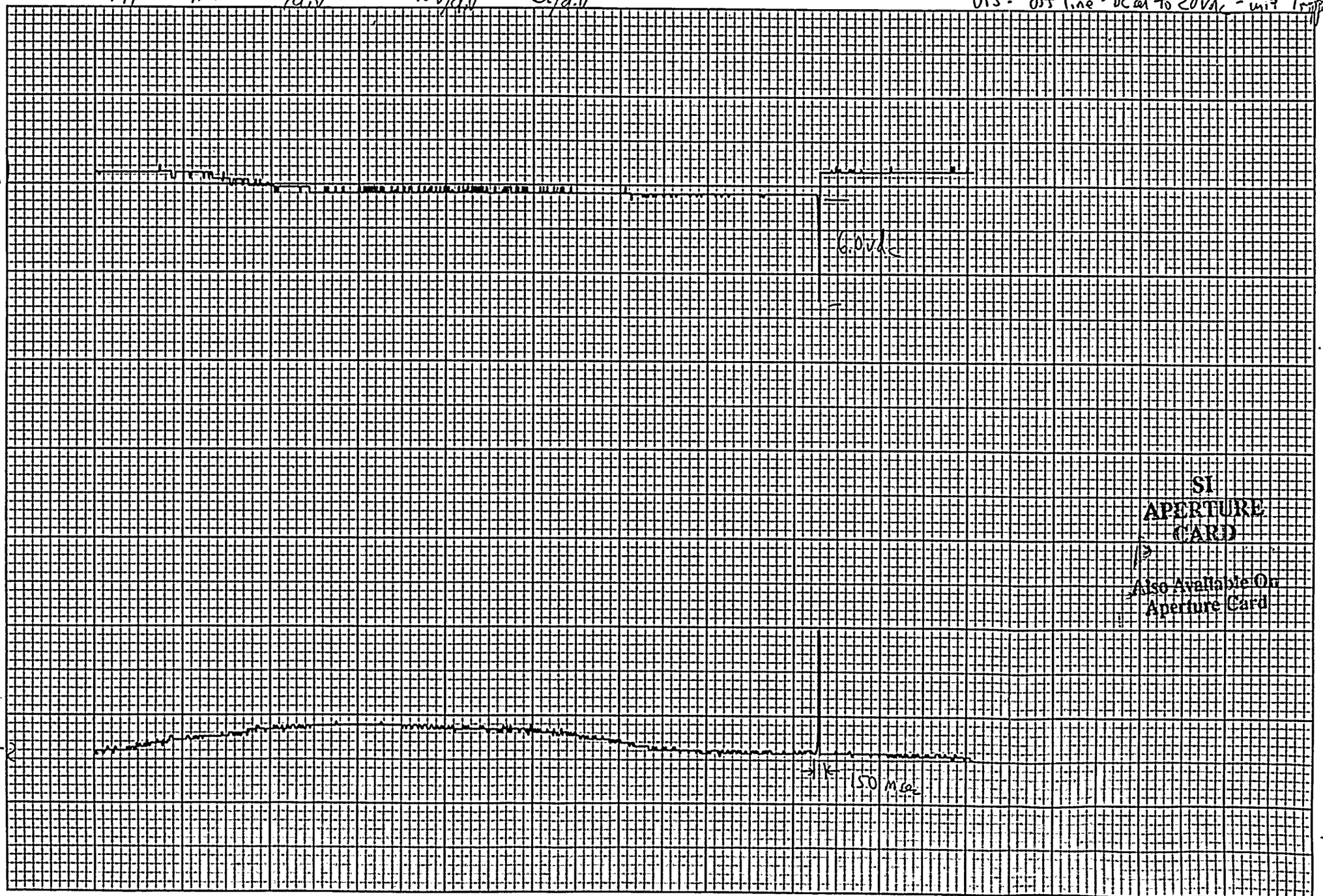
W-1 UPS 10 8/22/91 ch-1 10v/div ch-2 100v/div 5 sec/div

UPS on line - no trip.



HEWLETT-PACKARD 8270-1004

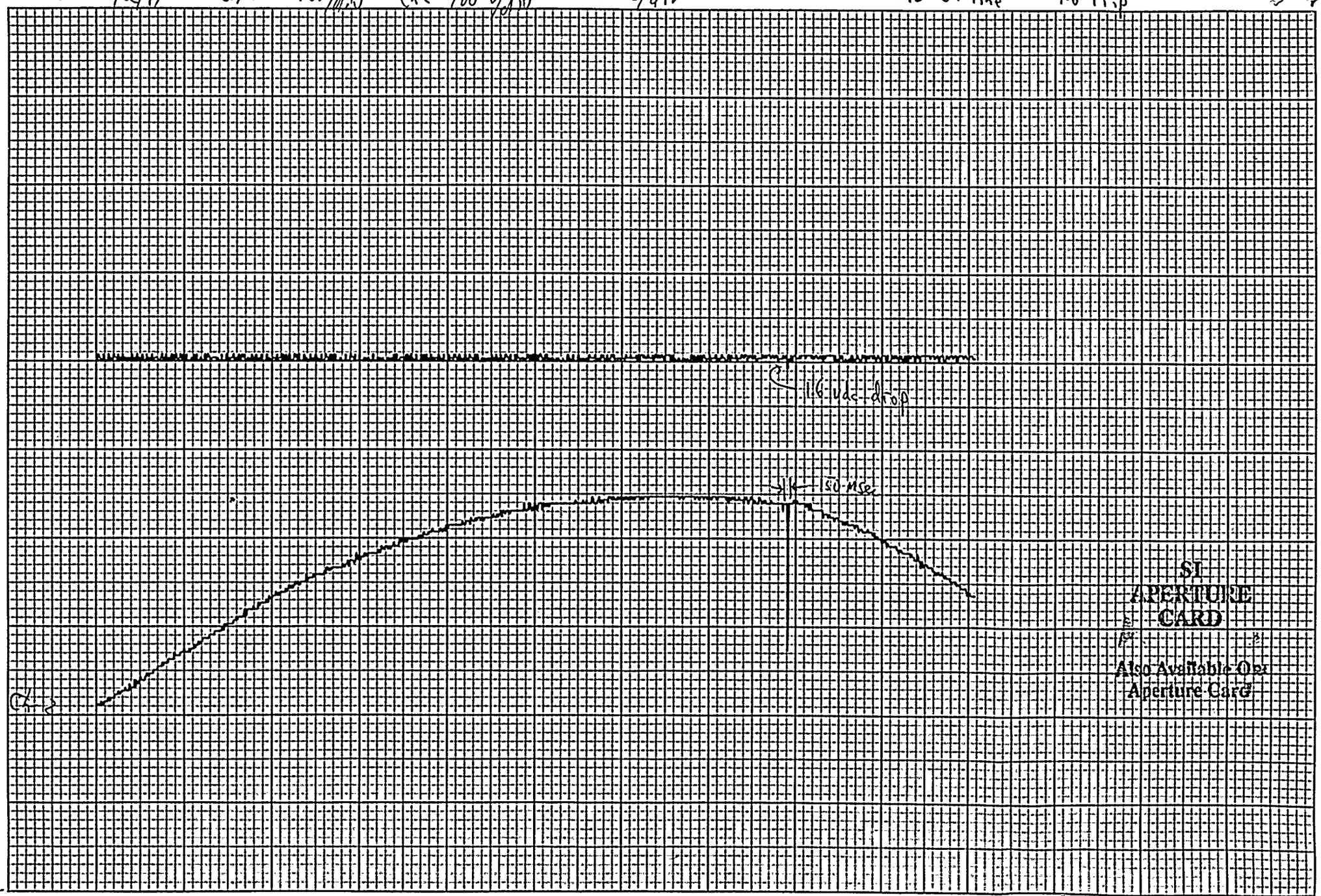
W-5 UPS ID 8/22/91 ch-1 5v/div ch-2 10v/div 5ca/div UPS - off line - Dc cut to 20vdc - unit tripped



HEWLETT-PACKARD 9270-1004

9304290247-10

W-9 UPS ID 8/22/91 ch-1 10v/div ch-2 100-v/div 5 sec/div UPS-on line - no trip



9304290247-11