

NIAGARA MOHAWK POWER CORPORATION

COPY 2  
07-197-91

NINE MILE POINT NUCLEAR STATION UNIT 2

ELECTRICAL PREVENTIVE MAINTENANCE PROCEDURE

N2-EPM-GEN-R700

REVISION 01

OUTDOOR TRANSFORMER AND GROUNDING TRANSFORMER  
PM DURING REFUELING OUTAGE

FOR INFO. ONLY

Approved By:  
W. C. Drews

  
Site Superintendent, Maintenance - Nuclear

9/27/90  
Date

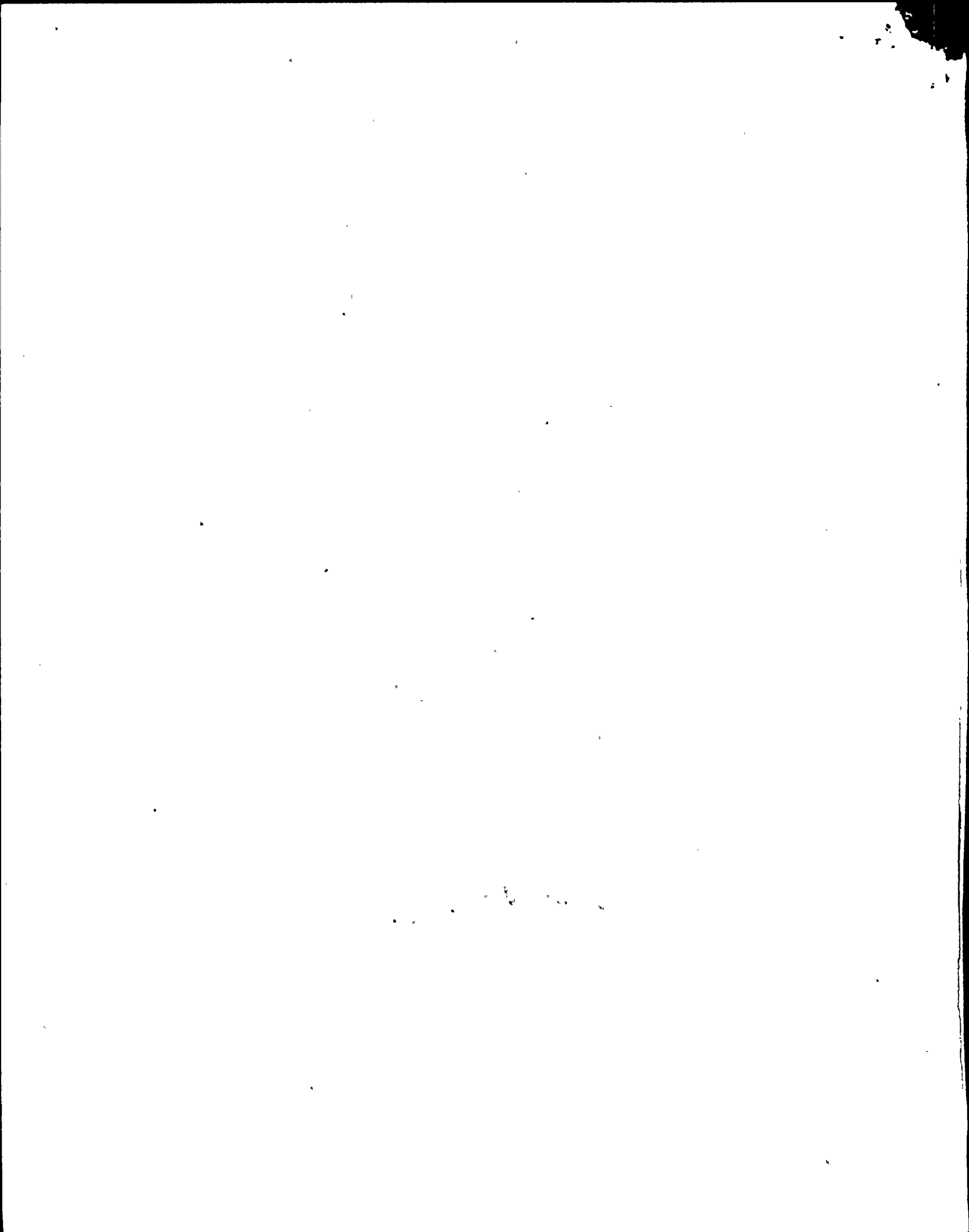
THIS REVISION IS A GENERAL REWRITE

Effective Date: October 4, 1990

NOT TO BE USED AFTER October 1994  
SUBJECT TO PERIODIC REVIEW

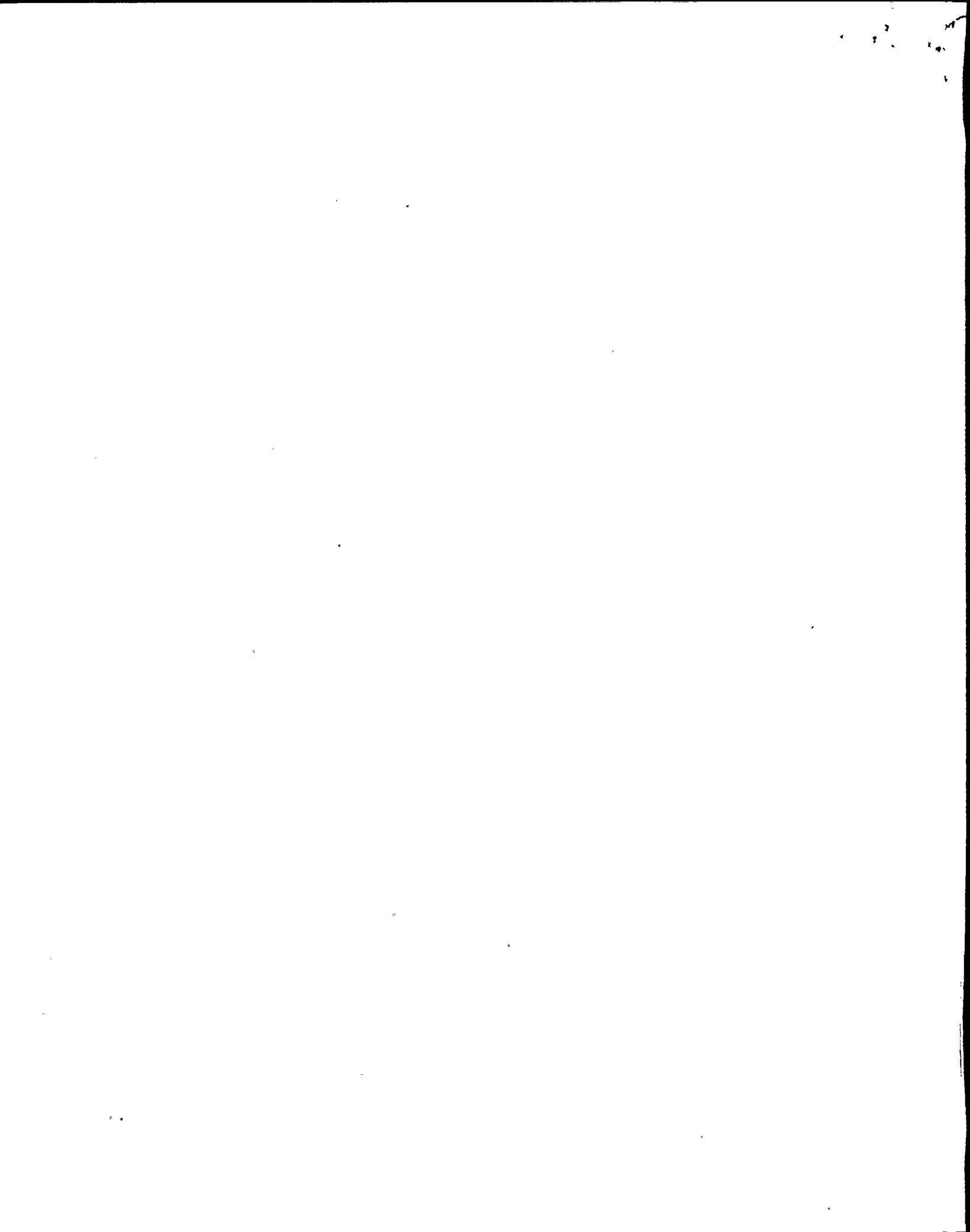
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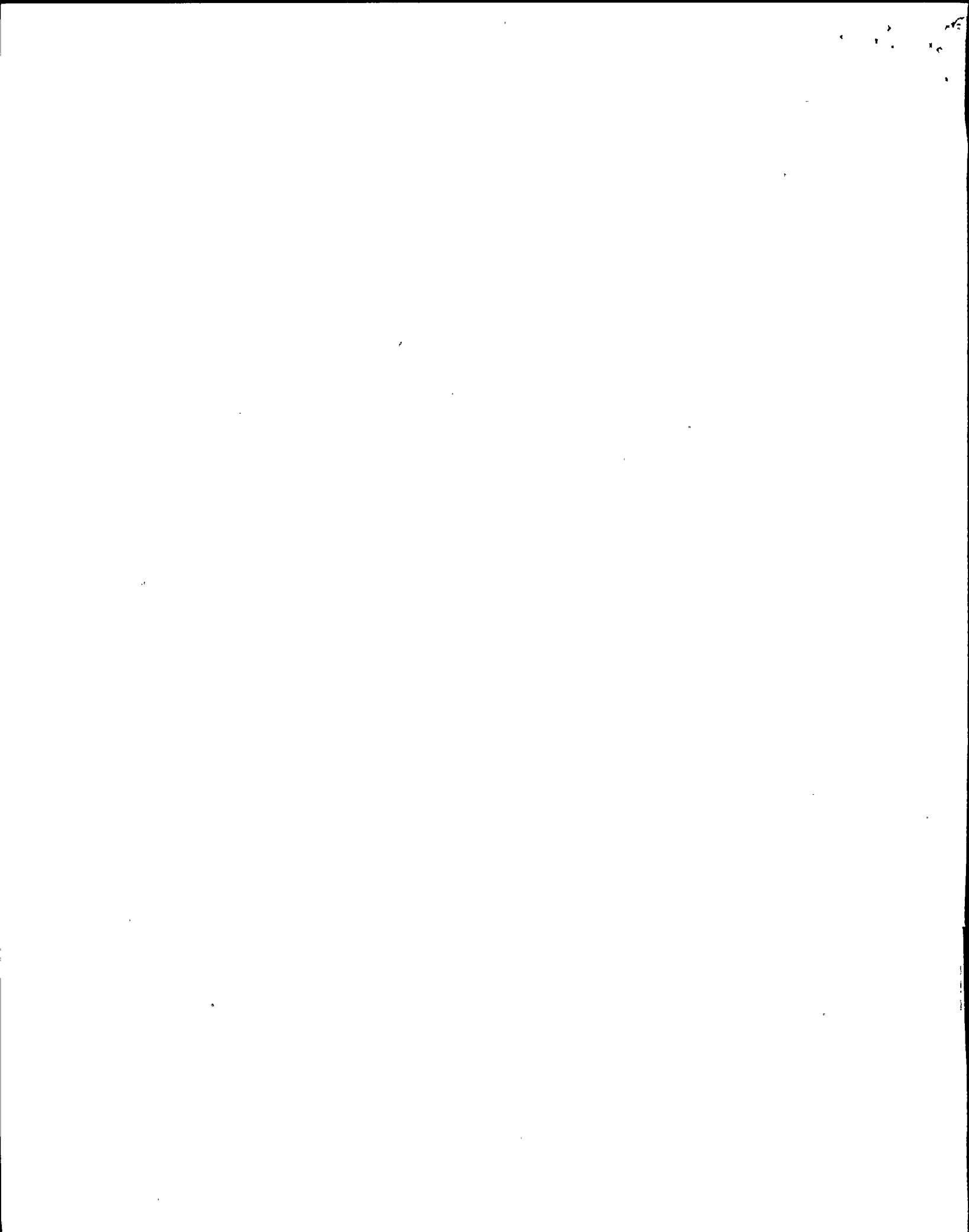
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1.0 PURPOSE

To provide direction in performing preventive maintenance on the Outdoor Transformers and Grounding Transformers.

1.1 Operational Conditions When Equipment is Required to be Operable

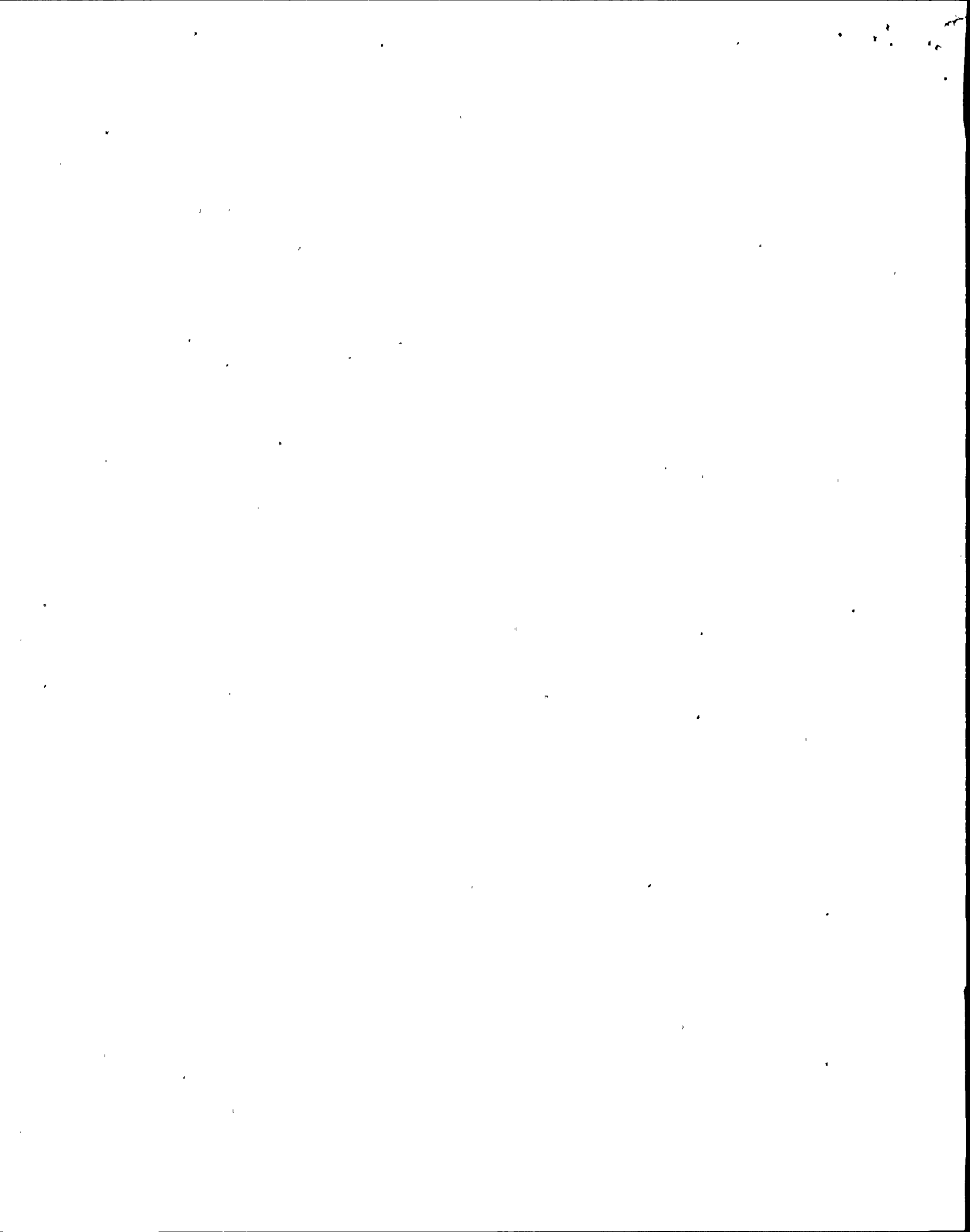
The equipment tested during the performance of this procedure is non-safety related but will be operable in Operational Conditions 1, 2, and 3 or may be inoperable in providing the applicable Limiting Conditions for Operation (LCOs) are satisfied.

1.2 Frequency

This procedure should be performed during refuel outage or more frequently as required.

1.3 Instrument/Equipment List

<u>Component ID Number</u>	<u>Safety Class</u>	<u>EQ</u>	<u>Location</u>		
			<u>Bldg.</u>	<u>Elev.</u>	<u>Col./line Azimuth</u>
2MTX-XM1A Main (McGraw-Edison)	NSR	None	345KV Swyd	261'	
2MTX-XM1B Main (McGraw-Edison)	NSR	None	345KV Swyd	261'	
2MTX-XM1C Main (McGraw-Edison)	NSR	None	345KV Swyd	261'	
2MTX-XM1D Main (McGraw-Edison)	NSR	None	345KV Swyd	261'	
* + 2STX-XNS1 Normal Station Service (G.E.)	NSR	None	115KV Swyd	261'	
* + 2RTX-XSR1A Reserve Station (G.E.)	NSR	None	115KV Swyd	261'	
* + 2RTX-XSR1B Reserve Station (G.E.)	NSR	None	115KV Swyd	261'	
* 2ABS-X1 Auxiliary Boiler (Westinghouse)	NSR	None	115KV Swyd	261'	
* 2ATX-XS1 Auxiliary Shutdown 13.8/4.2KV (GE)	NSR	None	115KV Swyd	261'	
* 2ATX-XS3 Auxiliary Shutdown 13.8/4.2KV (GE)	NSR	None	115KV Swyd	261'	





1.3 (Cont)

<u>Component ID Number</u>	<u>Safety Class</u>	<u>EQ</u>	<u>Location Bldg. Elev. Col./line Azimuth</u>
2NNS-XG016 Grounding Transformer for 2RTX-XSRIA (Hevi-Duty)	NSR	None	NS 237' AF 09.00
2NNS-XG017 Grounding Transformer for 2RTX-XSRIB (Hevi-Duty)	NSR	None	NS 237' AF 09.00
2NNS-XG018 Grounding Transformer for 2ABS-X1 (Hevi-Duty)	NSR	None	NS 237' AF 09.00

\* = Inert Gas Compartment  
+ = Tap Changers with Oil Compartments

1.4 Discussion

None

2.0 REFERENCES AND COMMITMENTS

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

2.1 Technical Specifications

Section 3/4.8, Electrical Power Systems

2.2 Licensee Documentation

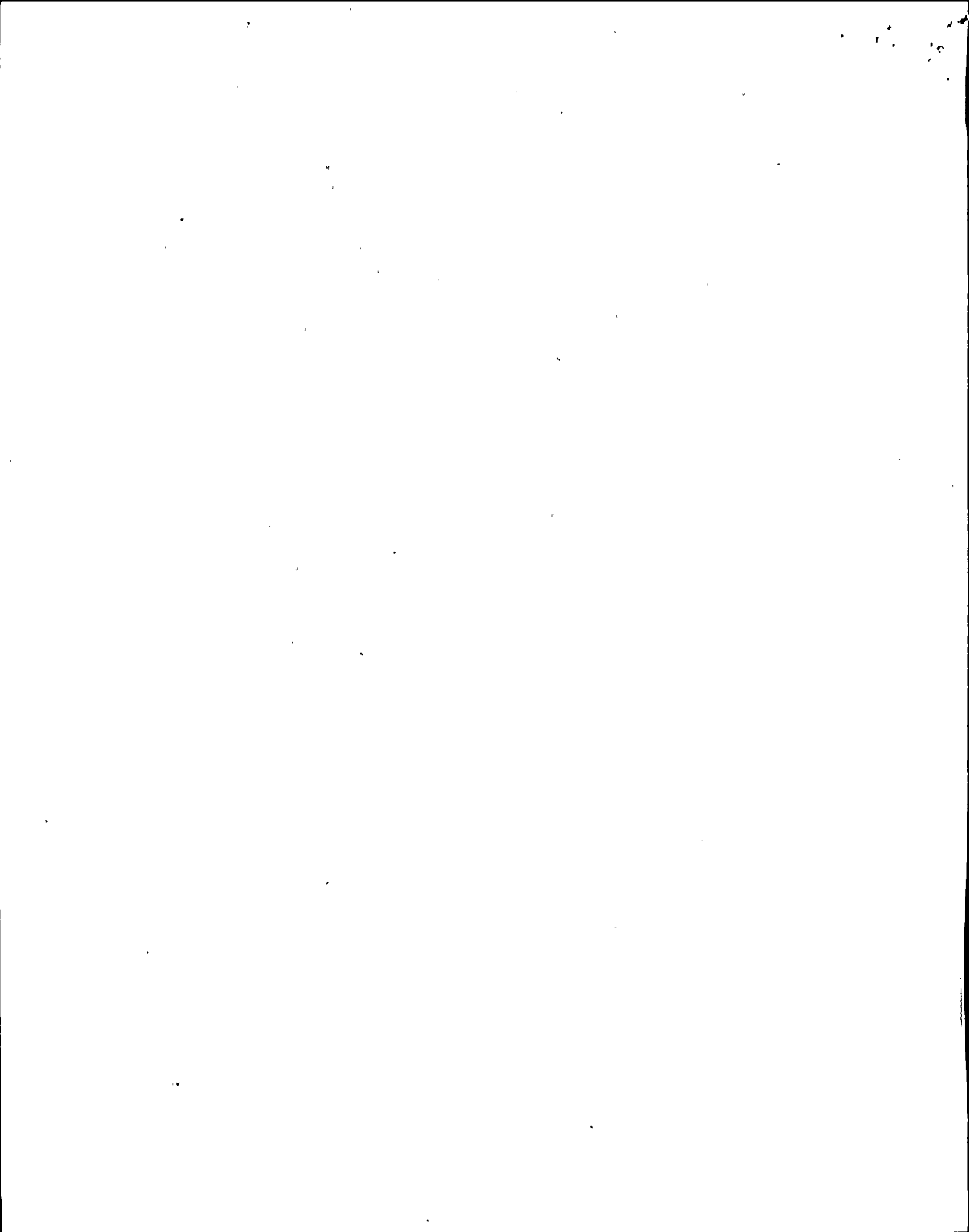
None

2.3 Standards, Regulations, and Codes

None

2.4 Policies, Programs, and Procedures

- 2.4.1 AP-4.2, Control of Equipment Markups
- 2.4.2 AP-5.2.4, Post Maintenance Testing Requirements
- 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 Modifications
- 2.4.6 NMPC Accident Prevention Rules



## 2.5 Technical Information

### 2.5.1 Drawings

- EE-1A, Main One-Line Diagram, Generator, and Main Transformers
- EE-1B, Main One-Line Diagram RSV and Normal Station SVCE Transformer, Normal 13.8KV and 600V Systems
- EE-1C, Main One-Line Diagram 4.16KV Auxiliary Transformer, Normal 4.16KV. and 600V Systems
- EE-1D, 4160V One-Line Diagram Normal Bus 2NNS-XG016, 017, and 018
- EE-11BL, 600VAC Wiring Diagram, DPNL 2NJS-PNL 400, PNL 401, PNL 402, PNL 500, and PNL 600
- EE-M01A, Plant Master One-Line Diagram Normal Power Distribution

### 2.5.2 Instruction Manuals

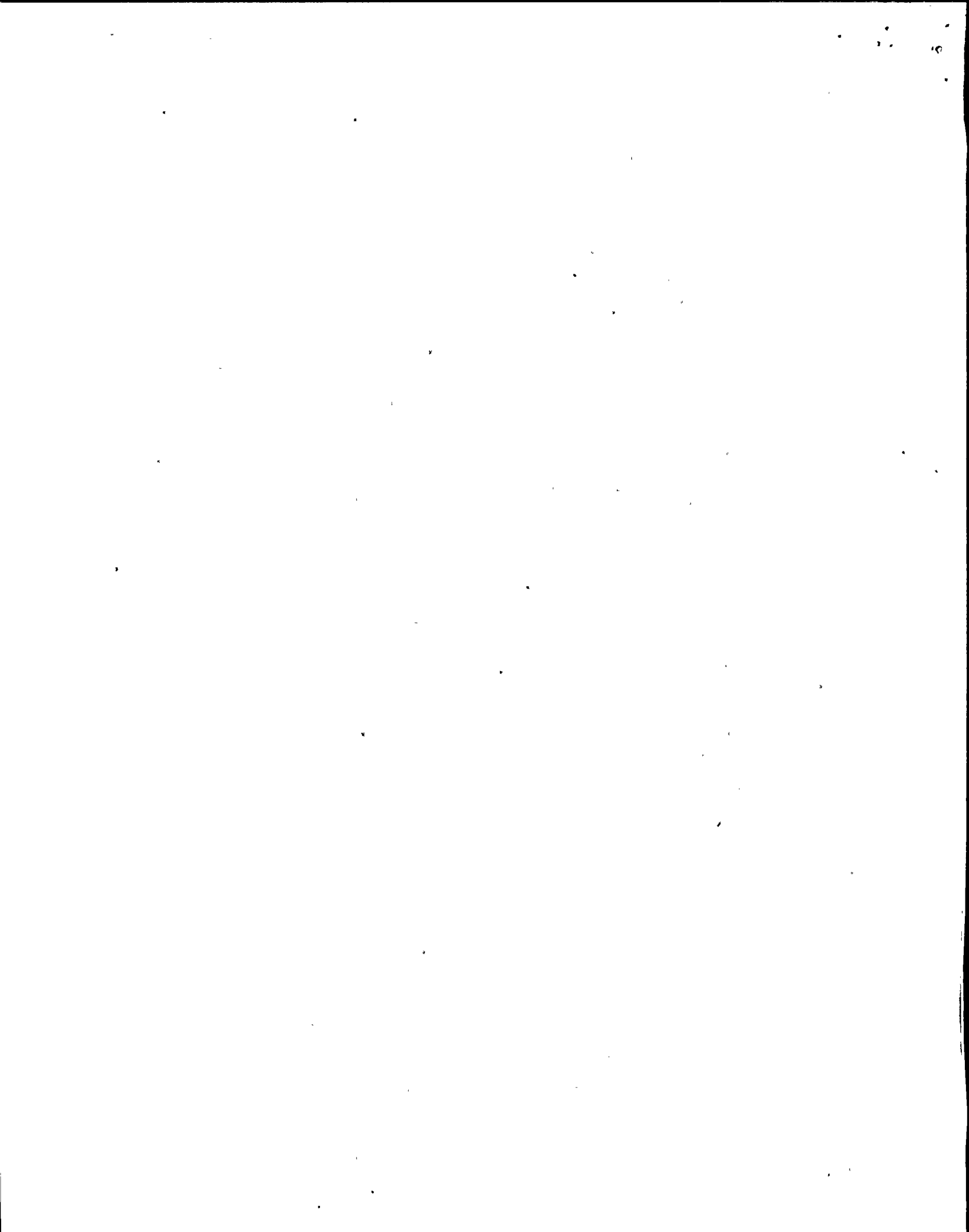
- NMPC File Sequence No. N20234, Westinghouse Instruction Book for Type SL Core Form Substation Transformers. (Auxiliary Boiler Transformer)
- NMPC File Sequence No. N20254, Hevi-Duty Electric Dry-Type-Low Voltage General Purpose Ventilated and Encapsulated Transformers. (Grounding Transformers 2NNS-XG016, 017, and 018)
- NMPC File Sequence No. N20445, McGraw-Edison Power Transformer Instruction Book. (Main Transformer)
- NMPC File Sequence No. N20448, General Electric Power Transformer Instruction Book. (Normal Station Service Transformer)
- NMPC File Sequence No. N20567, General Electric Transformer Instruction Book. (Auxiliary Shutdown Transformers-13.8/4.2KV)
- NMPC File Sequence No. N20814, General Electric Power Transformer Instruction Book. (Reserve Station Transformers)

## 2.6 Supplemental References

None

## 2.7 Implementing References

None



2.8 Commitments

<u>Sequence Number</u>	<u>NCTS Number</u>	<u>Description</u>
------------------------	--------------------	--------------------

None

3.0 TEST EQUIPMENT, SPECIAL TOOLS, AND MATERIALS

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

3.1 Test Equipment

Digital Multimeter, Fluke Model 8062A or equivalent.

3.2 Special Tools

3.2.1 Hand Grease Gun

3.2.2 Vacuum Cleaner

NOTE: Material symbol numbers are for information only.

3.3 Materials

3.3.1 Durmetal (93-40-664)

3.3.2 Bearing Lubricant (93-52-068)

3.3.3 Lint free cloth (92-91-157)

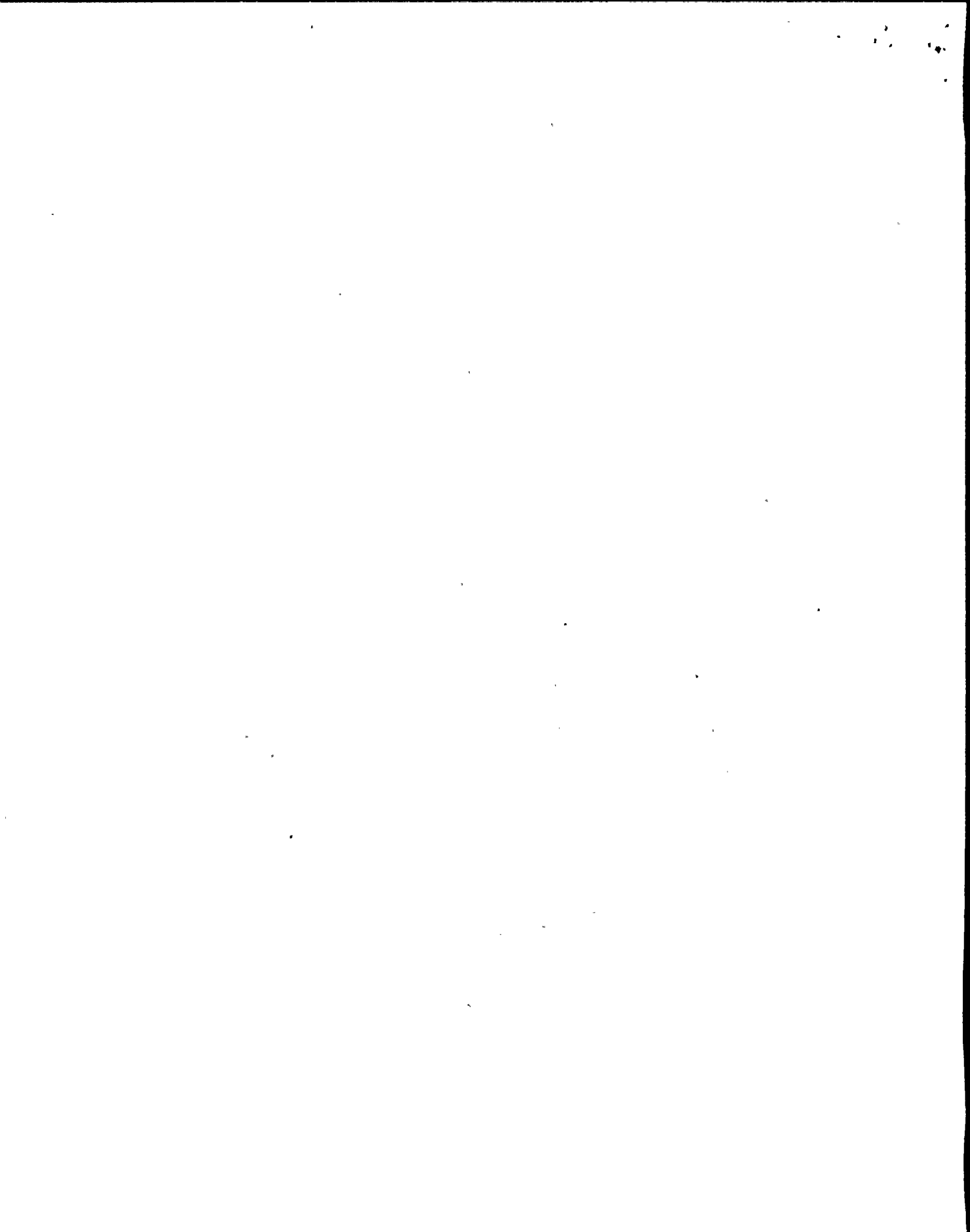
4.0 PRECAUTIONS

4.1 Rubber gloves shall be worn when working on equipment which can possibly be energized.

4.2 Before opening energized electrical cabinets in areas protected by automatic water deluge systems, consideration should be given to the consequences of an inadvertent deluge actuation such as equipment damage, increase personnel hazards, or loss of power to vital equipment. Appropriate actions should be taken to prevent or mitigate an inadvertent deluge actuation. Cabinets subject to deluge spray should remain open only as long as absolutely necessary.

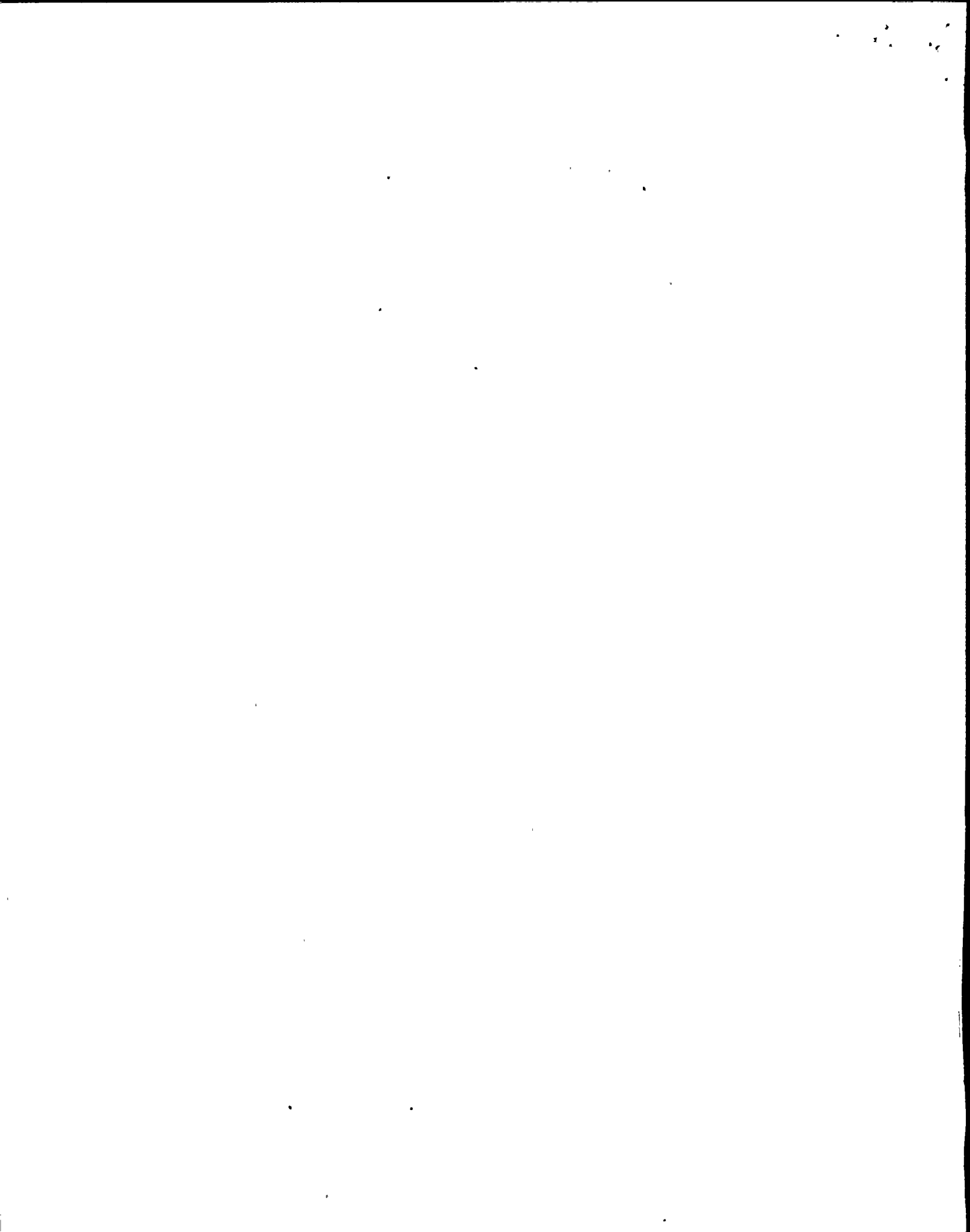
4.3 Working distances appropriate with the high voltages associated with these transformers shall be maintained.

4.4 While work is in progress temporary grounds shall be applied to Primary/Secondary and Tertiary Leads of transformers.



5.0 LIMITATIONS AND ACTIONS

- 5.1 This procedure shall be followed directly at the job site.
- 5.2 Initiation of any Work Request (WR) shall be accomplished in accordance with AP-5.5.1. Work Request for unsatisfactory items should be initiated by Step 8.1.
- 5.3 The steps contained in Section 6.0 and 8.0 do not have to be performed in the sequence indicated.
- 5.4 The sequence of Steps in Section 7.0 is not critical and may be performed in any preferred order or in parallel.
- 5.5 A (\_\_\_) indicates a checkmark should be used to signify an action is completed OR determination that a specific condition has been met.
- 5.6 Any step in the procedure that cannot be completed as stated, the Station Shift Supervisor (SSS) THEN Electrical department supervision shall be contacted immediately.
- 5.7 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 the Remarks Section.
- 5.8 All temporary modifications shall be performed in accordance with AP-6.1.
- 5.9 All placement of Markups shall be performed in accordance with AP-4.2.
- 5.10 All cleanup of equipment and space within the work area shall be done in accordance with AP-5.4.1.
- 5.11 The external surface of the component and the surrounding area should be free of foreign materials, rags, loose objects, and debris before commencing work.





Equipment ID No. \_\_\_\_\_

Initials/Date

6.0 PREREQUISITES

6.1 Plant/System Conditions

6.1.1 Plant Conditions

Verify Plant is in Operational Conditions 4 or 5 OR applicable LCO's are satisfied and equipment operation is not required.

TCN-1

6.1.2 System Conditions

Outdoor Transformers or Grounding Transformers being maintained will be de-energized and not available for service.

6.2 Administrative

6.2.1 Specify reason for procedure performance below:

- Routine Schedule
- Post Maintenance Testing  
Work Request Number \_\_\_\_\_
- Other, (Specify reason) \_\_\_\_\_

**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, 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

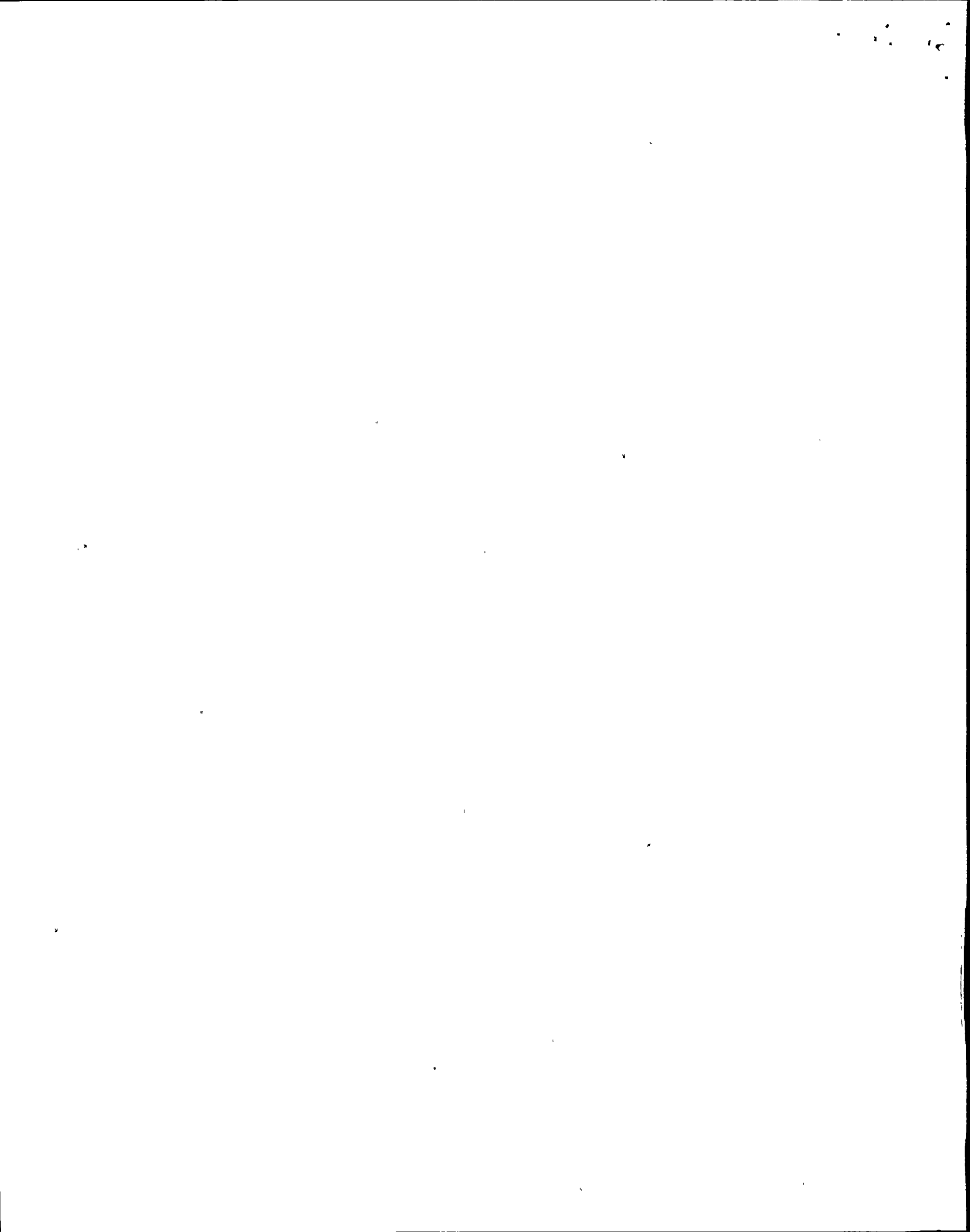
INITIALS

_____	_____
_____	_____
_____	_____
_____	_____

6.2.3 Obtain markups as necessary and record number below:

Markup Number \_\_\_\_\_  
Markup Number \_\_\_\_\_

N/A, No Markup required..... ( ) \_\_\_\_\_



Equipment ID No. \_\_\_\_\_

Initials/Date

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

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

<u>M&amp;TE Nomenclature</u>	<u>M&amp;TE Number</u>	<u>Range(s) Used</u>	<u>Calibration Due Date</u>
<u>Multimeter</u>	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

6.2.5 Record Equipment ID in space provided at top of each page.

6.3 Notify QA Surveillance Department of intent to perform procedure. Record name of person contacted, time, and date. If message is left on answering machine, enter "machine" in the "Person Contacted" space below.

Person Contacted \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

**NOTE:** Section 7.0 may be completed with unsatisfactory items.

7.0 PROCEDURE

7.1 Preliminary Actions

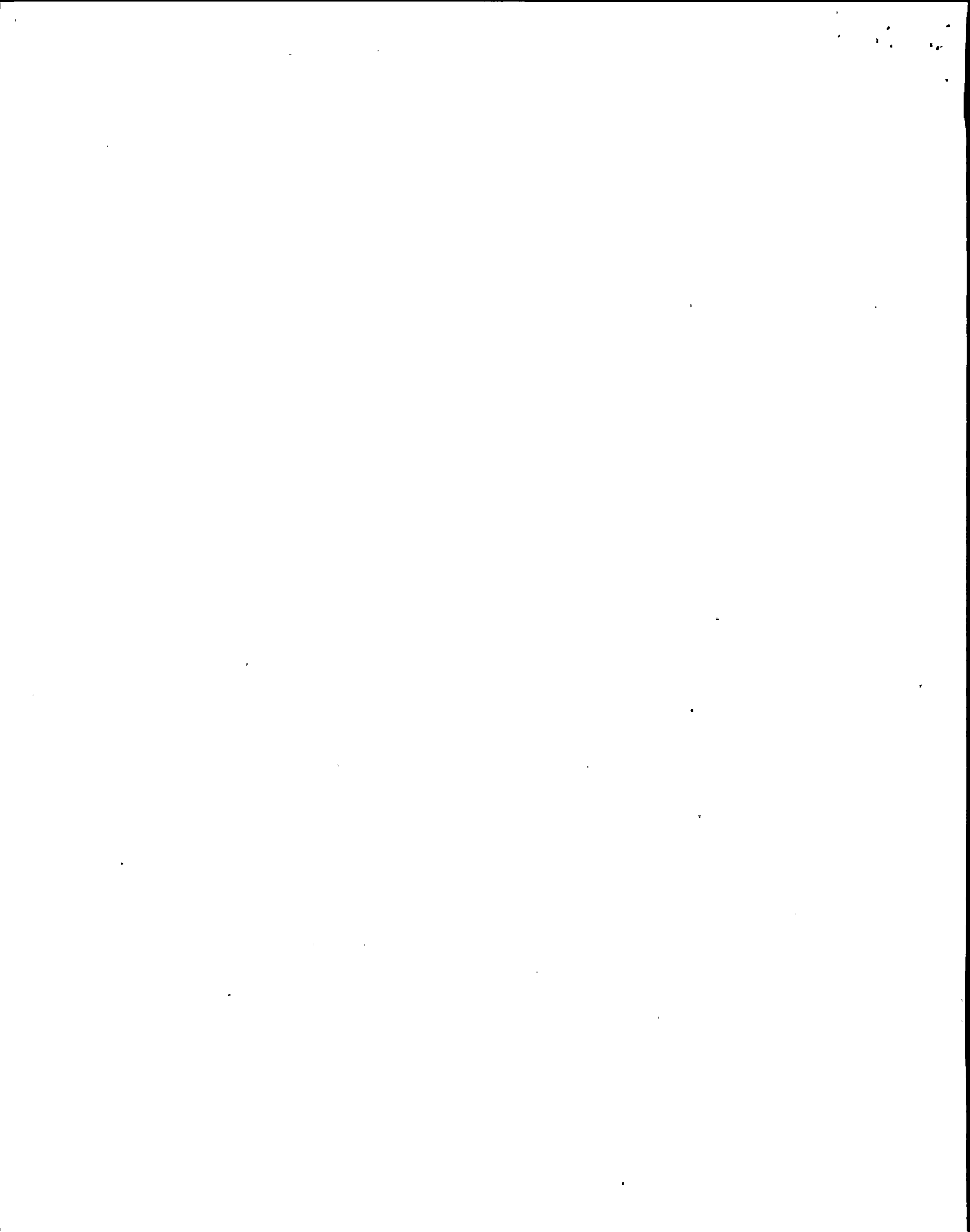
7.1.1 Discuss Plant Impact and resulting effect on plant due to performance of this procedure with Station Shift Supervisor (SSS) and Chief Shift Operator (CSO).

- PLANT IMPACT:**
1. LIFTED LEADS MAY HAVE TO BE PERFORMED.
  2. EQUIPMENT BEING MAINTAINED WILL NOT BE AVAILABLE FOR SERVICE.

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

SSS Signature \_\_\_\_\_ Date \_\_\_\_\_

CSO Signature \_\_\_\_\_ Date \_\_\_\_\_



Equipment ID No. \_\_\_\_\_

Initials/Date \_\_\_\_\_

7.1.3 Notify CSO of commencement and record start time/date.

Start Time \_\_\_\_\_ / \_\_\_\_\_  
Date

\_\_\_\_\_ / \_\_\_\_\_

**WARNING**

Before opening energized electrical cabinets in areas protected by automatic water deluge systems, consideration should be given to the consequences of an inadvertent deluge actuation such as equipment damage, increase personnel hazards, or loss of power to vital equipment. Appropriate actions should be taken to prevent or mitigate an inadvertent deluge actuation. Cabinets subject to deluge spray should remain open only as long as absolutely necessary.

7.2 Transformer Checks

Section 7.2 N/A, Grounding Transformer maintenance..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.2.1 Ensure Markups are completed AND tags are hung. Complete as necessary.

Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.2.2 Ensure Primary/Secondary and Tertiary Winding grounds are installed. Install as necessary.

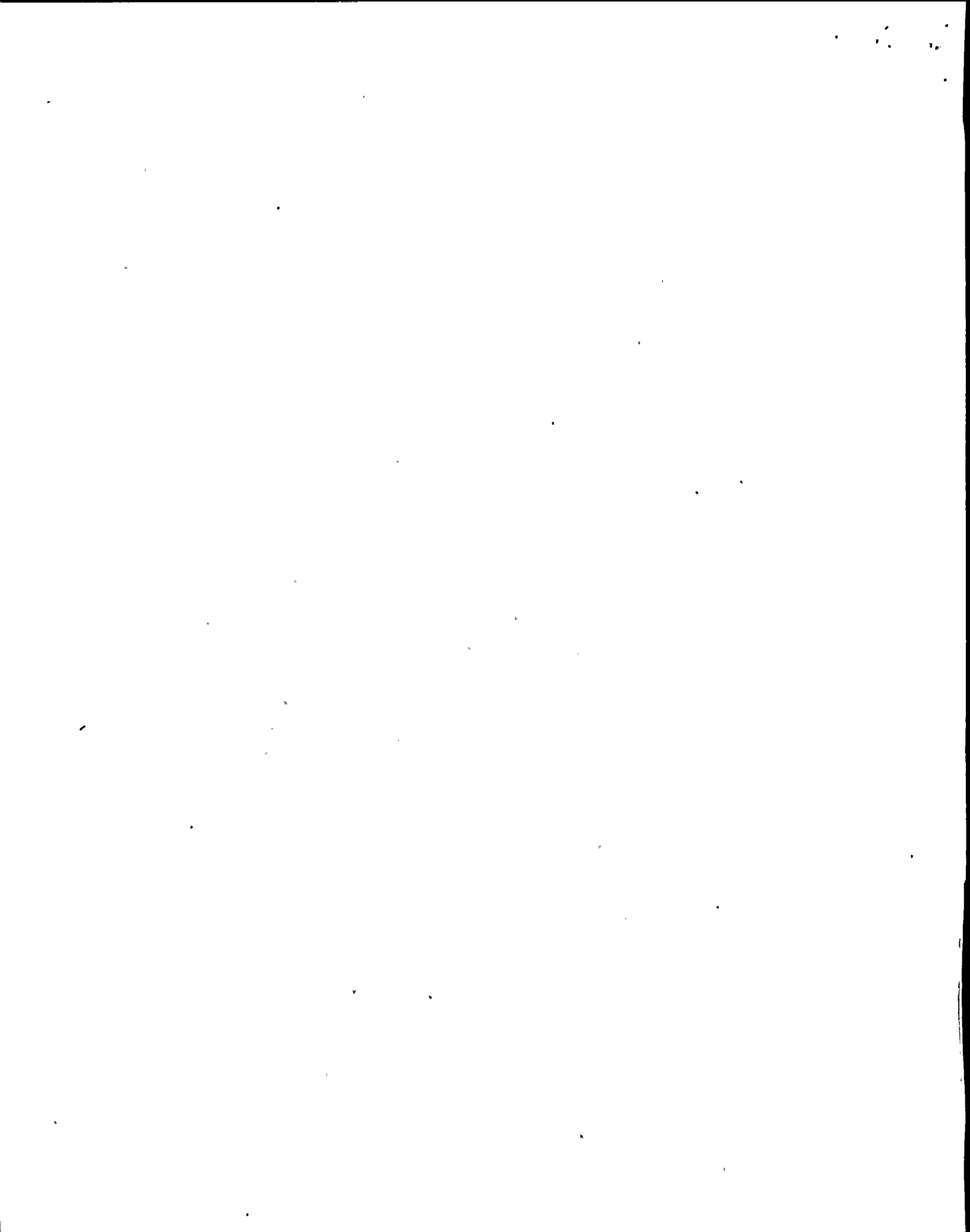
Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.2.3 Install means to access all external components of Transformer.

\_\_\_\_\_ / \_\_\_\_\_

7.2.4 Check Transformer for paint deterioration and rust, especially weld areas, bends, and bolted areas.

Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_



Equipment ID No. \_\_\_\_\_

Initials/Date

7.2.5 Check Transform and attached accessories for indications of oil leaks. This includes discoloration and oil films near seams and bolted connections. Repair as necessary with Durmetal and record in Section 10.0.

Satisfactory..... ( )  
Repaired..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.2.6 Check Transformer Oil Level.

Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.2.7 Clean Transformer surfaces as necessary.

\_\_\_\_\_ / \_\_\_\_\_

7.2.8 Check Gasketing Materials that are visible for deterioration and damage.

Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.3 Heat Exchanger Checks

Section 7.3 N/A, Grounding Transformer maintenance..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.3.1 Remove Cooling Fan Guards.

\_\_\_\_\_ / \_\_\_\_\_

7.3.2 Clean Heat Exchangers of all dirt and grime, especially in the Cooling Fin and Cooling Fan areas.

\_\_\_\_\_ / \_\_\_\_\_

7.3.3 Check for damage or deterioration in the Cooling Fin and Cooling Fan areas. Repair as necessary and record in Section 10.0.

Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.3.4 Check Cooling Fin area for paint deterioration and rust.

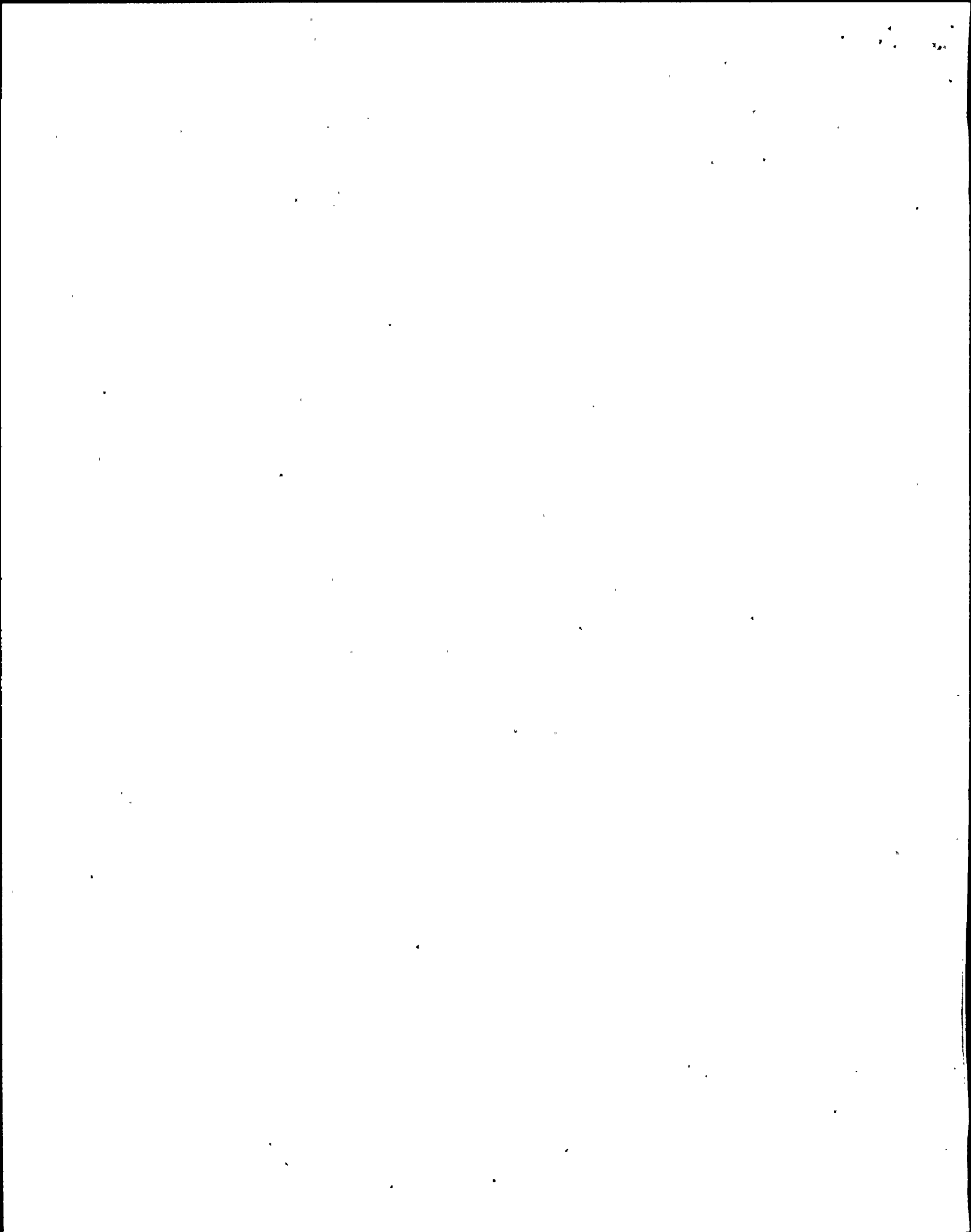
Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.3.5 Check Cooling Fan Blades for tightness and guard clearance. Tighten as necessary.

Satisfactory..... ( )  
Tightened..... ( )

\_\_\_\_\_ / \_\_\_\_\_





Equipment ID No. \_\_\_\_\_

Initials/Date

7.3.6 Lubricant Cooling Fan Bearings with Bearing Lubricant (93-52-068).

N/A, Lubrication not required..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.3.7 Install Cooling Fan Guards.

\_\_\_\_\_ / \_\_\_\_\_

7.4 Tap Changer Checks

Section 7.4 N/A, Grounding Transformer maintenance..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.4.1 Check Tap Changers for oil leaks.

Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.4.2 Check Oil Level at Tap Changers.

Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.5 Insulator and Bushing Checks

Section 7.5 N/A, Grounding Transformer maintenance..... ( )

7.5.1 Clean dirt and grime from all Insulators and Bushings.

\_\_\_\_\_ / \_\_\_\_\_

7.5.2 Check all Insulators and Bushings for the following:

• Cracks

Satisfactory..... ( )  
Unsatisfactory..... ( )

• Streaks

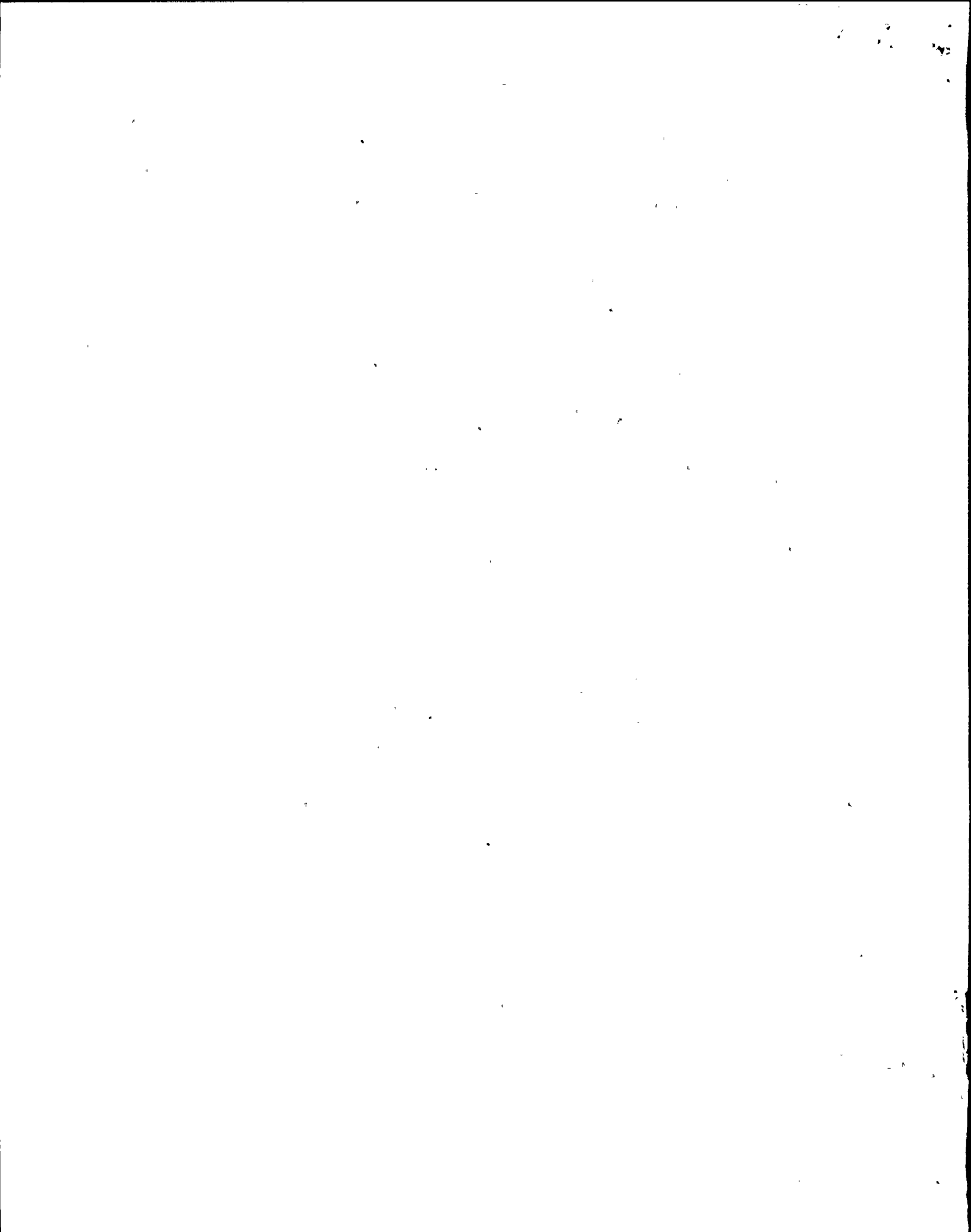
Satisfactory..... ( )  
Unsatisfactory..... ( )

• Discoloration

Satisfactory..... ( )  
Unsatisfactory..... ( )

• Loose Connections

Satisfactory..... ( )  
Tightened..... ( )



Equipment ID No. \_\_\_\_\_

Initials/Date

7.5.2 (Cont)

- Excessive Strain

Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_/

7.5.3 Check Oil Filled Bushings for indications of oil leaks.

Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_/

7.5.4 Check Oil Level in Bushing.

Satisfactory..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_/

7.6 Control Panel Checks

Section 7.6 N/A, Grounding Transformer maintenance..... ( )

7.6.1 Check Control Panel Door Gaskets for damage or deterioration. Repair or replace as necessary and record in Section 10.0.

Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )

\_\_\_\_\_/

7.6.2 Check Control Panel for evidence of moisture or corrosion. Clean as necessary.

Satisfactory..... ( )  
Cleaned..... ( )

\_\_\_\_\_/

7.6.3 Check Electrical Wires for deterioration or damage due to heat. Replace as necessary.

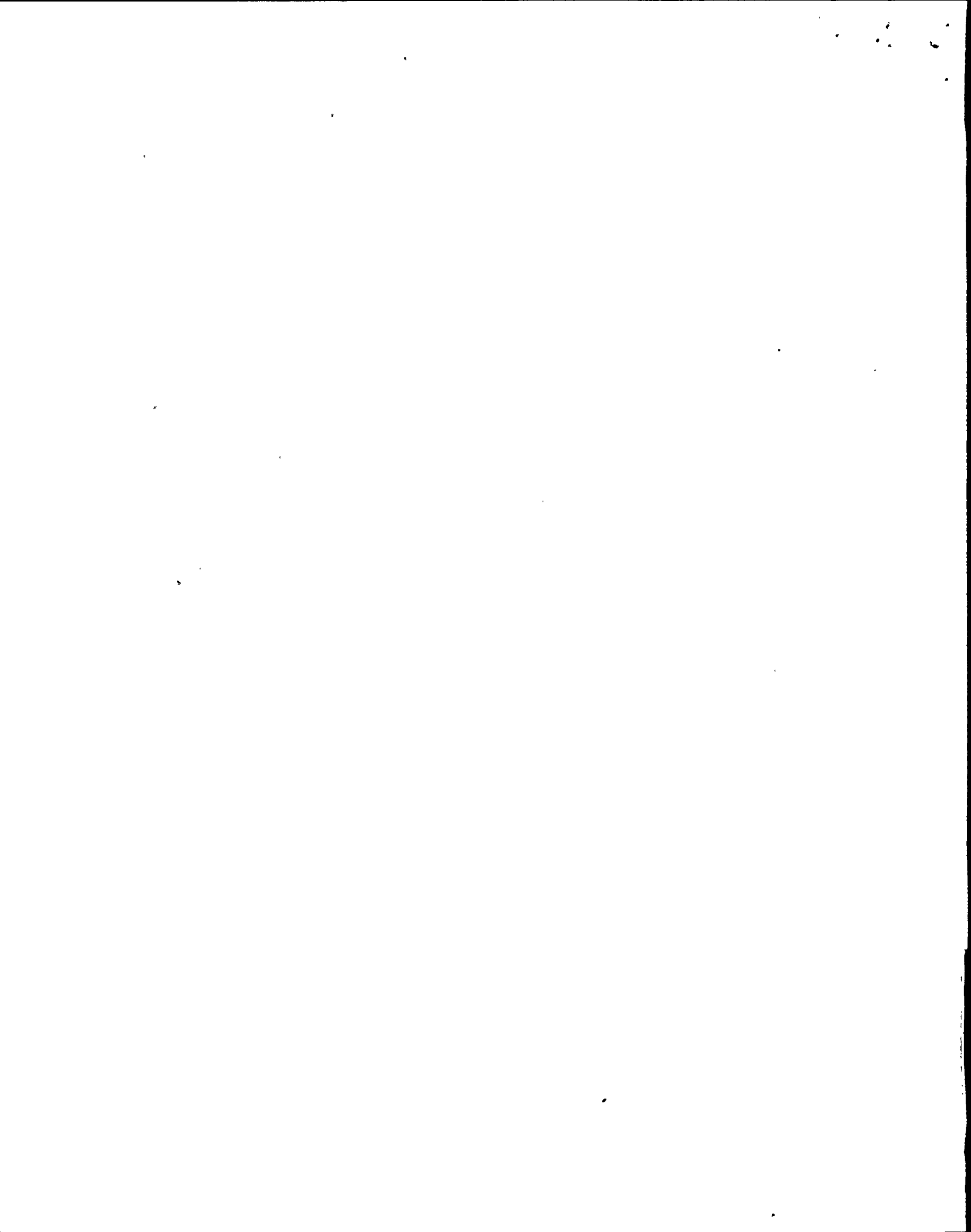
Satisfactory..... ( )  
Replaced..... ( )

\_\_\_\_\_/

7.6.4 Check Electrical Connections for tightness. Tighten as necessary.

Satisfactory..... ( )  
Tightened..... ( )

\_\_\_\_\_/



Equipment ID No. \_\_\_\_\_

Initials/Date

7.6.5 Check Electrical Relay Contacts for wear and damage. Repair or replace as necessary and record in Section 10.0.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.6.6 Check, manually, the Electrical Relays for smooth mechanical operation. Repair or replace as necessary and record in Section 10.0.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.6.7 Check Electrical Control Panel Heaters for deterioration or damage. Repair or replace as necessary and record in Section 10.0.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.6.8 Check Light Switches AND Lights/Lamps for proper operation. Repair or replace as necessary.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.6.9 Check Control Fuses for continuity and tightness in Fuse Holders. Repair or replace as necessary.

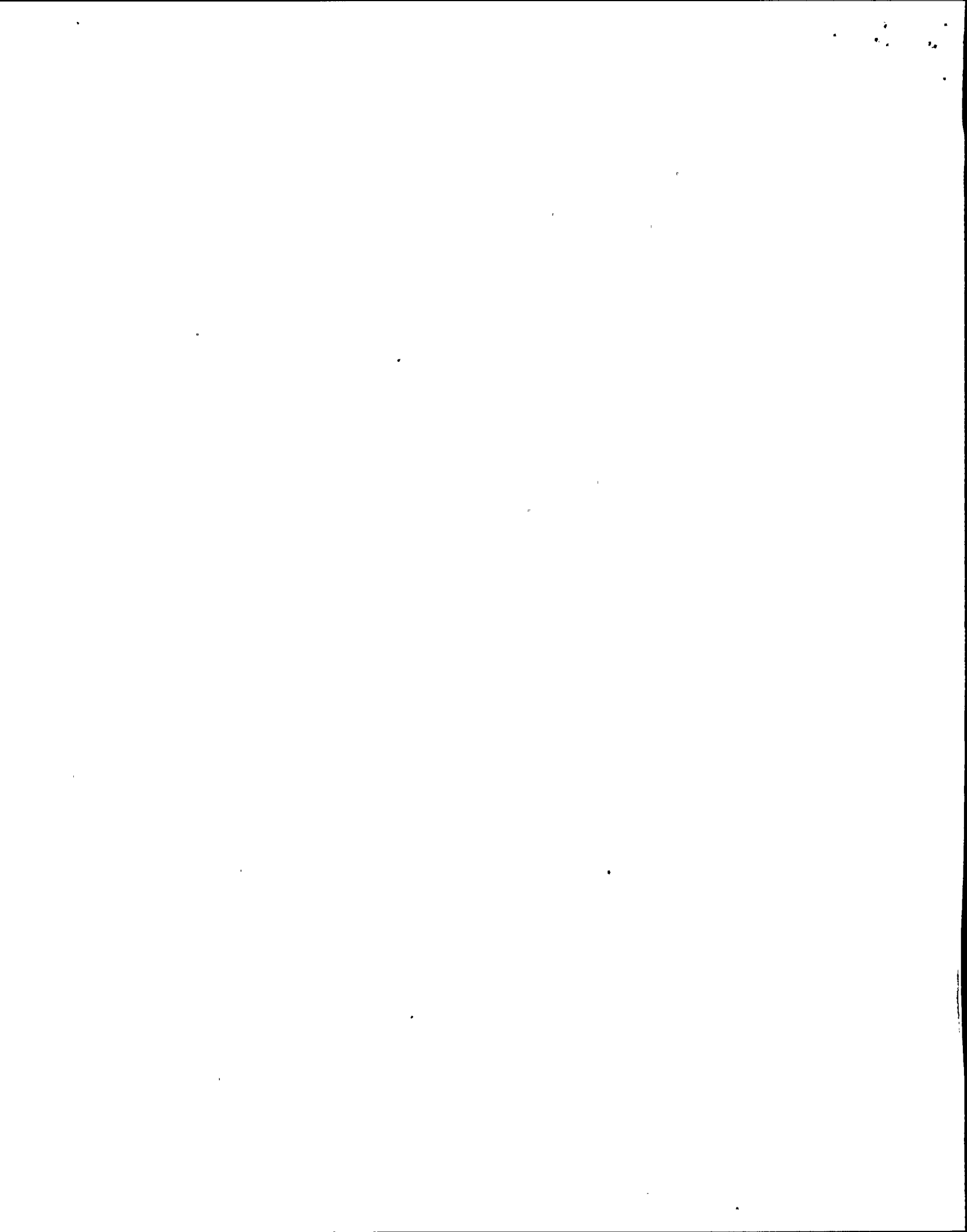
- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.6.10 Check Control Fuse Holders for deterioration. Repair or replace as necessary and record in Section 10.0.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )

\_\_\_\_\_ / \_\_\_\_\_



Equipment ID No. \_\_\_\_\_

Initials/Date

7.6.11 Check Motor Contactors Contacts for wear and damage. Repair or replace as necessary and record in Section 10.0.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.6.12 Check, manually, Motor Contactors for smooth mechanical operation. Repair or replace as necessary and record in Section 10.0.

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7 Transformer Electrical Connection Checks

Section 7.7 N/A, Grounding Transformer maintenance..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7.1 Check Transformer Power Connections for indications of arcing or overheating. Repair as necessary.

- Satisfactory..... ( )
- Repaired..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7.2 Check Transformer Power Connections for excessive strains. Repair as necessary.

- Satisfactory..... ( )
- Repaired..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7.3 Check tightness of Transformer Power Connections. Tighten as necessary.

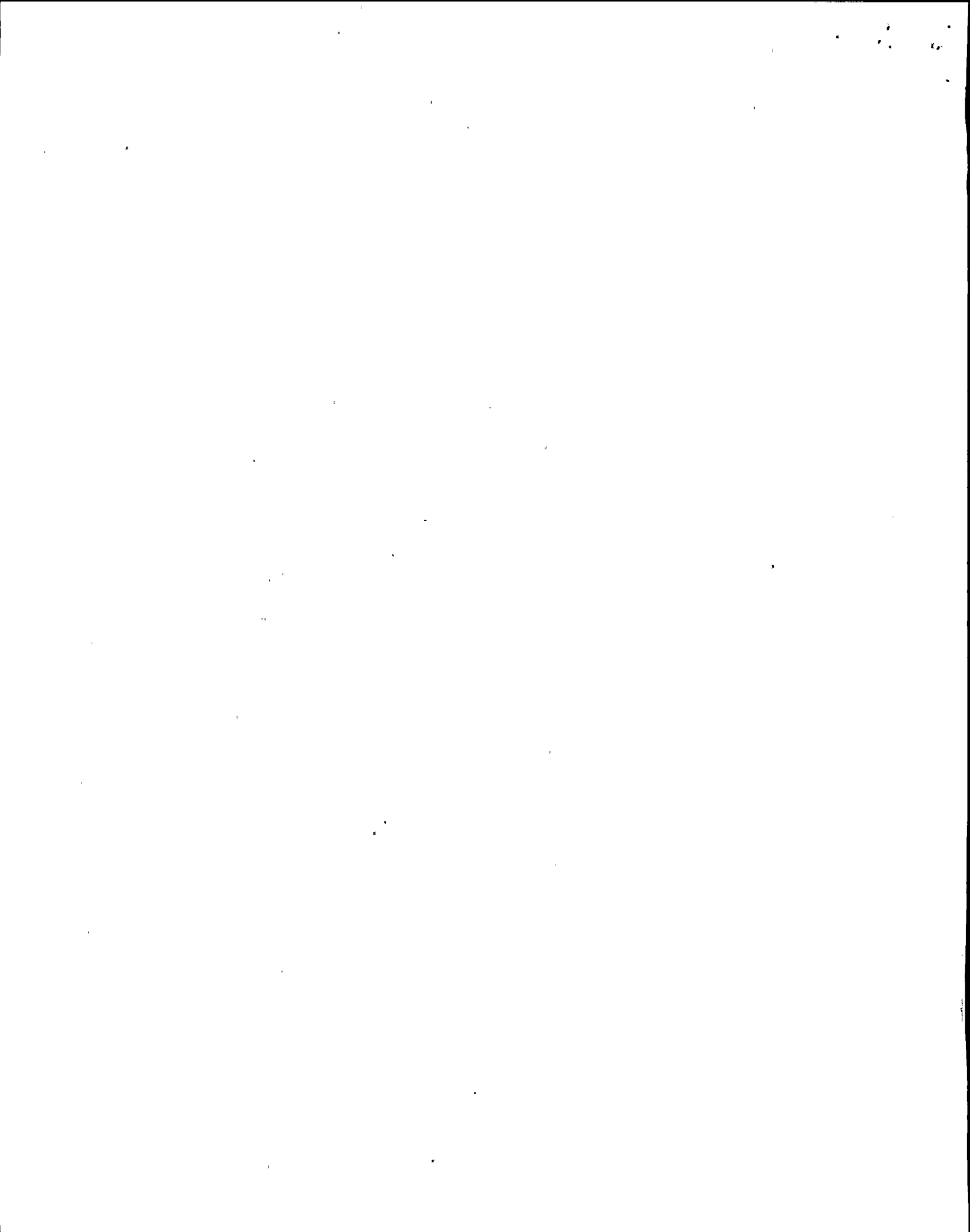
- Satisfactory..... ( )
- Tightened..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7.4 Check tightness of Transformer Ground Connections. Tighten as necessary.

- Satisfactory..... ( )
- Tightened..... ( )

\_\_\_\_\_ / \_\_\_\_\_





7.7.5 Check the following Transformer Ground Equipment for damage and deterioration. Repair or replace as necessary an record in Section 10.0.

• Ground Leads

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

• Ground Resistors

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

• Ground Switches (For Reserve Station Transformers 2RTX-XSR1A and 2RTX-XSR1B only)

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

N/A, Not 2RTX-XSR1A or 2RTX-XSR1B..... ( )

• Ground Buses

- Satisfactory..... ( )
- Repaired..... ( )
- Replaced..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7.6 Check Transformer Power Buses for damage and deterioration.

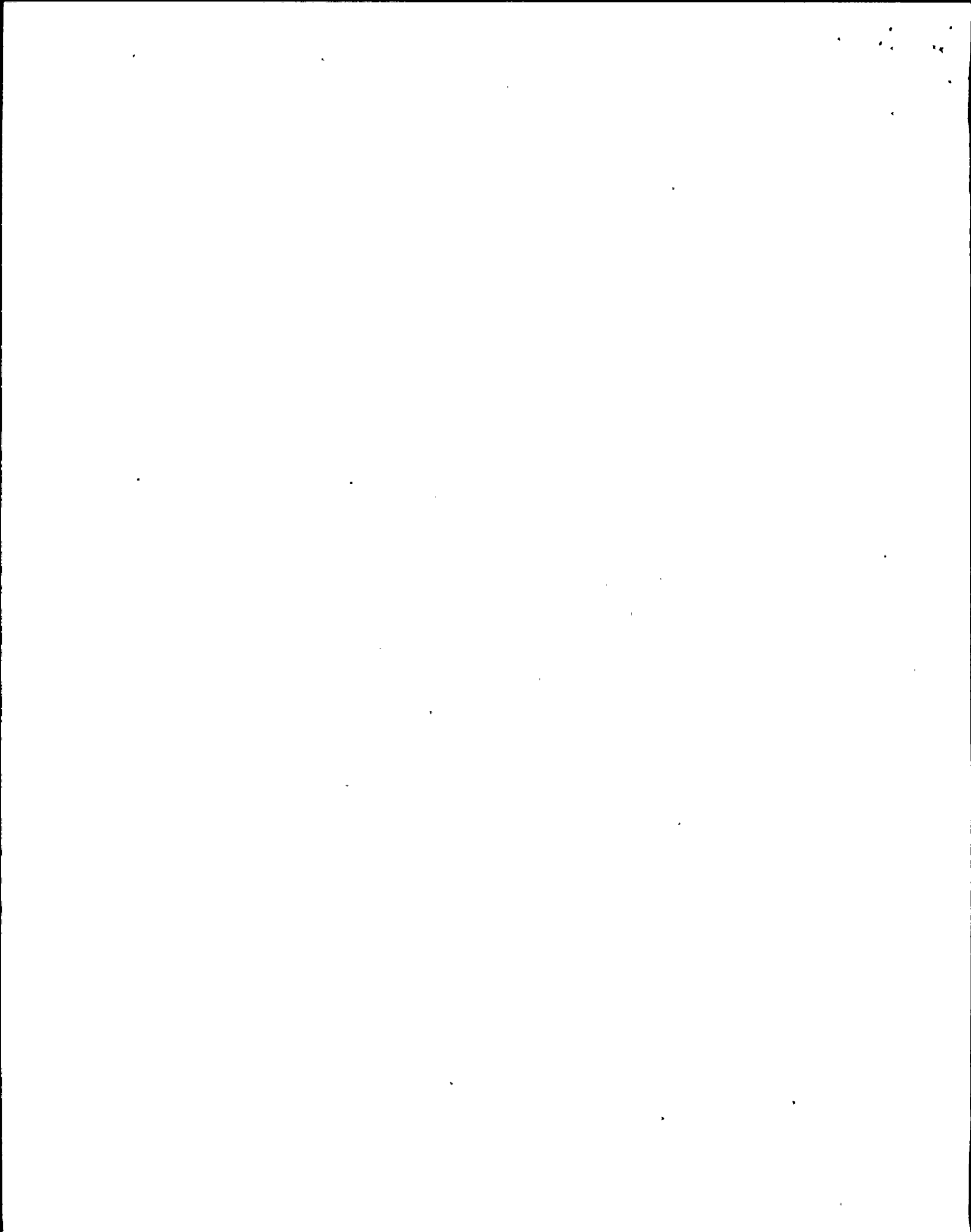
- Satisfactory..... ( )
- Unsatisfactory..... ( )

\_\_\_\_\_ / \_\_\_\_\_

7.7.7 Check all Electrical Devices, mounted on exterior of Transformer, for connection tightness. Tighten as necessary.

- Satisfactory..... ( )
- Tightened..... ( )

\_\_\_\_\_ / \_\_\_\_\_



Equipment ID No. \_\_\_\_\_

Initials/Date

7.7.8 Check all Electrical Devices, mounted on exterior of Transformer, for connection damage and deterioration. Repair or replace as necessary and record in Section 10.0.

Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )  
Unsatisfactory..... ( )

\_\_\_\_\_/

7.7.9 Check Condulet Covers for weather-tightness and missing hardware. Repair or replace as necessary.

Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )

\_\_\_\_\_/

7.7.10 Check Terminal Blocks for deterioration and damage. Repair or replace as necessary and record in Section 10.0.

Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )

\_\_\_\_\_/

7.7.11 Check Electrical Connections at Terminal Blocks for tightness. Tighten as necessary.

Satisfactory..... ( )  
Tightened..... ( )

\_\_\_\_\_/

7.8 Lightning Arrestor Checks

Section 7.8 N/A, Grounding Transformer maintenance..... ( )

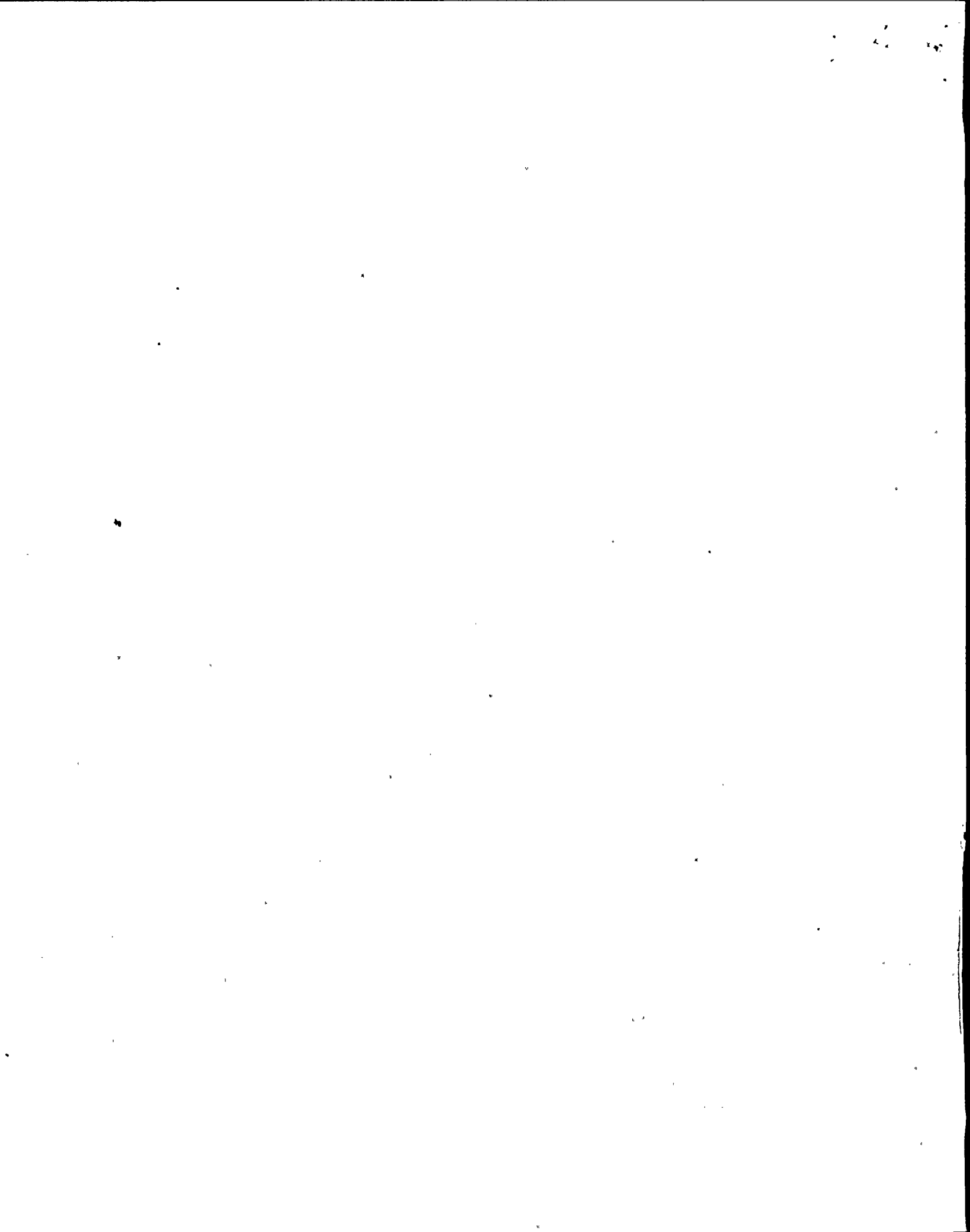
\_\_\_\_\_/

7.8.1 Clean Lightning Arrestors.

7.8.2 Check Connections for tightness. Tighten as necessary.

Satisfactory..... ( )  
Tightened..... ( )

\_\_\_\_\_/



Equipment ID No. \_\_\_\_\_

Initials/Date

7.9 Grounding Transformer Checks

Section 7.9 N/A, Equipment being maintained is not a Grounding Transformer..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.9.1 Verify Grounding Transformer is de-energized and windings are temporarily grounded. \_\_\_\_\_ / \_\_\_\_\_

7.9.2 Remove enclosure panels. \_\_\_\_\_ / \_\_\_\_\_

7.9.3 Clean interior of enclosure and exterior of transformer with vacuum cleaner and lint free cloth. \_\_\_\_\_ / \_\_\_\_\_

7.9.4 Check terminations for any damage due to overheating. Repair as necessary.

Satisfactory..... ( )  
Repaired..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.9.5 Check for loose terminations. Tighten as necessary.

Satisfactory..... ( )  
Tightened..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.9.6 Check terminal boards for any cracks or other damage. Replace as necessary.

Satisfactory..... ( )  
Replaced..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.9.7 Check exterior of transformer for any damage due to overheating.

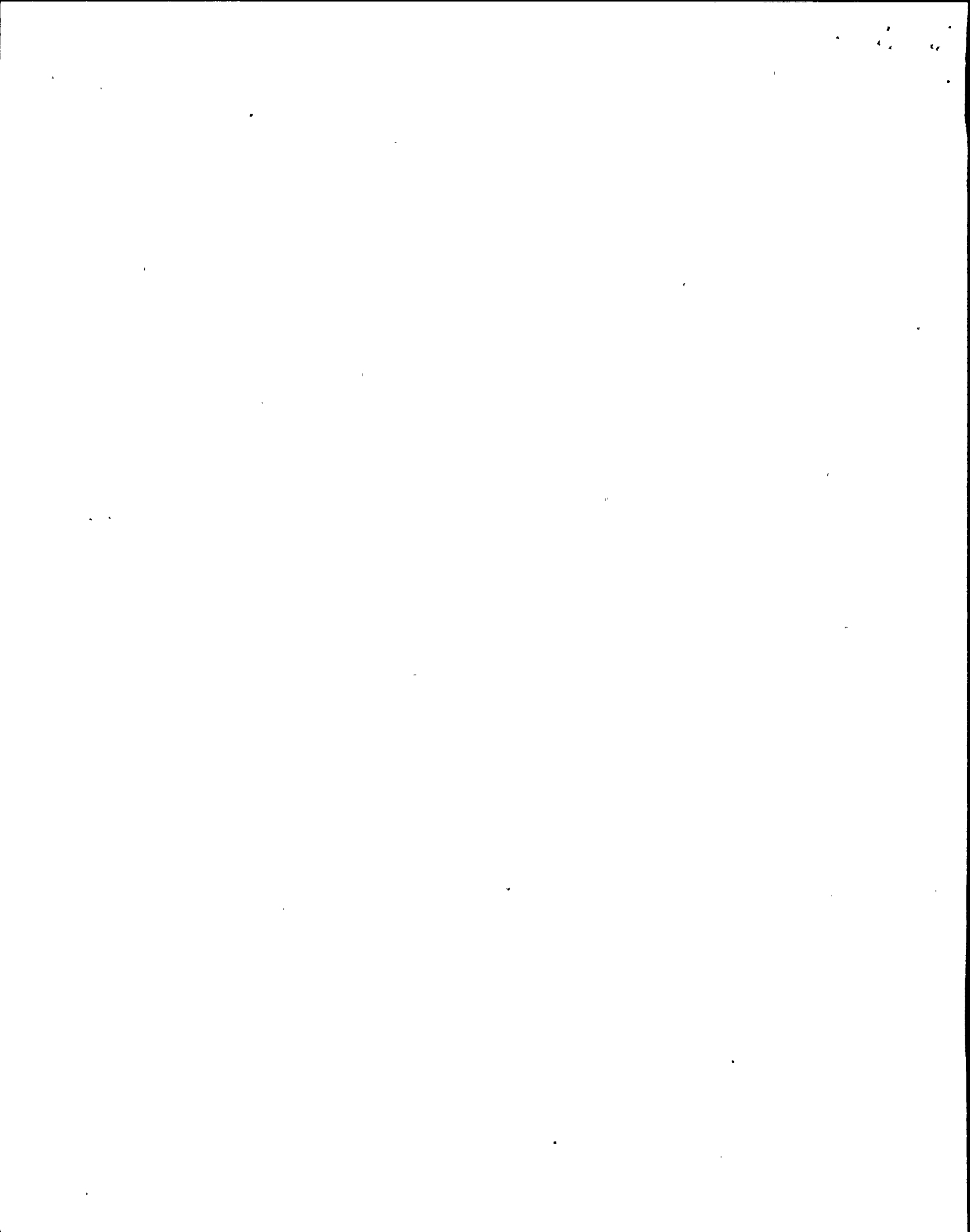
Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.9.8 Check transformer insulation for any deterioration.

Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ / \_\_\_\_\_

7.9.9 Remove temporary grounds. \_\_\_\_\_ / \_\_\_\_\_

7.9.10 Replace enclosure panels. \_\_\_\_\_ / \_\_\_\_\_



7.10 Maintenance Testing

Section 7.10 N/A, Grounding Transformer maintenance..... ( ) \_\_\_\_\_ /

7.10.1 Check for smooth operation of all Heat Exchanger Cooling Fans. Repair or replace as necessary and record in Section 10.0.

N/A, Grounding Transformer maintenance..... ( )  
Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ /

7.10.2 Check operability of Oil Pumps. Repair or replace as necessary and record in Section 10.0.

N/A, Grounding Transformer maintenance..... ( )  
Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ /

7.10.3 Check operability or electrically controlled Tap Changers.

N/A, Grounding Transformer maintenance..... ( )  
Satisfactory..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ /

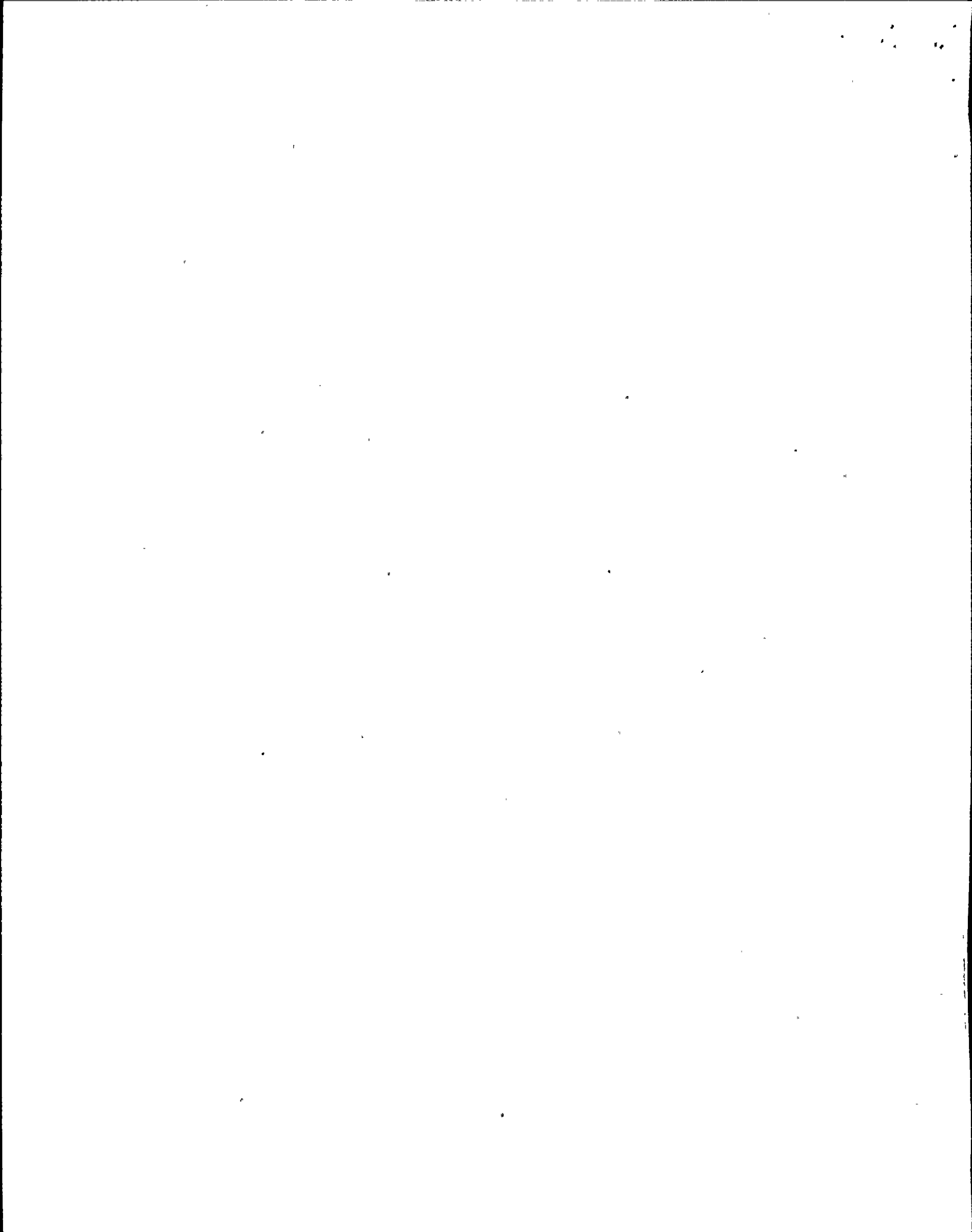
7.10.4 Check operability of Electric Heaters located in Control Panels. Repair or replace as necessary and record in Section 10.0.

N/A, Grounding Transformer maintenance..... ( )  
Satisfactory..... ( )  
Repaired..... ( )  
Replaced..... ( )  
Unsatisfactory..... ( ) \_\_\_\_\_ /

**NOTE:** Attachment 1, Applicability List, should be referenced when performing Section 7.11.

7.11 Transformer Annunciator Tests

Section 7.11 N/A, Grounding Transformer maintenance..... ( ) \_\_\_\_\_ /





Equipment ID No. \_\_\_\_\_

Initials/Date

**NOTE:** Step 7.11.1 requires independent verification on Attachment 3, Lifted Lead and Jumper Log.

7.11.1 Lift wires, install jumpers or block devices as necessary to simulate Annunciator monitored conditions. Record on Attachment 3. \_\_\_\_\_ / \_\_\_\_\_

**NOTE:** Attachment 2, Annunciator Test Data Sheets, should be referenced when performing Step 7.11.2.

7.11.2 Verify Transformer Annunciator points are operable and record on specific Data sheet (Attachment 2) for Transformer being maintained. \_\_\_\_\_ / \_\_\_\_\_

**NOTE:** Step 7.11.3 requires independent verification on Attachment 3.

7.11.3 Connect wires, remove jumpers, or blocks as necessary to restore circuit to normal conditions. Record on Attachment 3, Lifted Lead and Jumper Log. \_\_\_\_\_ / \_\_\_\_\_

8.0 RETURN TO NORMAL

8.1 Notify Electrical supervision of any unsatisfactory items, THEN initiate a Work Request to correct any unsatisfactory items.

N/A, No unsatisfactory items..... ( ) \_\_\_\_\_ / \_\_\_\_\_

8.2 Perform a general cleanup of all equipment and space within the work area. \_\_\_\_\_ / \_\_\_\_\_

8.3 Notify CSO and SSS of maintenance completion and that equipment is available for Post Maintenance Testing (PMT). The following PMT is recommended:

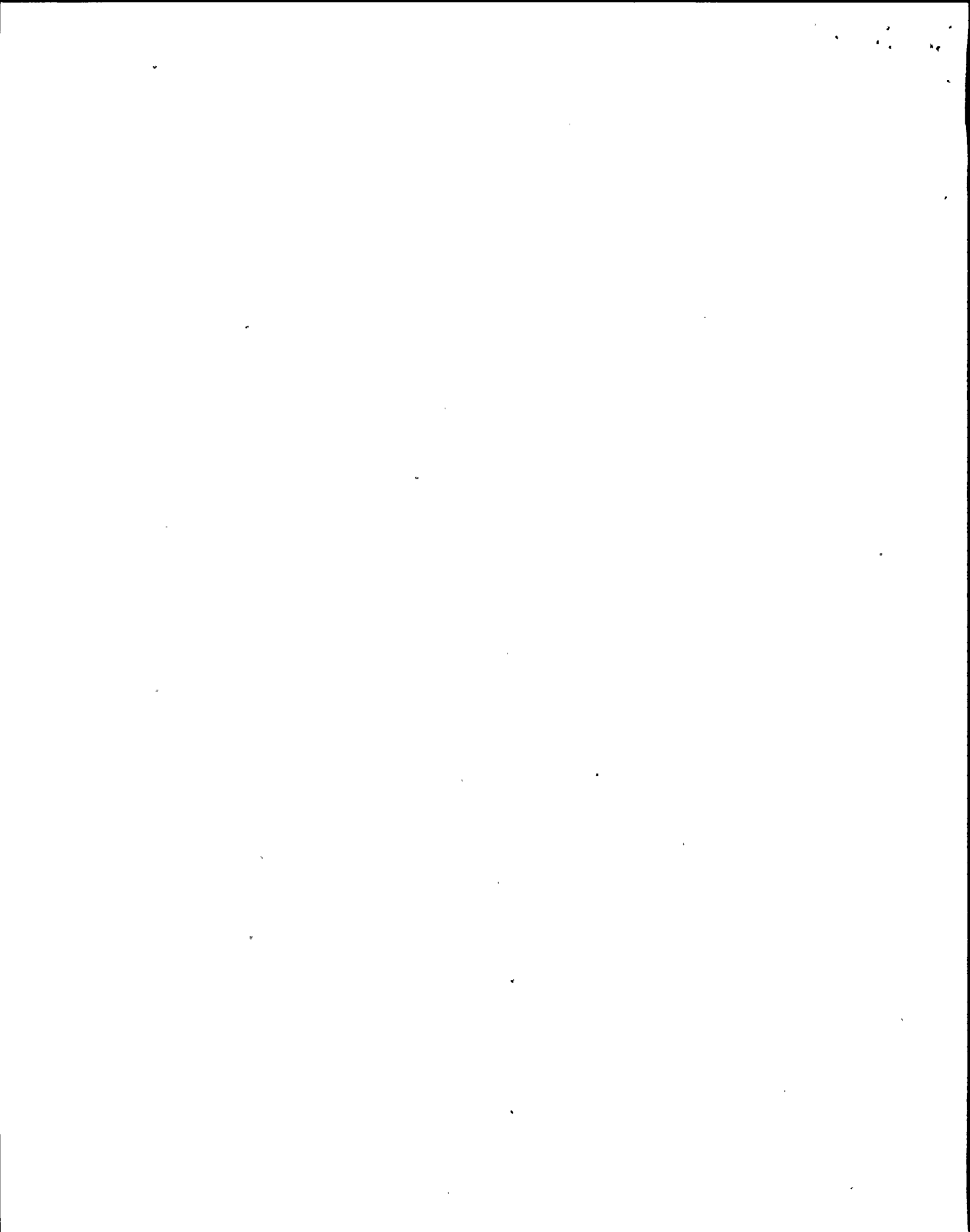
- Power Transformer operability test (primary/secondary voltage and current)
- \_\_\_\_\_ / \_\_\_\_\_

8.4 Record stop time/date and have CSO and SSS acknowledge completion by obtaining their initials.

Stop Time	_____ / _____	Date	_____	CSO Initials	_____	SSS Initials	_____	_____ / _____
-----------	---------------	------	-------	--------------	-------	--------------	-------	---------------

8.5 Coordinate with Operations to clear Equipment Markup, after completion of maintenance activity.

N/A no Markup required..... ( ) \_\_\_\_\_ / \_\_\_\_\_



Equipment ID No. \_\_\_\_\_

Initials/Date \_\_\_\_\_

8.6 Record test equipment ranges used during the performance of this procedure in Step 6.2.4. Complete Calibration Log card for each piece of M&TE utilized.

\_\_\_\_\_ / \_\_\_\_\_

9.0 ACCEPTANCE CRITERIA

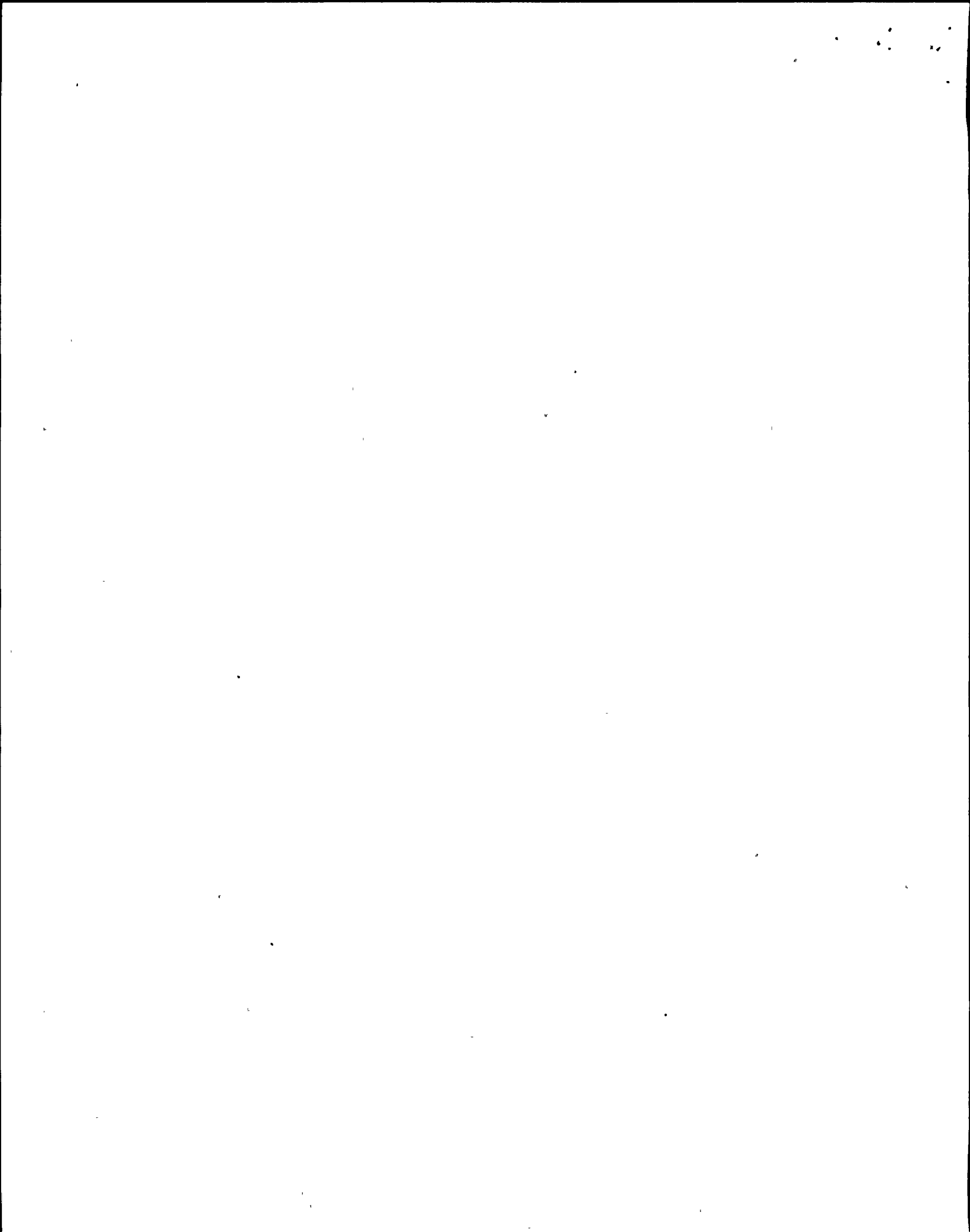
All parts are reassembled AND all available equipment that is associated with power or grounding transformer are functional.

\_\_\_\_\_ / \_\_\_\_\_

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: \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_



Equipment ID No. \_\_\_\_\_

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

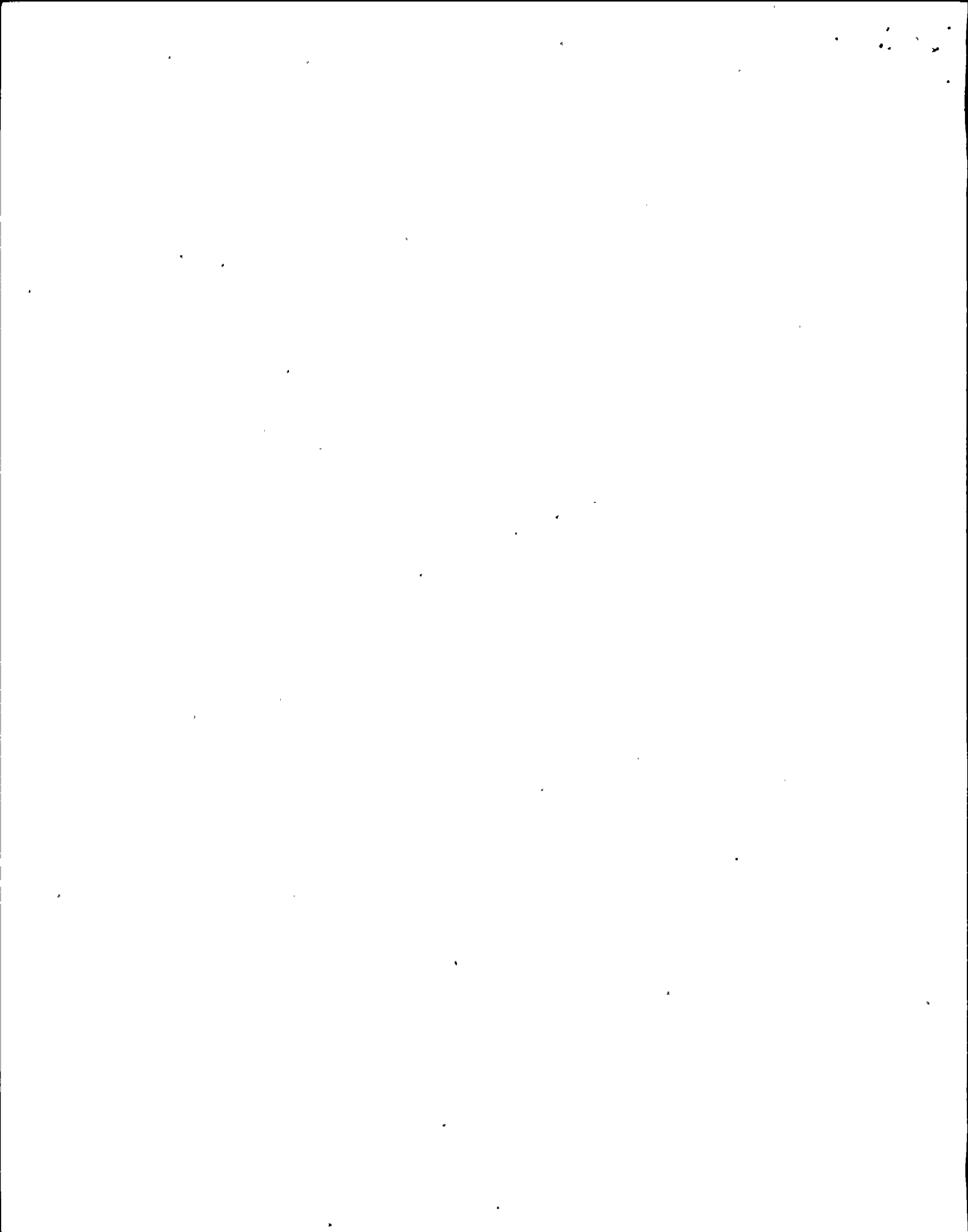
	<u>Initials</u>	<u>Printed Name</u>	<u>Signature</u>
Performed by	_____	_____	_____
Performed by	_____	_____	_____
Performed by	_____	_____	_____
Performed by	_____	_____	_____

10.3 Electrical supervision shall review data resulting from performance of the procedure for completeness, accuracy, and acceptability.

Satisfactory     Unsatisfactory

\_\_\_\_\_/\_\_\_\_\_  
Supervision                      Date

10.4 Electrical supervision shall ensure records completed (maintenance or test data) are included in the Work Request Package and are sent to Records Management for Permanent Plant File retention.

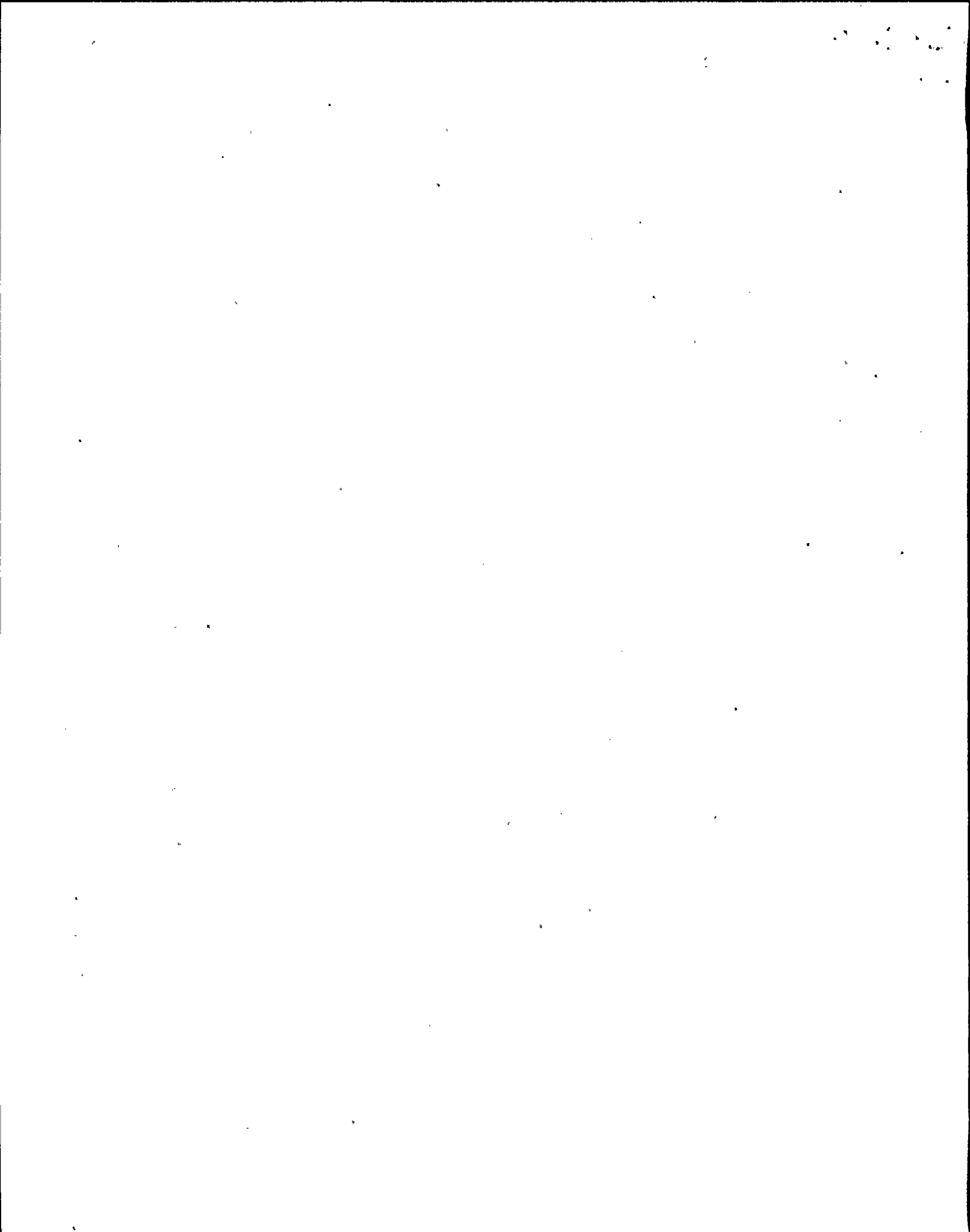


ATTACHMENT 1  
APPLICABILITY LIST

Annunciator Window: Name RES STA SER XFMR 1A TROUBLE  
Number 852444

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
1722	SPRPC17	30C	2SPRY10	8SPR08	10IHA415	X+Y Fault Press.
1725	SPRPC19	30C	2SPRY17	8SPR19	10IHA517	TC Fault Press.
2495	SPRPC03	30X	2SPRY10	8SPR08	10IHA415	X Fault Press.
2496	SPRPC04	30Y	2SPRY10	8SPR08	10IHA415	Y Fault Press.
4071	SPRTC01	26Q	2SPRA01	**	10IHA452	Oil Temp.
4072	SPRLC01	71QL(TR)	2SPRA01	**	10IHA452	Main Tank Oil Level
4073	SPRLC02	71QL(LTC)	2SPRYA01	**	10IHA452	Tap Change Oil Level
4074	SPRFC01	74	2SPRA01	**	10IHA452	Oil Cooler Flow
4075	SPRTC03	49T-4	2SPRA01	**	10IHA452	Winding Hot Spot
4076	SPRPC01	63PR(TR)	2SPRA01	**	10IHA452	Press.Relief Actuated
4078	SPRBC05	27C	2SPRA01	**	10IHA452	Cooler Trouble
4966	SPRPC10	30X	2SPRY17	8SPR08	10IHA517	TC Fault Pressure
4967	SPRPC11	30Y	2SPRY17	8SPR08	10IHA517	TC Fault Press. (Y)
4986	SPRPC14	63PR(LTC)	2SPRA01	**	10IHA518	TC Fault Press.Relief Act.

\*\* See S&W Drawing 1:130-203-006



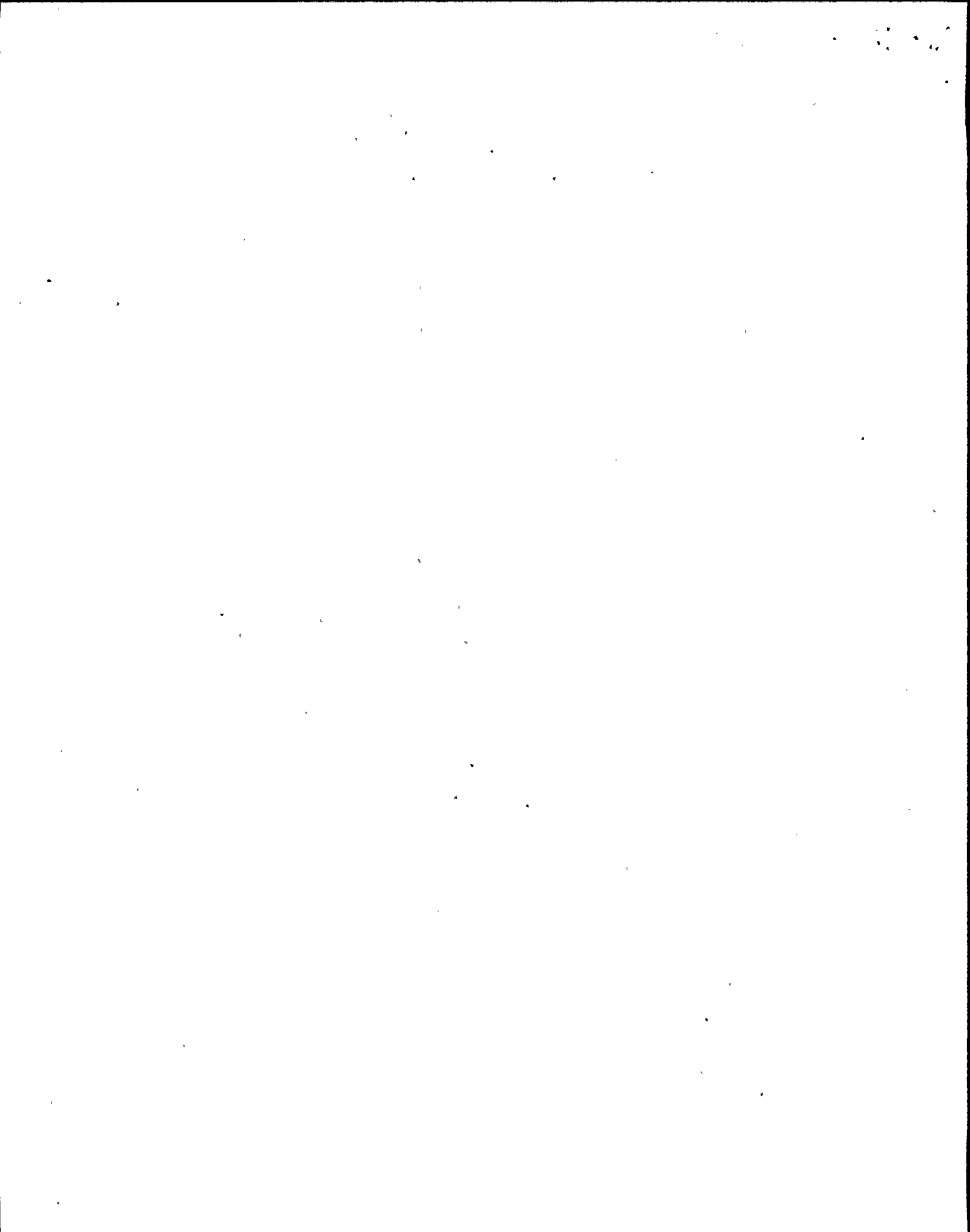


ATTACHMENT 1 (Cont)

Annunciator Window: Name RES STA SER XFMR: 1B TROUBLE  
 Number 852445

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
1721	SPRPC16	30C	2SPRX10	8SPR08	10IHA415	X+Y Fault Press.
1724	SPRPC20	30C	2SPRX17	8SPR19	10IHA518	TC Fault Press.
2498	SPRPC05	30X	2SPRX10	8SPR08	10IHA415	X Fault Press.
2499	SPRPC06	30Y	2SPRX10	8SPR08	10IHA415	Y Fault Press.
4079	SPRTC02	26Q	2SPRB01	**	10IHA453	Oil Temp.
4080	SPRLC03	71QL(TR)	2SPRA01	**	10IHA453	Main Tank Oil Level
4081	SPRLC04	71QL(LTC)	2SPRYA01	**	10IHA453	Tap Change Oil Level
4082	SPRFC03	74	2SPRA01	**	10IHA453	Oil Cooler Flow
4083	SPRTC04	49T-4	2SPRA01	**	10IHA453	Winding Hot Spot
4084	SPRPC02	63PR(TR)	2SPRA01	**	10IHA453	Press.Relief Actuated
4085	SPRBC06	27C	2SPRA01	**	10IHA453	Cooler Trouble
4969	SPRPC12	30X	2SPRY17	8SPR08	10IHA518	TC Fault Press. (X)
4970	SPRPC13	30Y	2SPRY17	8SPR08	10IHA518	TC Fault Press. (Y)
4987	SPRPC15	63PR(LTC)	2SPRA01	**	10IHA518	TC Fault Press.Relief Act.

\*\* See S&W Drawing 1.130-203-006

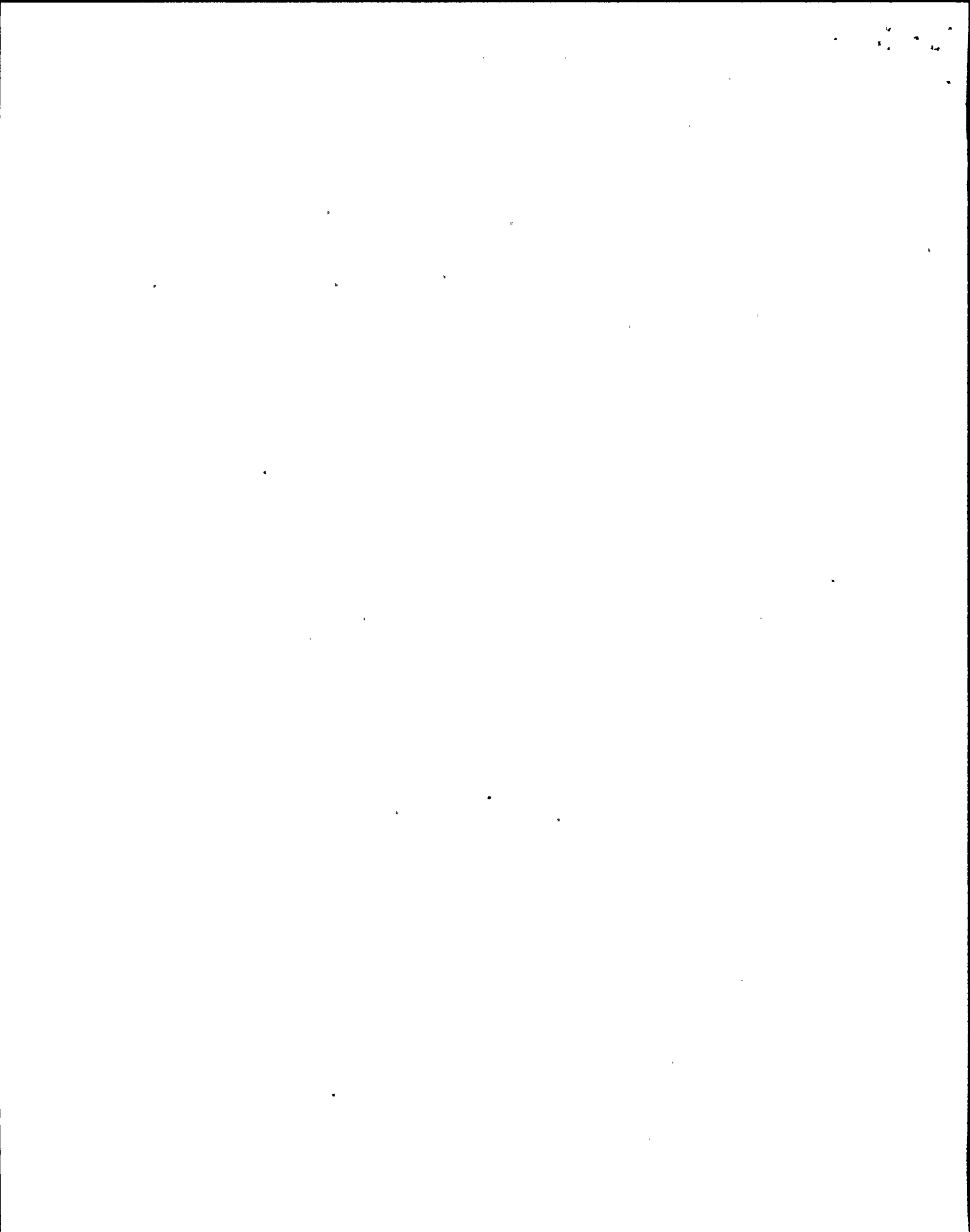


ATTACHMENT 1 (Cont)

Annunciator Window: Name AUX BOILER TRANSFORMER OIL SYSTEM TROUBLE  
 Number 852446

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
1723	SPRPC18	30C	2SPRZ10	8SPR11	10IHA405	X+Y Fault Press
2504	SPRPC11	74	2SPRZ10	8SPR19	10IHA405	Fault Press. Relief Pwr.
2505	SPRPC08	30X	2SPRZ10	8SPR08	10IHA405	X Fault Press.
2506	SPRPC09	30Y	2SPRZ10	8SPR08	10IHA405	Y Fault Press.
4086	SPRTC05	26Q	2SPRC01	**	10IHA453	Oil Temp.
4087	SPRLC05	71QL	2SPRC01	**	10IHA453	Reservoir Oil Level
4088	SPRLC06	49T-1,	2SPRYC01	**	10IHA453	Winding
4090	SPRBC12	49T-2, 49T-3 27-1,	2SPRC01	**	10IHA453	Hot Spot Cooler
4091	SPRPC07	27-2 63P	2SPRC01	**	10IHA453	Trouble Press. Relief Actuated

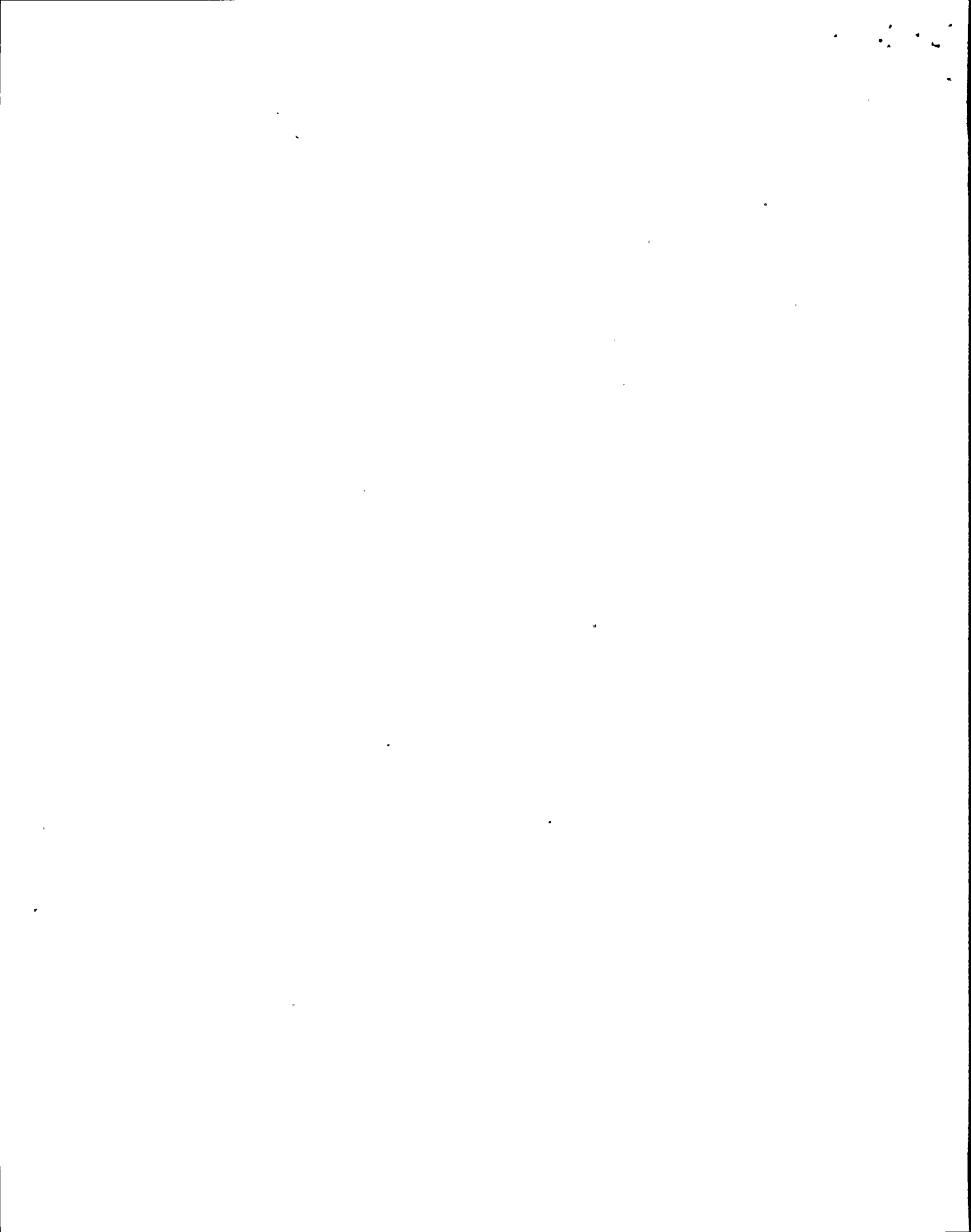
\*\* See S&W Drawing 1.131-905-006



ATTACHMENT 1 (Cont)

Annunciator Window: Name MAIN XFMR 1A/1B/1C/1D SUDDEN PRESS/CONT PWR FAIL  
 Number 852608

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
1700	SPMPC13	30C-1	2SPRX10	8SPM04	10IHA423	XM1A Fault Press. Mid
1701	SPMPC14	30C-2	2SPRX17	8SPM04	10IHA423	XM1B Fault Press. Mid
1702	SPMPC15	30C-3	2SPRX10	8SPM04	10IHA423	XM1C Fault Press. Mid
1703	SPMPC16	30C-4	2SPRX10	8SPM04	10IHA423	XM1D Fault Press. Mid
2405	SPMBC01	74	2SPRB01	8SPM04	10IHA423	125V Control Pwr Pnl 865
2406	SPMPC05	30X-1	2SPRA01	8SPM04	10IHA423	XM1A Fault Press. Left
2407	SPMPC06	30Y-1	2SPRYA01	8SPM04	10IHA423	XM1A Fault Press. Right
2408	SPMPC07	30X-2	2SPRA01	8SPM04	10IHA423	XM1B Fault Press. Left
2409	SPMPC08	30Y-2	2SPRA01	8SPM04	10IHA423	XM1B Fault Press. Right
2410	SPMPC09	30X-3	2SPRA01	8SPM04	10IHA423	XM1C Fault Press. Left
2411	SPMPC10	30Y-3	2SPRA01	8SPM04	10IHA423	XM1C Fault Press. Right
2412	SPMPC11	30X-4	2SPRY17	8SPM04	10IHA423	XM1D Fault Press. Left
2413	SPMPC12	30Y-4	2SPRY17	8SPM04	10IHA423	XM1D Fault Press. Right

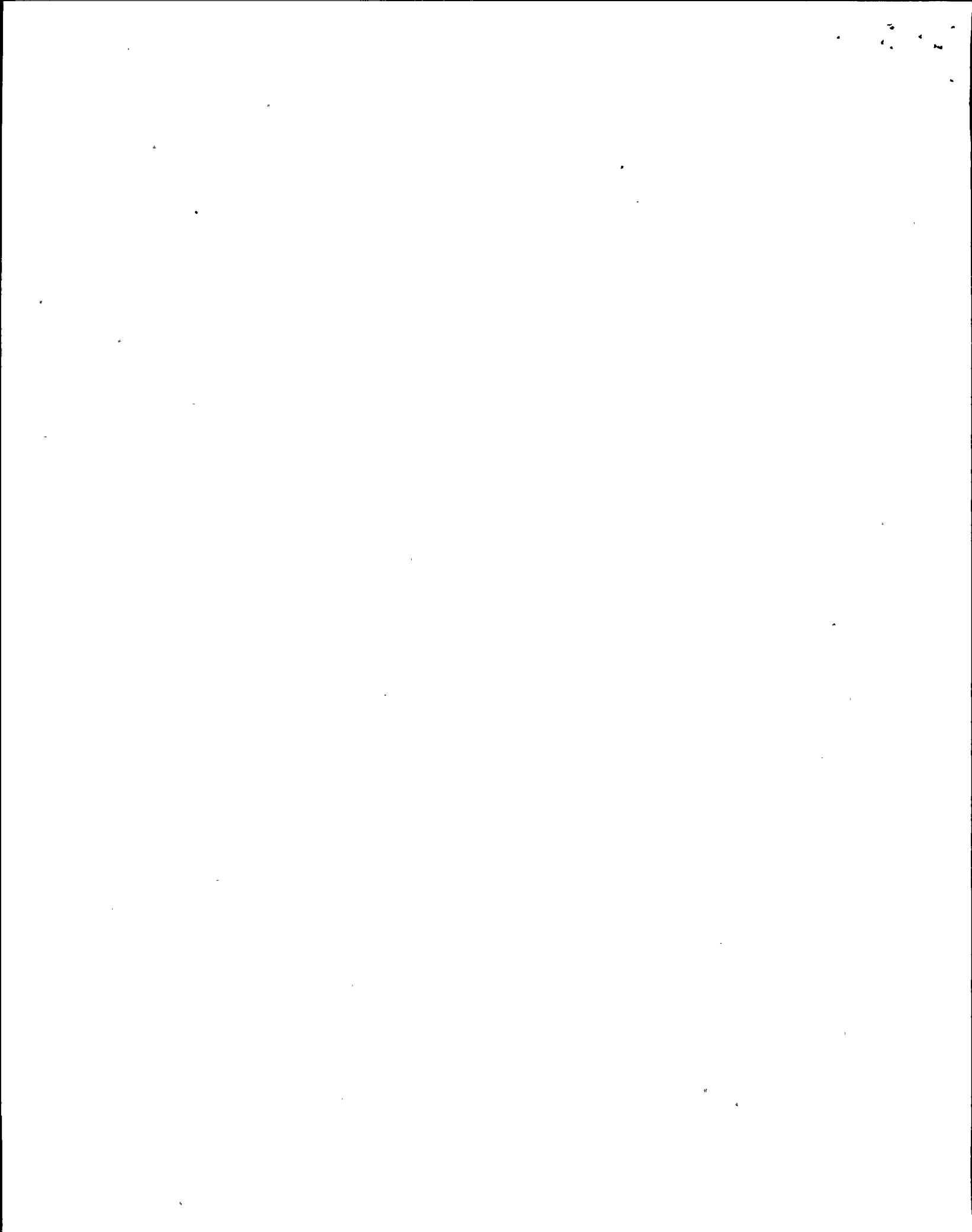


ATTACHMENT 1 (Cont)

Annunciator Window: Name MAIN XFEMER 1A/1B/1C/1D OIL SYSTEM TROUBLE  
 Number 852618

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
4005	SPMTC01	26	2SPMA01	**	10IHA436	XM1A Oil Temp.
4006	SPMLC01	71	2SPMA01	**	10IHA436	XM1A Oil Reservoir Lvl
4007	SPMFC01	800/1, 800/2	2SPMA01	**	10IHA436	XM1A Oil Cooler Flow
4008	SPMTC05	49X2/2	2SPMA01	**	10IHA436	XM1A Winding Hot Spot
4009	SPMPC01	63PR1, 63PR2	2SPMA01	**	10IHA436	XM1A Pressure Relief
4010	SPMAC01	63GD	2SPMA01	**	10IHA436	XM1A Gas Detector
4011	SPMBC02	27X1, 27X2, 27-3	2SPMA01	**	10IHA436	XM1A Cooler Trouble
4012	SPMTC02	26	2SPMB01	**	10IHA436	XM1A Oil Temp.
4013	SPMLC03	71	2SPMB01	**	10IHA436	XM1A Oil Reservoir Lvl
4014	SPMFC05	800/1, 800/2	2SPMB01	**	10IHA436	XM1A Oil Cooler Flow
4015	SPMTC06	49X2/2	2SPMB01	**	10IHA436	XM1A Winding Hot Spot
4016	SPMPC02	63PR1, 63PR2	2SPMB01	**	10IHA436	XM1A Pressure Relief
4017	SPMAC02	63GD	2SPMB01	**	10IHA436	XM1A Gas Detector
4018	SPMBC03	27X1, 27X2, 27-3	2SPMB01	**	10IHA436	XM1A Cooler Trouble

\*\* See S&W Drawing 1.110-988-048



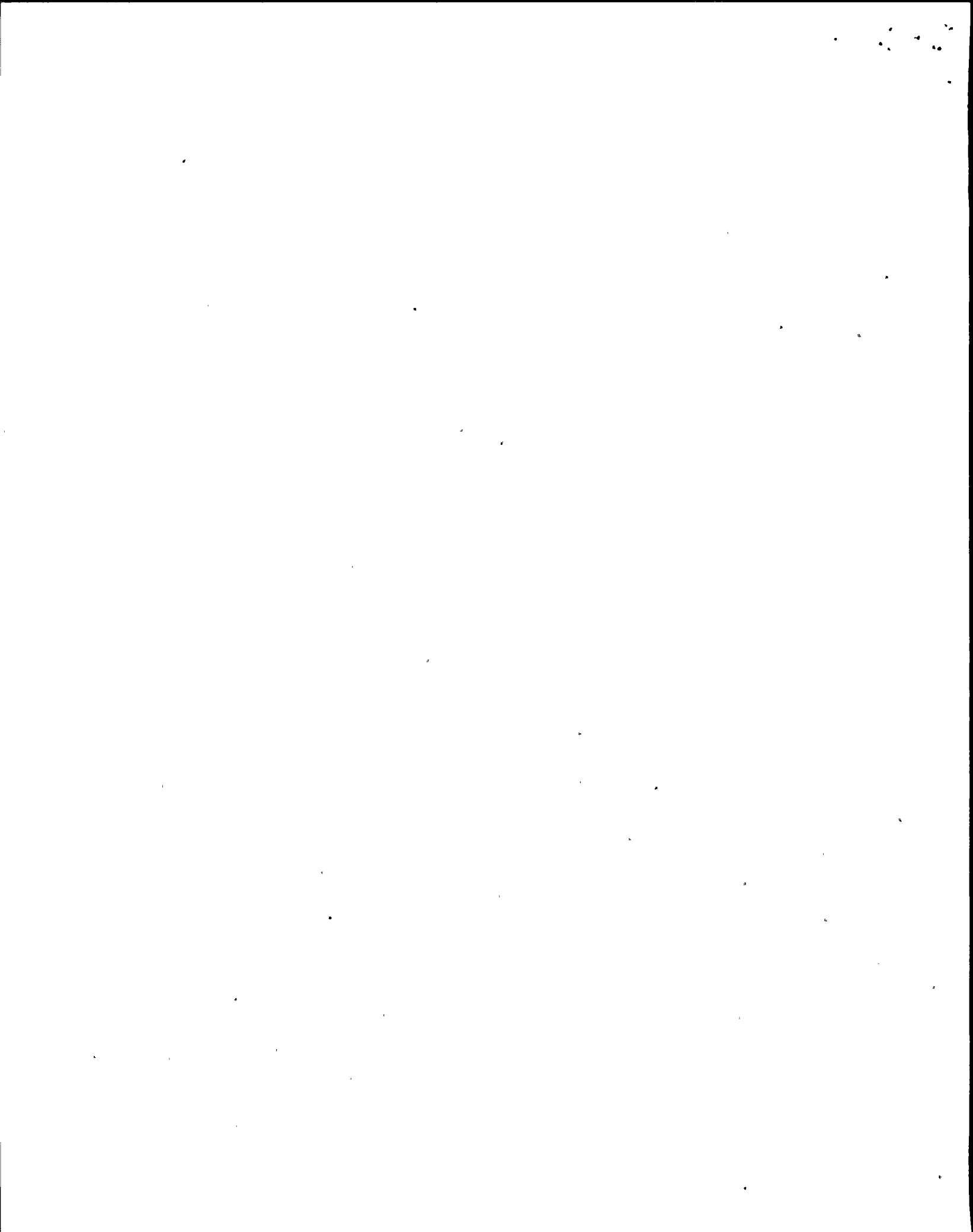


ATTACHMENT 1 (Cont)

Annunciator Window: Name MAIN XFMR 1A/1B/1C/1D OIL SYSTEM TROUBLE  
 Number 852618

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
4019	SPMTC03	26	2SPMC01	**	10IHA436	XM1A Oil Temp.
4020	SPMLC03	71	2SPMC01	**	10IHA436	XM1A Oil Reservoir Lvl
4021	SPMFC09	800/1, 800/2	2SPMC01	**	10IHA436	XM1A Oil Cooler Flow
4022	SPMTC07	49X2/2	2SPMC01	**	10IHA436	XM1A Winding Hot Spot
4023	SPMPC03	63PR1, 63PR2	2SPMC01	**	10IHA436	XM1A Pressure Relief
4024	SPMAC03	63GD	2SPMC01	**	10IHA436	XM1A Gas Detector
4025	SPMBC04	27X1, 27X2, 27-3	2SPMC01	**	10IHA436	XM1A Cooler Trouble
4026	SPMTC04	26	2SPMD01	**	10IHA436	XM1A Oil Temp.
4027	SPMLC07	71	2SPMD01	**	10IHA436	XM1A Oil Reservoir Lvl
4028	SPMFC13	800/1, 800/2	2SPMD01	**	10IHA436	XM1A Oil Cooler Flow
4029	SPMTC08	49X2/2	2SPMD01	**	10IHA436	XM1A Winding Hot Spot
4030	SPMPC04	63PR1, 63PR2	2SPMD01	**	10IHA436	XM1A Pressure Relief
4031	SPMAC04	63GD	2SPMD01	**	10IHA436	XM1A Gas Detector
4032	SPMBC05	27X1, 27X2, 27-3	2SPMD01	**	10IHA436	XM1A Cooler Trouble

\*\* See S&W Drawing 1.110-988-048



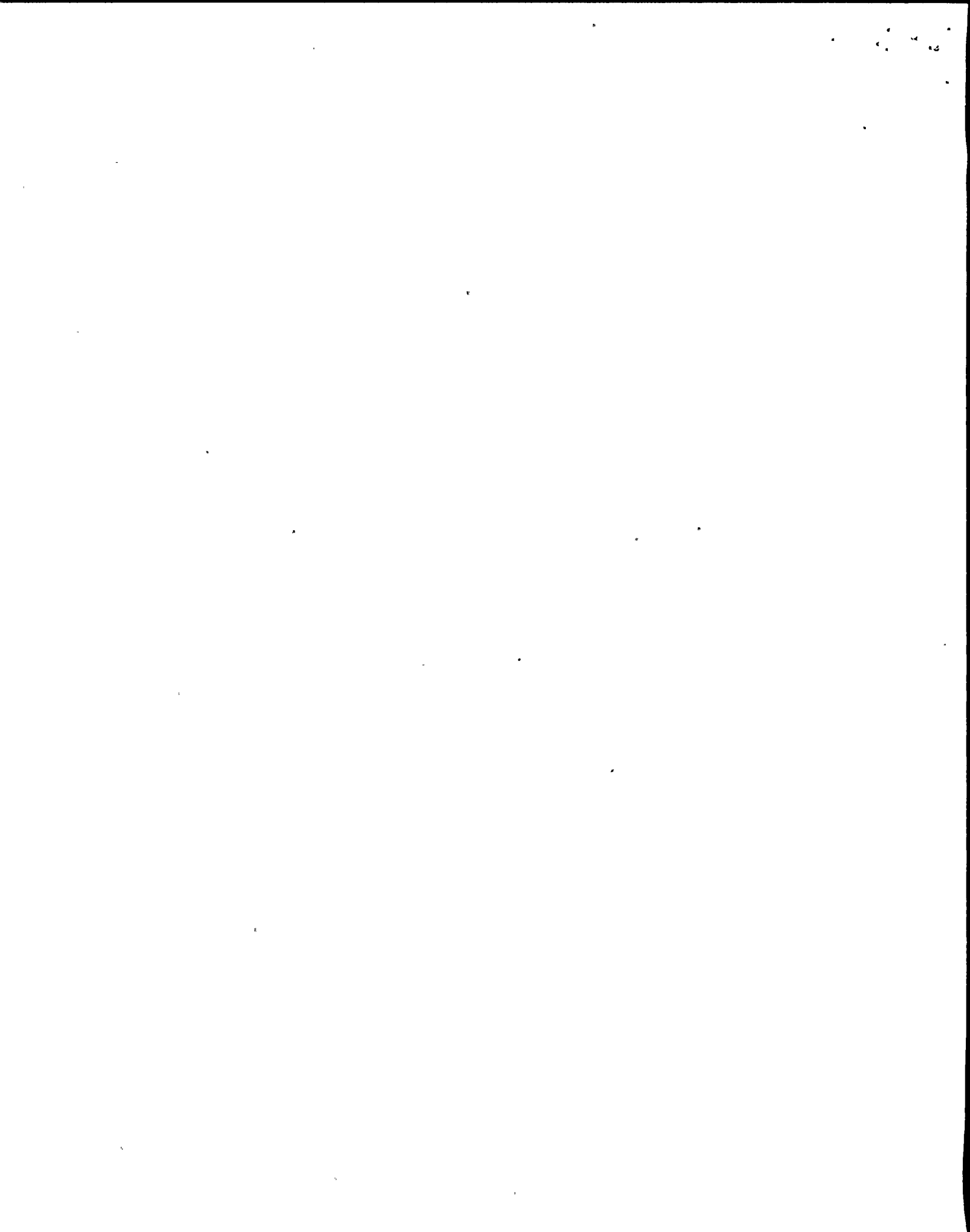
ATTACHMENT 1 (Cont)

Annunciator Window: Name AUXILIARY XFMR XS1 TROUBLE/AUX XFMR XS1 SUDDEN PRESSURE

Number 852621/852641

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
4092	SPXTC01	260	2SPXA01	**	10IHA455	Oil Temp
4093	SPXLC01	710	2SPXA01	**	10IHA455	Oil Reservoir Level
4094	SPXTC03	49	2SPXA01	**	10IHA455	Winding Hot Spot
4095	SPXPC01	63PR	2SPXA01	**	10IHA455	Pressure Relief
3421	SPXBC03	74	2SPXX05	8SPX09	10IHA500	Control Power
4097	SPXPC03	30X	2SPXX05	8SPX09	10IHA469	Sudden Press.Left
4133	SPXPC04	30Y	2SPXX05	8SPX09	10IHA469	Sudden Press.Right
4988	SPXPC08	30C	2SPXX05	8SPX09	10IHA469	Sudden Press.Middle
4098	SPXTC02	260	2SPXB01	**	10IHA455	Oil Temp
4099	SPXLC02	710	2SPXB01	**	10IHA455	Oil Reservoir Level
4100	SPXTC04	49	2SPXB01	**	10IHA455	Winding Hot Spot
4101	SPXPC02	63PR	2SPXB01	**	10IHA455	Pressure Relief
3422	SPXBC04	74	2SPXY05	8SPX09	10IHA500	Control Power
4103	SPXPC05	30X	2SPXY05	8SPX09	10IHA469	Sudden Press.Left
4134	SPXPC07	30Y	2SPXY05	8SPX09	10IHA469	Sudden Press.Right
4989	SPXPC09	30C	2SPXY05	8SPX09	10IHA469	Sudden Press.Middle

\*\* See S&W Drawing 1.140-204-004

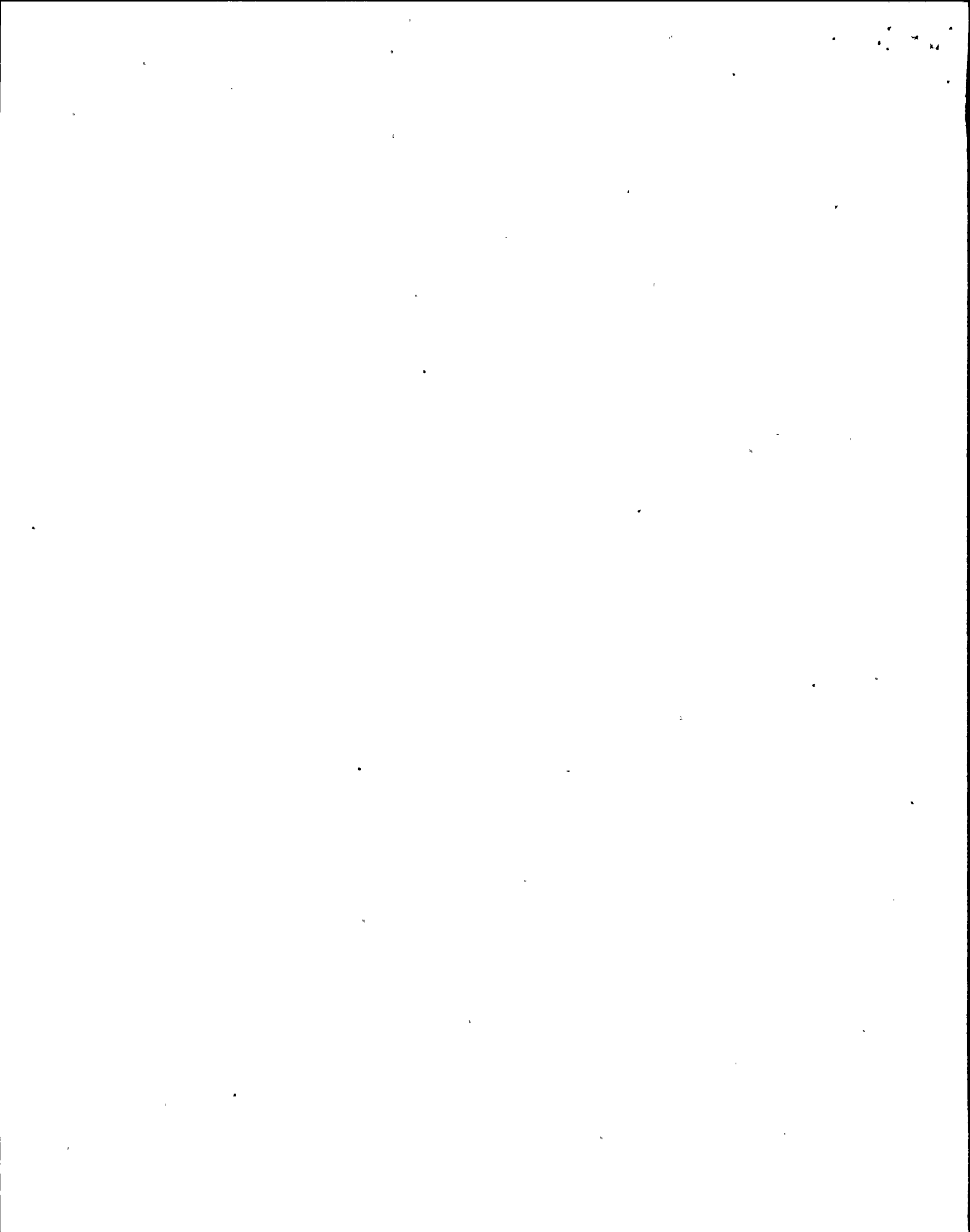


ATTACHMENT 1 (Cont)

Annunciator Window: Name NOR STA SER XFMR XNS1 TROUBLE  
 Number 852657

ANN Input Number	Computer Pt. No.	Monitored Device ID No.	Device Circuit No.	Device ESK No.	ANN ESK No.	Alarm
1704	SPSPC07	30C	2SPSY01	8SPS03	10IHA423	Fault Press. Mid
1728	SPSPC08	30C	2SPSY03	8SPS06	10IHA517	TC Fault Press.
2415	SPSPC02	30X	2SPSY01	8SPS03	10IHA423	Fault Press. GR Side
2416	SPSPC03	30Y	2SPSY01	8SPS03	10IHA423	Fault Press. HE Side
4062	SPSTC01	260	2SPSN02	**	10IHA452	Oil Temp.
4063	SPSLC01	71QL(TR)	2SPSN02	**	10IHA452	Reservoir Oil Level
4064	SPSLC02	71QL(LTC)	2SPSN02	**	10IHA452	TC Reservoir Oil Level
4065	SPSFC01	74-1	2SPSN02	**	10IHA452	GPI Oil Level
4066	SPSTC02	49T-1, 49T-2, 49T-3	2SPSN02	**	10IHA452	Winding Hot Spot
4067	SPSPC01	63PR(TR)	2SPSN02	**	10IHA452	Press. Relief
4068	SPSPC04	63PR(LTC)	2SPSN02	**	10IHA452	TC Press. Relief
4070	SPSBC02	27E, 27N 27C	2SPSN02	**	10IHA452	Cooler Trouble
4168	SPSFC02	74-2	2SPSN02	**	10IHA452	GP2 Oil Flow
4964	SPSPC05	30LX	2SPSY03	8SPS06	10IHA517	TC Fault Press. GR Side
4965	SPSPC06	30LY	2SPSY03	8SPS06	10IHA517	TC Fault Press. HE Side

\*\* See S&W Drawings 1.120-202-007/008/009

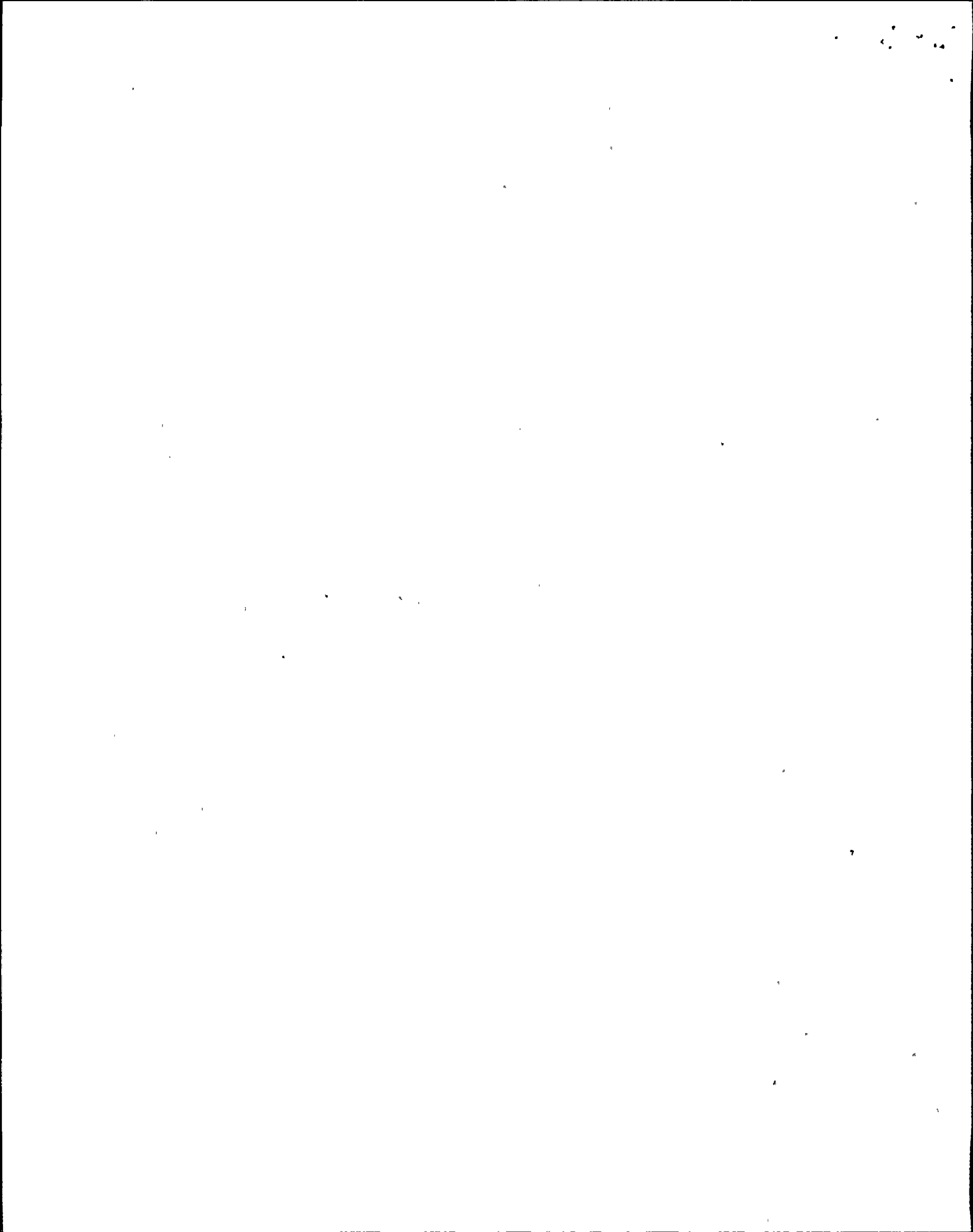


ATTACHMENT 2  
ANNUNCIATOR TEST DATA SHEETS

Annunciator Window: Name RES STA SER XFMR 1A TROUBLE

Number 852444

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPRBC05	Clr Trouble Relay 27C-2SPRA01						
SPRFC01	Oil Cooler Flow 74-2SPRA01						
SPRLC01	Oil Main Tk Level 71QL(TR)-2SPRA01						
SPRLC02	Tap Changer Oil Lvl 71QL(LTC)-2SPRA01						
SPRPC01	Press. Relief Valve 63PR(TR)-2SPRA01						
SPRPC03	Fault Press. Left 30X-2SPRY10						
SPRPC04	Fault Press. Right 30Y-2SPRY10						
SPRPC10	Tap Changer Fault Pressure (X) 30X-2SPRY17						
SPRPC11	Tap Changer Fault Pressure (Y) 30Y-2SPRY17						
SPRPC14	Tap Changer Fault Pressure Relief 63PR(LTC)-2SPRA01						
SPRTC01	Oil Temp. Switch 26Q-2SPRA01						
SPRTC03	Winding Hot Spot 49T-4-2SPRA01						
SPRPC17	Fault Pressure 30C-2SPRY10						
SPRPC19	Tap Changer Fault Pressure 30C-2SPRY17						

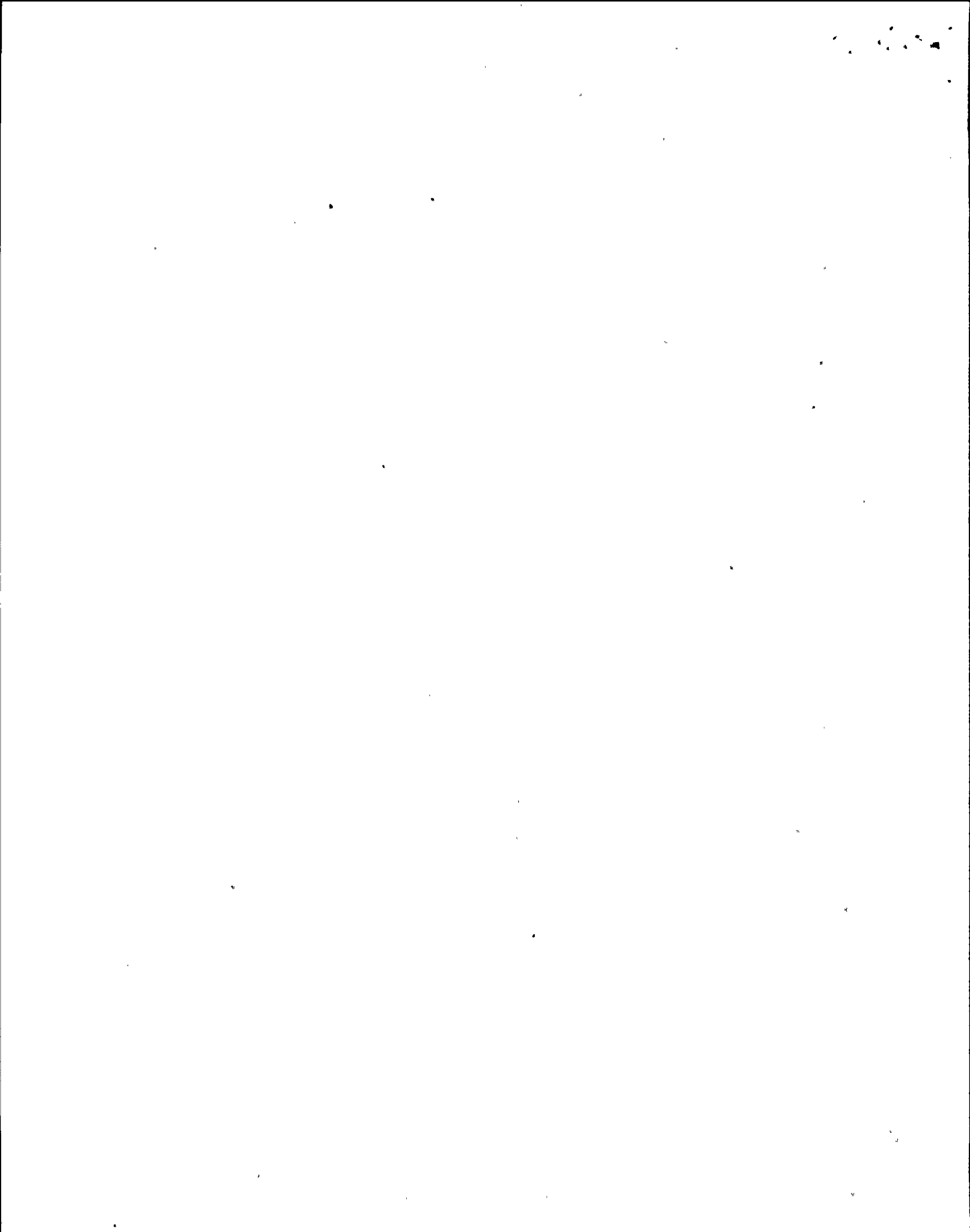




ATTACHMENT 2 (Cont)

Annunciator Window: Name RES STA SER XFMR 1B TROUBLE  
 Number 852445

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPRBC06	Clr Trouble Relay 27C-2SPRB01						
SPRFC03	Oil Cooler Flow 74-2SPRB01						
SPRLC03	Oil Main Tk Level 71QL(TR)-2SPRB01						
SPRLC04	Tap Changer Oil Lvl 71QL(LTC)-2SPRB01						
SPRPC02	Press. Relief Valve 63PR(TR)-2SPRB01						
SPRPC05	Fault Press. Left 30X-2SPRX10						
SPRPC06	Fault Press. Right 30Y-2SPRX10						
SPRPC12	Tap Changer Fault Pressure (X) 30X-2SPRX17						
SPRPC13	Tap Changer Fault Pressure (Y) 30Y-2SPRX17						
SPRPC15	Tap Changer Fault Pressure Relief 63PR(LTC)-2SPRB01						
SPRTC02	Oil Temp. Switch 26Q-2SPRB01						
SPRTC04	Winding Hot Spot 49T-4-2SPRB01						
SPRPC16	Fault Pressure 30C-2SPRX10						
SPRPC20	Tap Changer Fault Pressure 30C-2SPRX17						

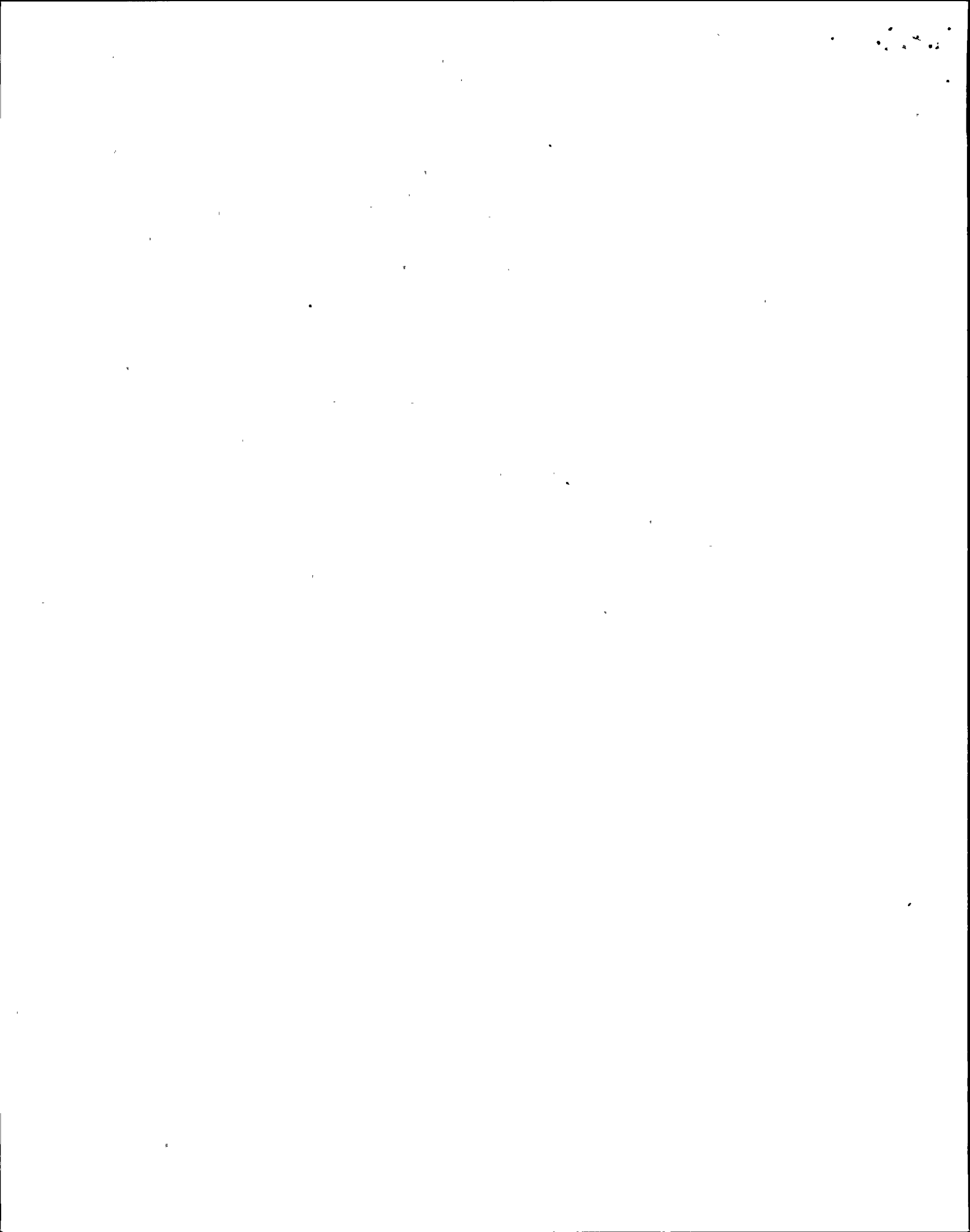


ATTACHMENT 2 (Cont)

Annunciator Window: Name AUX BOILER TRANSFORMER OIL SYSTEM TROUBLE

Number 852446

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPRBC11	Fault Ckt Pwr Loss 74-2SPRZ10						
SPRFC12	Cooler Trouble 27-1&2-2SPRC01						
SPRLC05	Oil Reservoir Level 71QL(TR)-2SPRC01						
SPRPC07	Press. Relieve Valve 63P-2SPRC01						
SPRPC08	Fault Press. Left 30X-2SPRZ10						
SPRPC09	Fault Press. Right 30Y-2SPRZ10						
SPRPC18	Fault Press. (X+Y) 30C-2SPRZ10						
SPRTC05	Oil Temperature 26Q-2SPRC01						
SPRTC06	Winding Hot Spot 49T-1, 49T-2, 49T-3- 2SPRC01						



ATTACHMENT 2 (Cont)

Annunciator Window: Name MAIN XFMR 1A/1B/1C/1D SUDDEN PRESS/CONT PWR FAIL  
MAIN XFMR 1A/1B/1C/1D OIL SYSTEM TROUBLE  
 Number 852608/852618

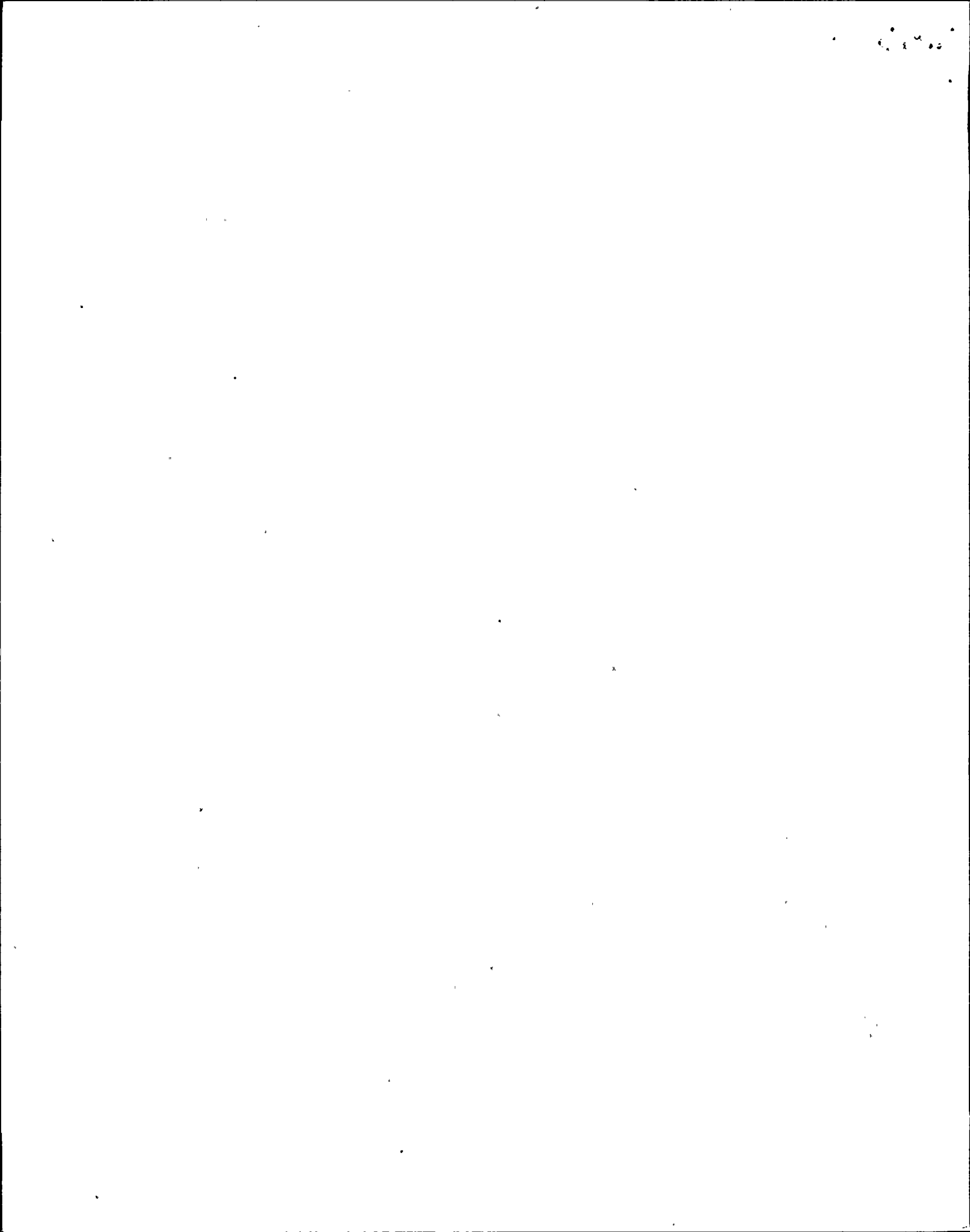
Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPMPC05	Fault Press. Left 30X-1-2SPMY01						
SPMPC06	Fault Press. Right 30Y-1-2SPMY01						
SPMPC13	Fault Press. Middle 30C-1-2SPMY01						
SPMBC01	125V Control Power Panel 865 74-2SPMY01						
SPMAC01	Gas Detector 63GD-2SPMA01						
SPMBC02	Cooling Trouble Rly 27-3-2SPMA01 27X-2-2SPMA01 27X-1-2SPMA01						
SPMFC01	Oil Flow Low 800/1-2SPMA01 800/2-2SPMA01						
SPMLC01	Oil Reservoir Level Low 71-2SPMA01						
SPMPC01	Pressure Relief Vlv 63PR1-2SPMA01 63PR2-2SPMA01						
SPMTC01	Oil Temperature High 80C Degrees 26-2SPMA01						
SPMTC05	Winding Hot Spot 105C Degrees 49X2/2-2SPMA01						



ATTACHMENT 2 (Cont)

Annunciator Window: Name MAIN XFMR 1A/1B/1C/1D SUDDEN PRESS/CONT PWR FAIL  
MAIN XFMR 1A/1B/1C/1D OIL SYSTEM TROUBLE  
 Number 852608/852618

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPMPC07	Fault Press. Left 30X-2-2SPMY01						
SPMPC08	Fault Press. Right 30Y-2-2SPMY01						
SPMPC14	Fault Press. Middle 30C-2-2SPMY01						
SPMBC01	125V Control Power Panel 865 74-2SPMY01						
SPMAC02	Gas Detector 63GD-2SPMB01						
SPMBC03	Cooling Trouble Rly 27-3-2SPMB01 27X-2-2SPMB01 27X-1-2SPMB01						
SPMFC05	Oil Flow Low 800/1-2SPMB01 800/2-2SPMB01						
SPMLC03	Oil Reservoir Level Low 71-2SPMB01						
SPMPC02	Pressure Relief Vlv 63PR1-2SPMB01 63PR2-2SPMB01						
SPMTC02	Oil Temperature High 80C Degrees 26-2SPMB01						
SPMTC06	Winding Hot Spot 105C Degrees 49X2/2-2SPMB01						





ATTACHMENT 2 (Cont)

Annunciator Window: Name MAIN XFMR 1A/1B/1C/1D SUDDEN PRESS/CONT PWR FAIL  
MAIN XFMR 1A/1B/1C/1D OIL SYSTEM TROUBLE

Number 852608/852618

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPMPC09	Fault Press. Left 30X-3-2SPMY01						
SPMPC10	Fault Press. Right 30Y-3-2SPMY01						
SPMPC15	Fault Press. Middle 30C-3-2SPMY01						
SPMBC01	125V Control Power Panel 865 74-2SPMY01						
SPMAC03	Gas Detector 63GD-2SPMC01						
SPMBC04	Cooling Trouble Rly 27-3-2SPMC01 27X-2-2SPMC01 27X-1-2SPMC01						
SPMFC09	Oil Flow Low 800/1-2SPMC01 800/2-2SPMC01						
SPMLC05	Oil Reservoir Level Low 71-2SPMC01						
SPMPC03	Pressure Relief Vlv 63PR1-2SPMC01 63PR2-2SPMC01						
SPMTC03	Oil Temperature High 80C Degrees 26-2SPMC01						
SPMTC07	Winding Hot Spot 105C Degrees 49X2/2-2SPMC01						

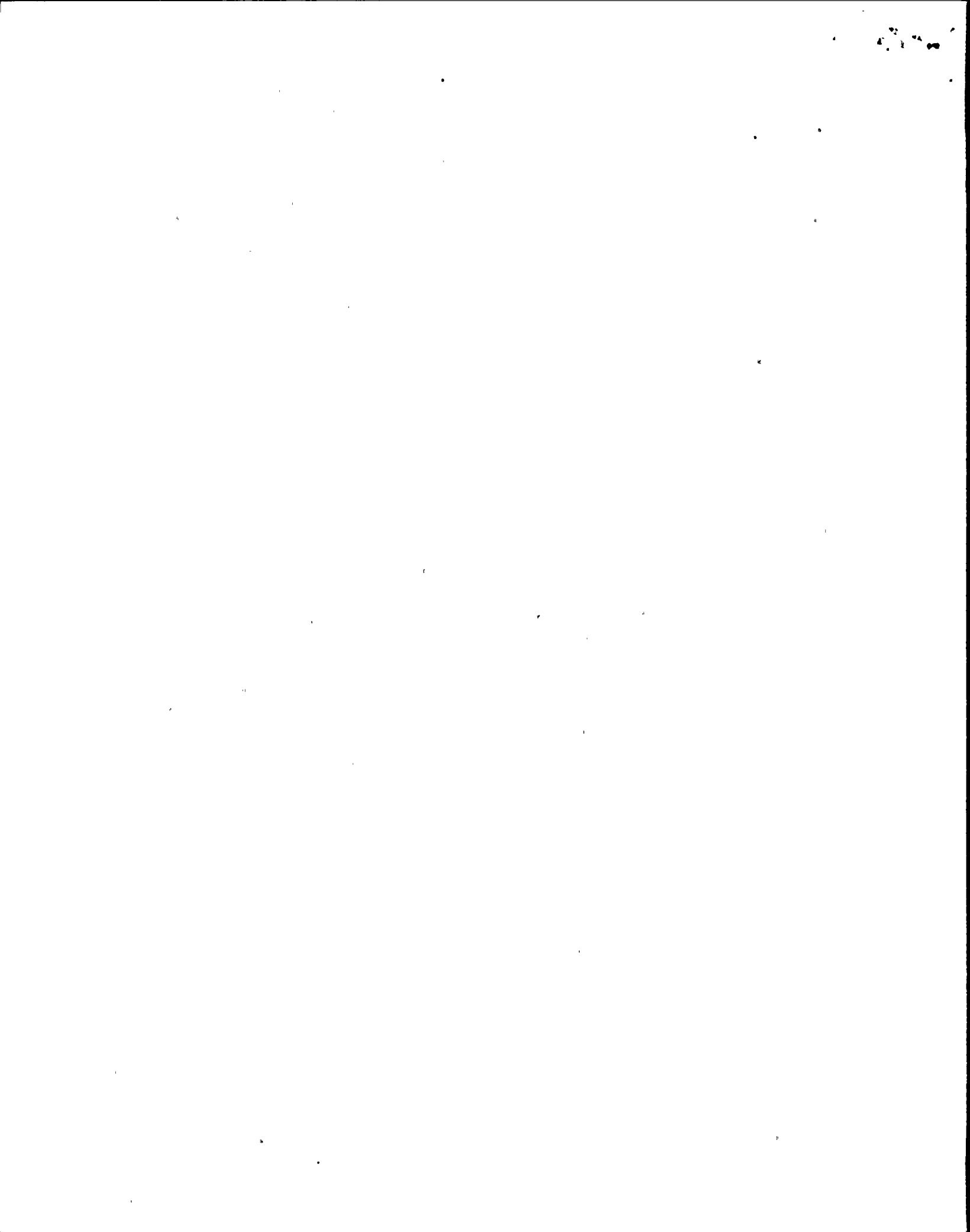


ATTACHMENT 2 (Cont)

Annunciator Window: Name MAIN XFMR 1A/1B/1C/1D SUDDEN PRESS/CONT PWR FAIL  
MAIN XFMR 1A/1B/1C/1D OIL SYSTEM TROUBLE

Number 852608/852618

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPMPC11	Fault Press. Left 30X-4-2SPMY01						
SPMPC12	Fault Press. Right 30Y-4-2SPMY01						
SPMPC16	Fault Press. Middle 30C-4-2SPMY01						
SPMBC01	125V Control Power Panel 865 74-2SPMY01						
SPMAC04	Gas Detector 63GD-2SPMD01						
SPMBC05	Cooling Trouble Rly 27-3-2SPMD01 27X-2-2SPMD01 27X-1-2SPMD01						
SPMFC13	Oil Flow Low 800/1-2SPMD01 800/2-2SPMD01						
SPMLC07	Oil Reservoir Level Low 71-2SPMD01						
SPMPC04	Pressure Relief Vlv 63PR1-2SPMD01 63PR2-2SPMD01						
SPMTC04	Oil Temperature High 80C Degrees 26-2SPMD01						
SPMTC08	Winding Hot Spot 105C Degrees 49X2/2-2SPMD01						



ATTACHMENT 2 (Cont)

Annunciator Window: Name AUXILIARY TRANSFORMER XS1 SYSTEM TROUBLE/SUDDEN PRESSURE

Number 852621/852641

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPXLC01	Oil Reservoir Level Low 71Q-2SPXA01						
SPXPC01	Pressure Relief Valve 63PR-2SPXA01						
SPXTC01	Oil Temperature High 26Q-2SPXA01						
SPXTC03	Winding Hot Spot Temperature High 49-2SPXA01						
SPXBC03	Sudden Pressure Circuit Power 74-2SPXX05						
SPXPC03	Sudden Pressure Left 30X-2SPXX05						
SPXPC06	Sudden Pressure Right 30Y-2SPXX05						
SPXPC08	Sudden Pressure Middle 30C-2SPXX05						



ATTACHMENT 2 (Cont)

Annunciator Window: Name AUXILIARY TRANSFORMER XS3 SYSTEM TROUBLE/SUDDEN PRESSURE

Number 852631/852651

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPXLC02	Oil Reservoir Level Low 71Q-2SPXB01						
SPXPC02	Press. Reliev Valve 63PR-2SPXB01						
SPXTC02	Oil Temperature High 26Q-2SPXB01						
SPXTC04	Winding Hot Spot Temperature High 49-2SPXB01						
SPXBC04	Sudden Pressure Circuit Power 74-2SPXY05						
SPXPC05	Sudden Pressure Left 30X-2SPXY05						
SPXPC07	Sudden Pressure Right 30Y-2SPXY05						
SPXPC09	Sudden Pressure Middle 30C-2SPXY05						

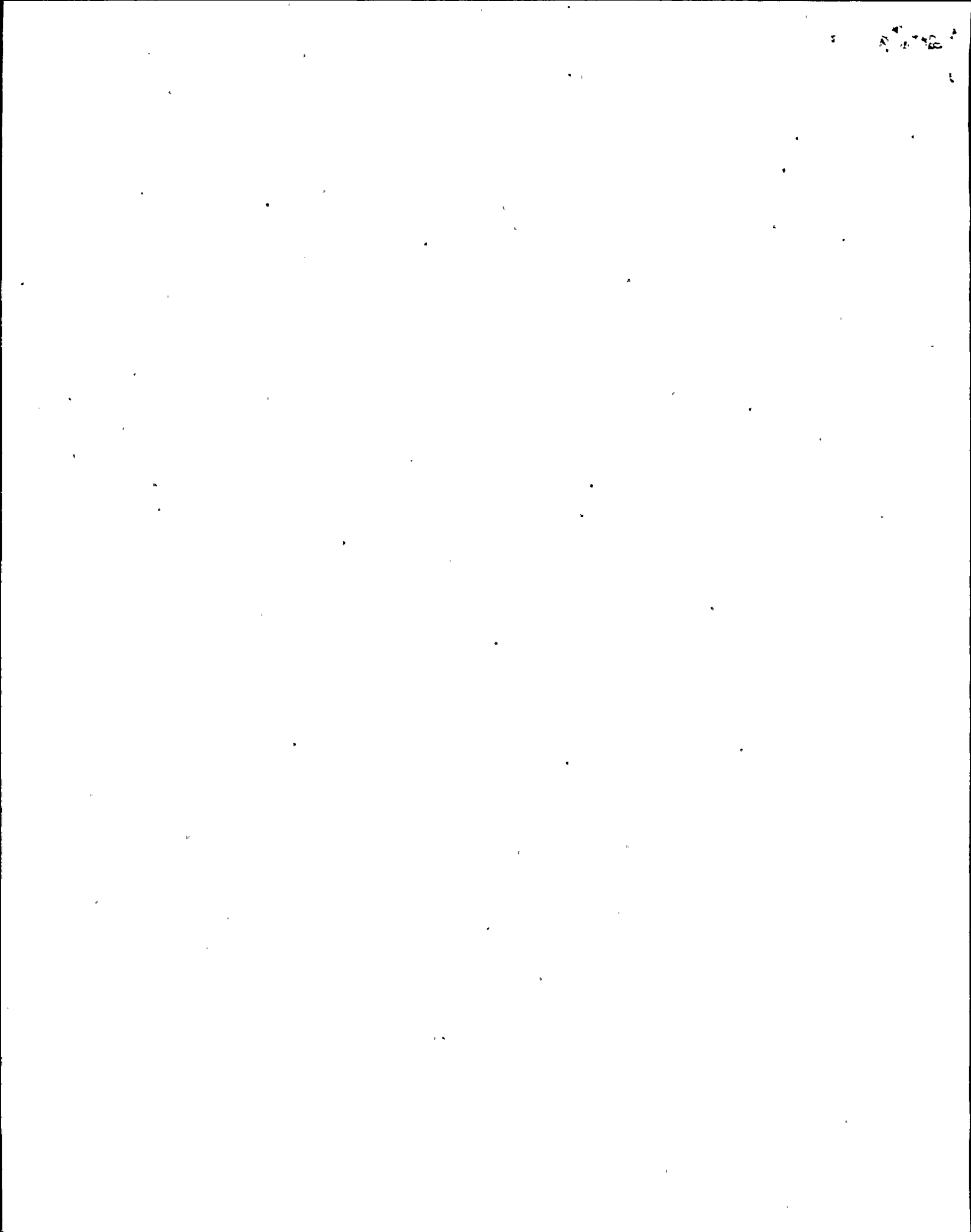




ATTACHMENT 2 (Cont)

Annunciator Window: Name RES STA SER XFMR 1B TROUBLE  
 Number 852445

Computer Point	Name/ ID No.	ANN Trip		Compt Input		Verified By	Date
		Sat	Unsat	Sat	Unsat		
SPSTC02	Hot Spot Temp. High 49T-1/2/3-2SPSN02						
SPSBC02	Cooler Trouble Rly. 27E/N/C-2SPSN02						
SPSFC01	GP1 Oil Flow Low 74-1-2SPSN02						
SPSLC01	Oil Level Low 71QL(TR)-2SPSN02						
SPSPC01	Press. Relief Valve 63PR(TR)-2SPSN02						
SPSPC02	Fault Press Gr Side 30X-2SPSY02						
SPSPC03	Fault Press. Hr Side 30Y-2SPSY01						
SPSLC02	Tap Changer Oil Level Low 71QL(LTC)-2SPSN02						
SPSPC06	Tap Changer Fault Pressure He Side 30LY-2SPSY03						
SPSPC04	Tap Changer Fault Pressure Relief Vlv 63PR(LTC)-2SPSN02						
SPSTC01	Oil Temp. High 26Q-2SPSN02						
SPSFC02	GP2 Oil Flow Low 74-2-2SPSN02						
SPSPC07	Fault Pressure Mid. 30C-2SPSY01						
SPSPC08	Tap Changer Fault Pressure 30C-2SPSY03						
SPSPC05	Tap Changer Fault Pressure Gr Side 30LX-2SPSY03						



**ATTACHMENT 3**  
**LIFTED LEAD AND JUMPER LOG**

Equipment ID No. \_\_\_\_\_

WIRE/CABLE ID					////LIFTED////			////LANDED////		
CABLE NO	WIRE NO	COLOR	DEVICE	PT.	STEP	PERF'D BY	VERF'D BY	STEP	PERF'D BY	VERF'D BY

247  
6  
2