

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

07-186-91

02-LOT-001-222-2-00 Revision 6

TITLE: DRYWELL COOLING SYSTEM

	<u>SIGNATURE</u>	<u>DATE</u>
PREPARER	<u>[Signature]</u>	<u>5/1/91</u>
TRAINING AREA SUPERVISOR	<u>[Signature]</u>	<u>5/2/91</u>
TRAINING SUPPORT SUPERVISOR	<u>[Signature]</u>	<u>5-3-91</u>
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	<u>[Signature]</u>	<u>5/9/91</u>

Summary of Pages

(Effective Date: 5/9/91)

Number of Pages:

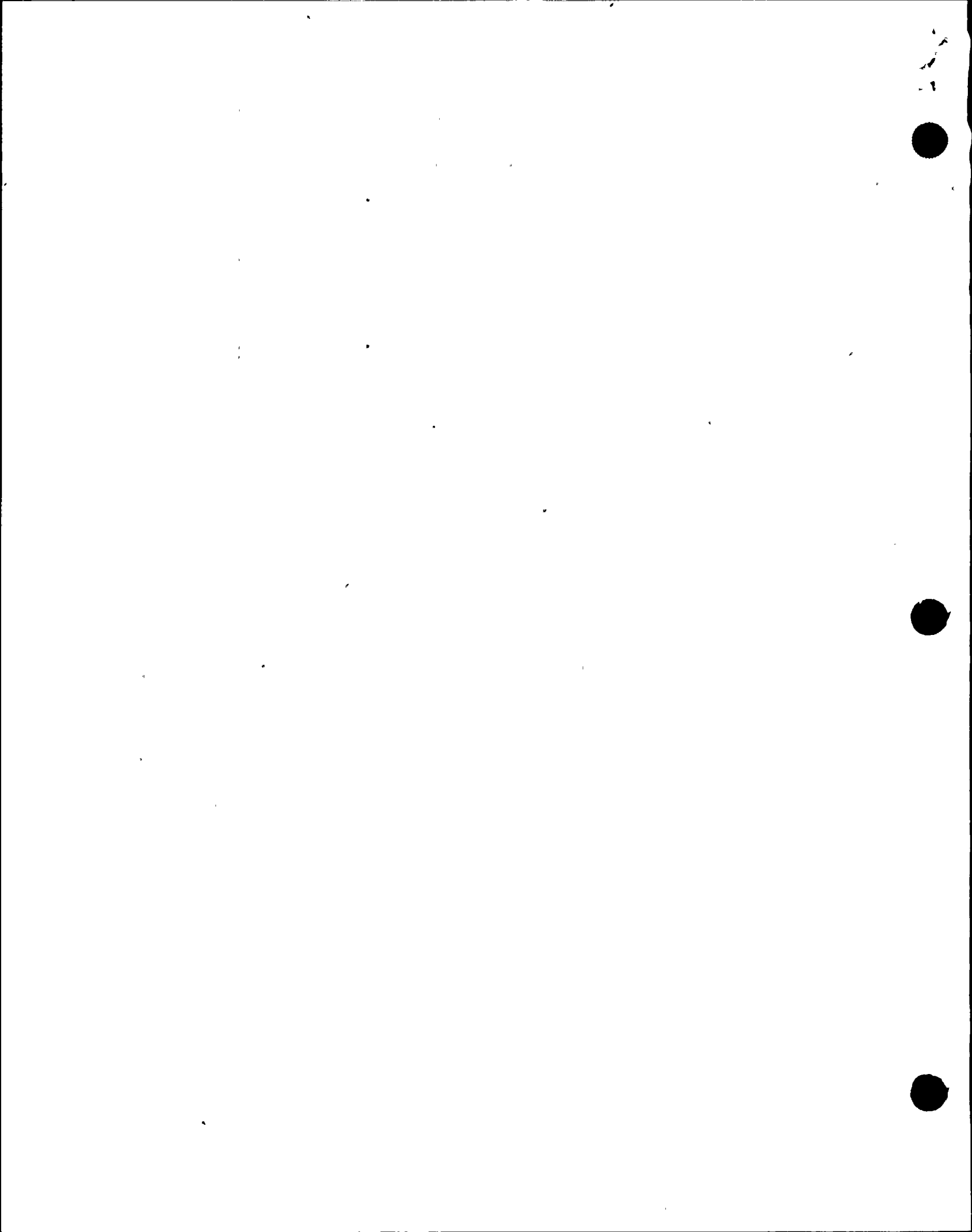
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April 1991	1 -11

MASTER

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY
CONTROLLED
VERIFICATION:
DATA ENTRY:
RECORDS:
DOCUMENT

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ATTACHMENT 6
LESSON PLAN TEMPORARY/PUBLICATION/ADDENDUM CHANGE FORM

The attached change was made to:

Lesson plan title: Drywell Cooling System

Lesson plan number: 02-LOT-001-222-2-00 Rev 6

Name of instructor initiating change: Dan Hunt

Reason for the change: TCO-02-LIC-90-022 to incorporate MOD #87-164 into LP. To accomplish this, Safety Evaluation for Mod #87-164 (pages A1 through A4) are being added as addendum A to this LP. When this LP is next revised,

Type of change:

- 1. Temporary change
- 2. Publication change
- 3. Addendum change

this addendum change can be removed and a brief description of MOD #87-164 added (along with any other applicable MOD) by creating Addendum I to the LP. (see HPCS Lesson Plan for an idea on how to do this).

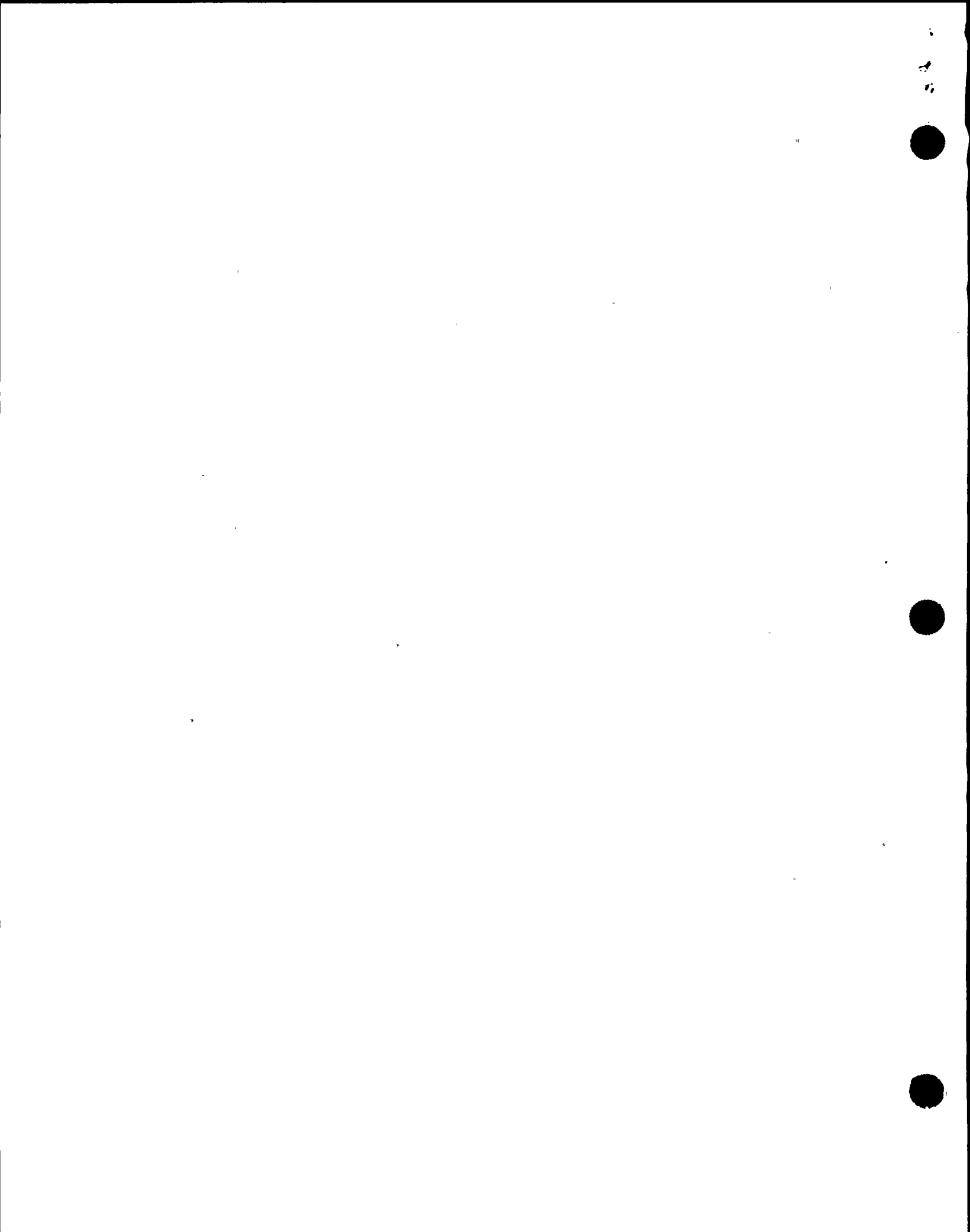
Disposition:

- 1. Incorporate this change during the next scheduled revision.
- 2. Begin revising the lesson plan immediately. Supervisor initiate the process.
- 3. To be used one time only.

Approvals:

Instructor: Dan Hunt /Date 6/14/91

Training Area Supervisor (or designee): [Signature] /Date 6/14/91



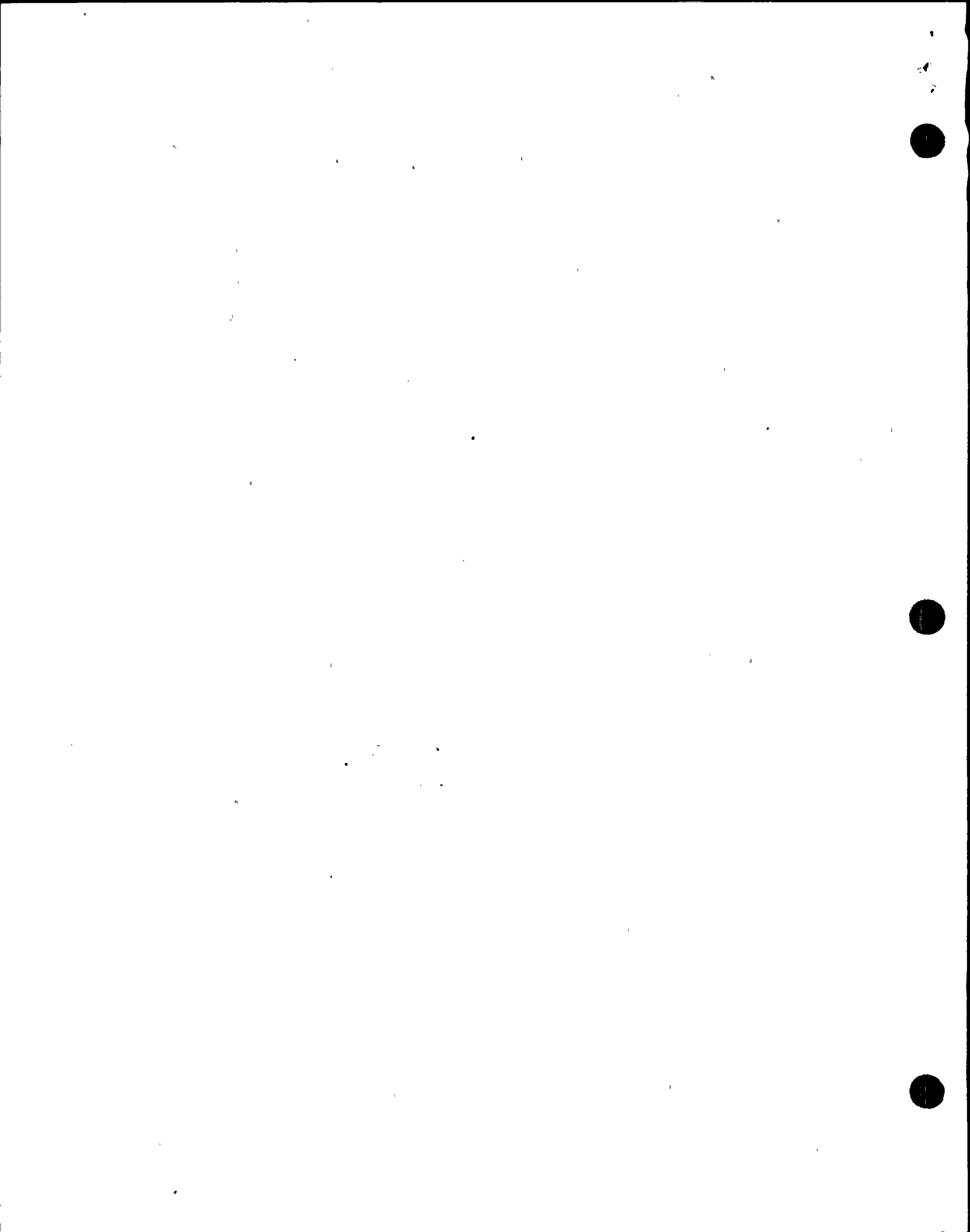
I. TRAINING DESCRIPTION

- A. Title of Lesson: Drywell Cooling System | 6
- B. Lesson Description: This lesson contains information pertaining to the Drywell Cooling System. The scope of this training is defined by the learning objectives and in general covers the knowledge requirements of a Licensed Control Room Operator. |
- C. Estimate of the Duration of the Lesson: 1.5 Hours |
- D. Method of Evaluation, Grade Format, and Standard of Evaluation: Written examination, passing grade of 80% or greater. |
- E. Method and Setting of Instruction: This training should be conducted in the classroom. |
- F. Prerequisites:
 - 1. Instructor:
 - a. The instructor shall be familiar with the lesson materials and have achieved the necessary instructor certification in accordance with NTP-16. |
 - 2. Trainee:
 - a. Initial License Candidate - In accordance with eligibility requirements of NTP-10. |
- G. References:
 - 1. Technical Specification
 - a. 3/4.6.1.7, Drywell Average Air Temperature |
 - 2. Operating Procedures
 - a. N2-OP-60, Drywell Cooling |
 - b. N2-OP-13, Reactor Building Closed Loop Cooling |
 - 3. NMP-2 FSAR
 - a. Design Basis Vol. 20, Ch. 9.4, Pg. 9.4-20 |
 - 4. MOD # PW2Y 87164 SAFETY Evaluation # 87-111 |

II. REQUIREMENTS

- A. AP-9, Administration of Training | 6
- B. NTP-10, Training of Licensed Operator Candidates |

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6/13/87
Oliver*



I. TRAINING DESCRIPTION

- A. Title of Lesson: Drywell Cooling System
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 - 3. NMP-2 FSAR
 - a. Design Basis Vol. 20, Ch. 9.4, Pg. 9.4-20

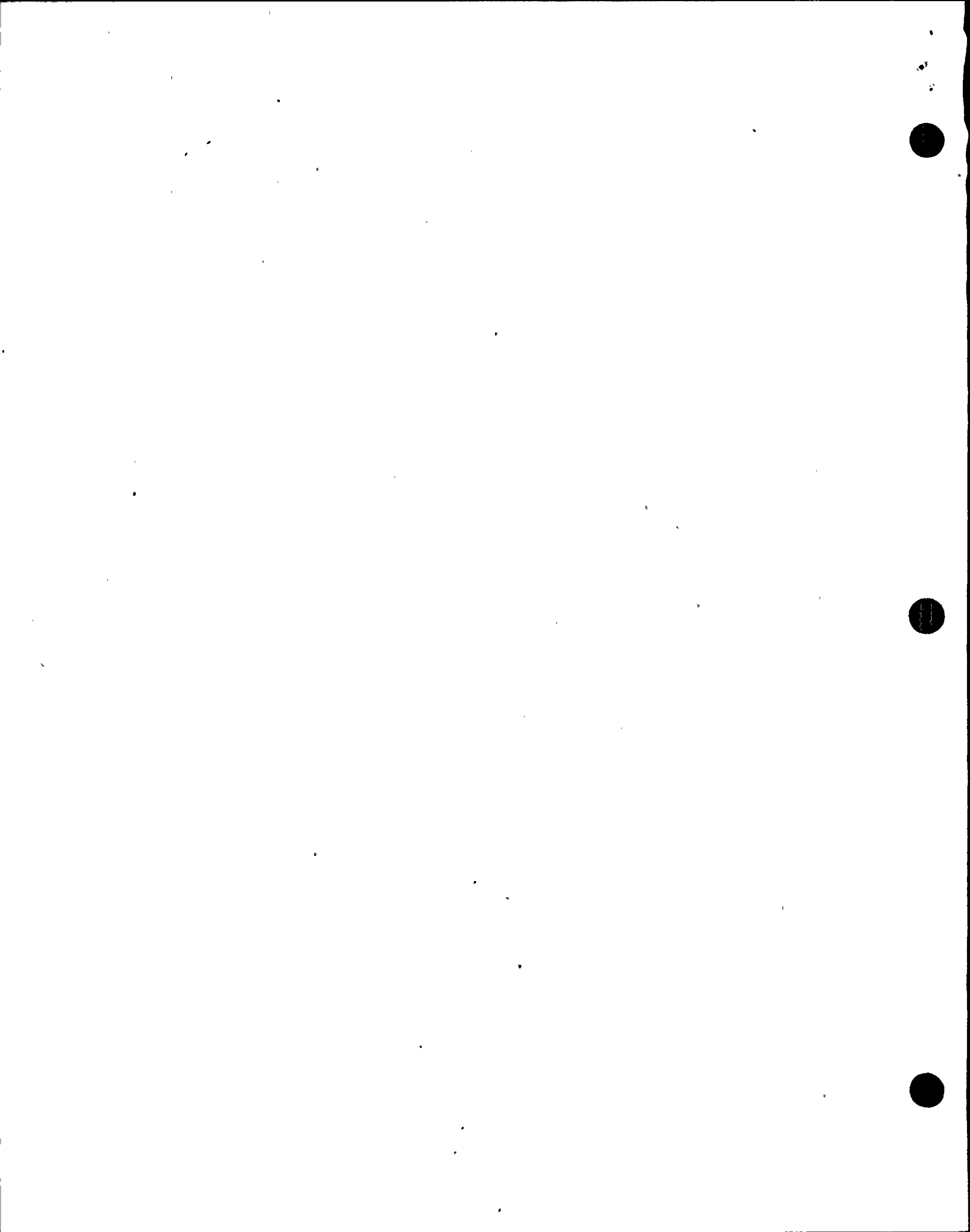
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II. REQUIREMENTS

- A. AP-9, Administration of Training
- B. NTP-10, Training of Licensed Operator Candidates

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*Ac. Director
Chere 4/13/91
[Signature]*



III. TRAINING MATERIALS

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A. Instructor Materials:

1. Training Record
2. Instructor's working copy of the lesson plan.
3. Whiteboard and Markers
4. Overhead Projector
5. Transparencies as needed
6. Flip Chart (if necessary)
7. Copy of trainee handouts
8. Trainee Course Evaluation Forms

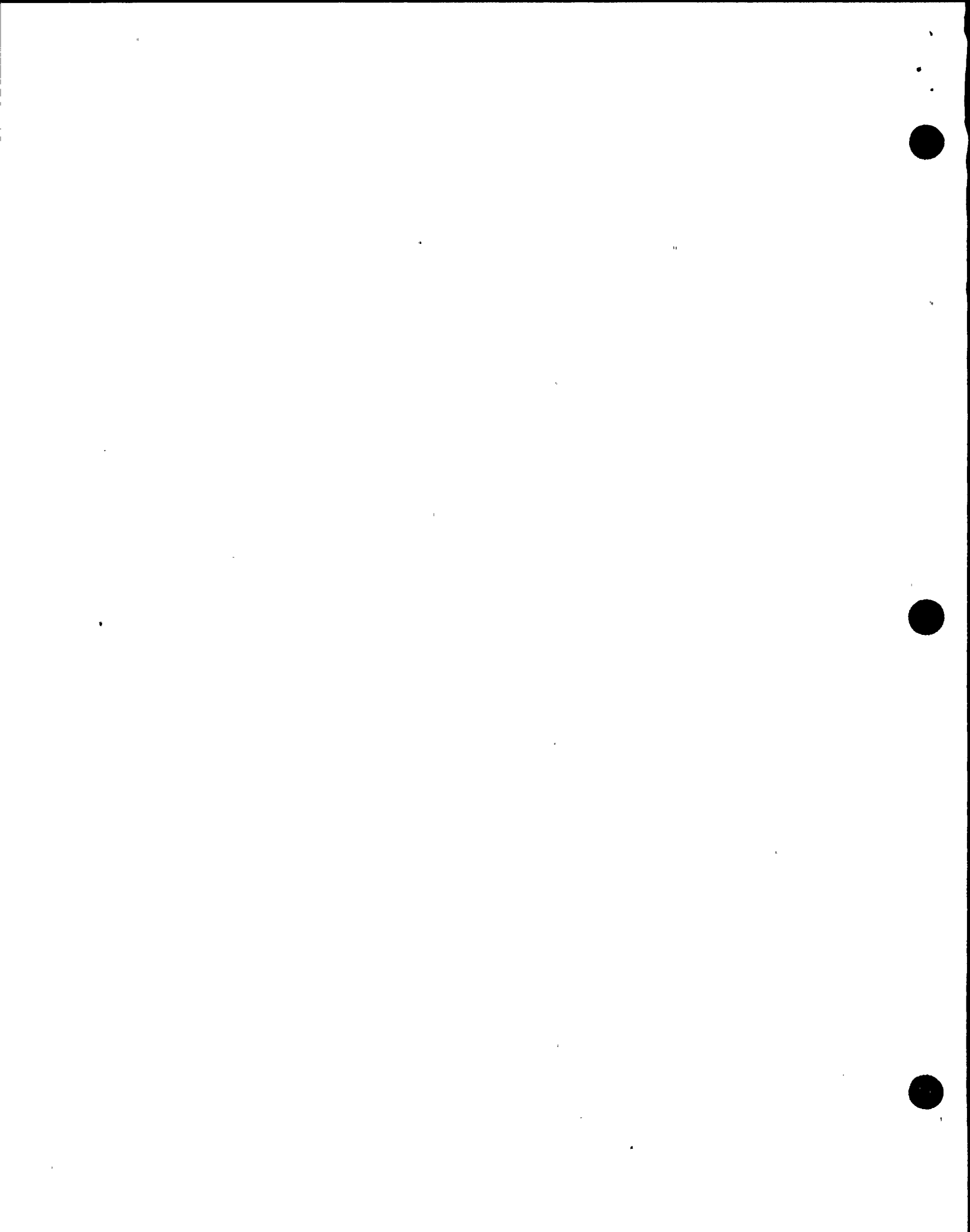
B. Trainee Materials:

1. Handouts
2. Paper or Notebook
3. Pen or Pencil

IV. EXAM AND MASTER ANSWER KEYS

Will be generated and administered as necessary. They will be on permanent file with the designated clerk.

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V. LEARNING OBJECTIVES

Upon completion of the training the trainee will have gained the knowledge to:

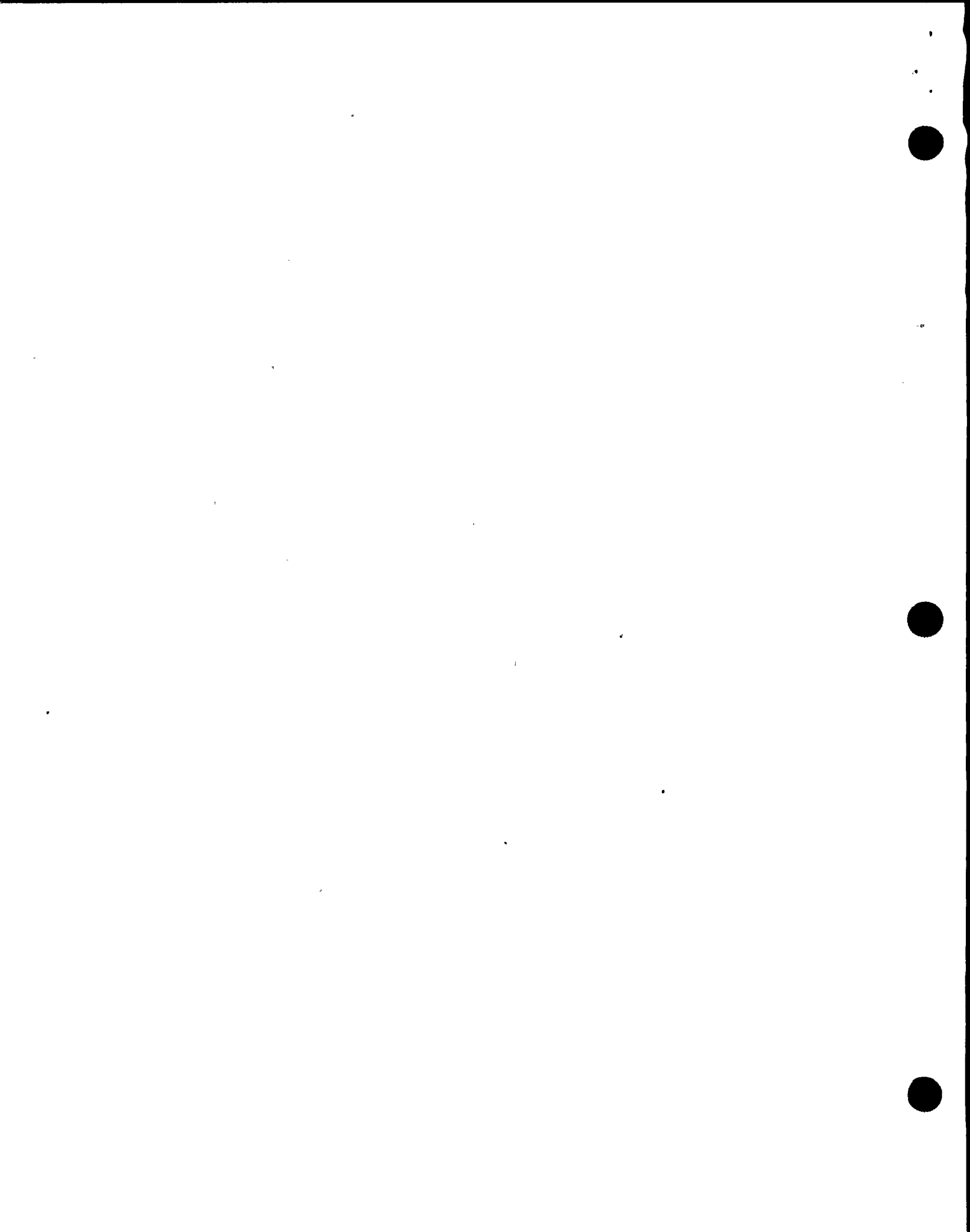
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A. Terminal Objectives:

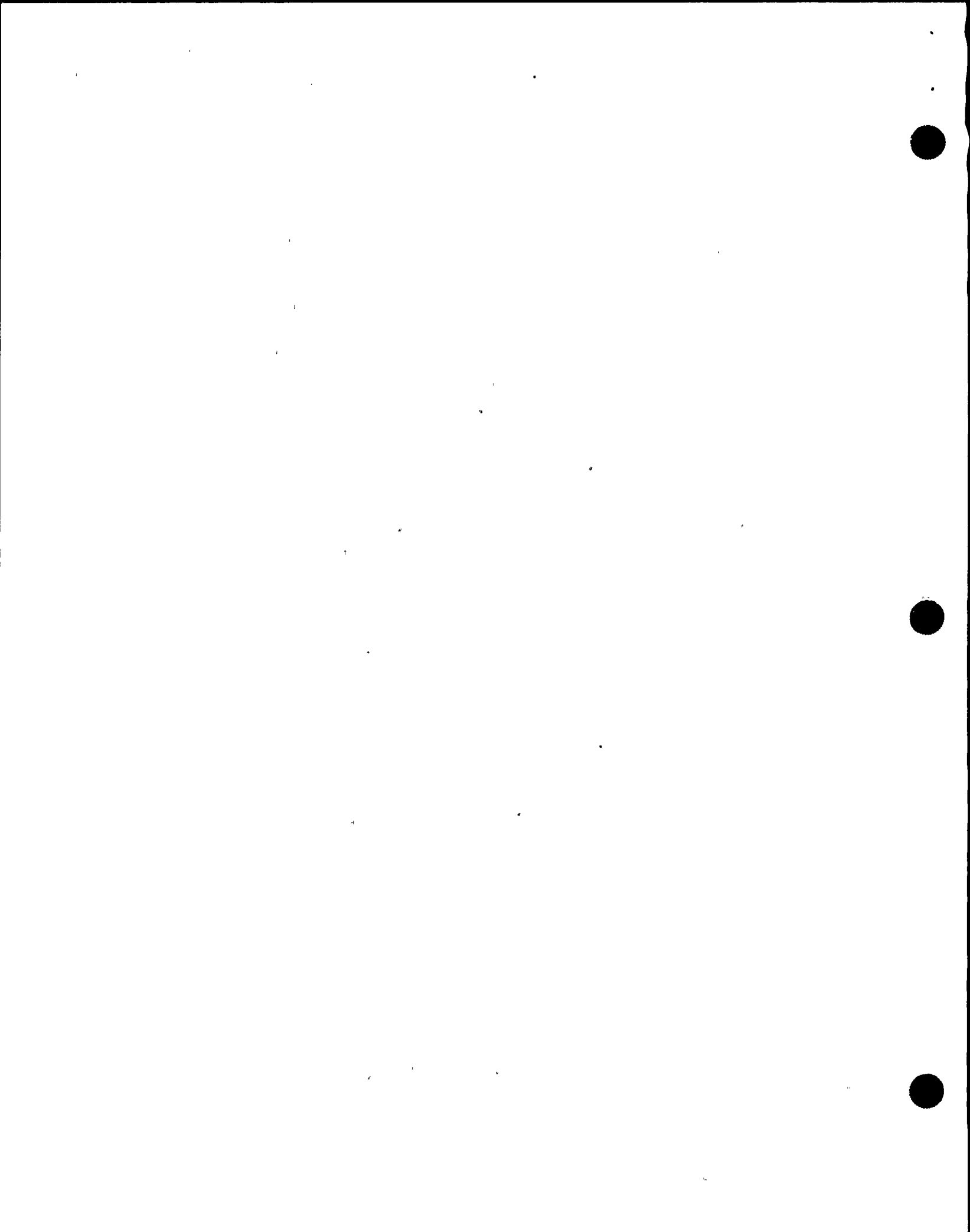
- TO-1.0 Place the Drywell Cooling System in operation from the Control Room and monitor for proper operation. (2220020101)
- TO-2.0 Secure the Drywell Cooling System. (2220040101)
- TO-3.0 Direct the actions required per EOP-PC Section DWT. (3449420603)
- TO-4.0 Direct the actions required per EOP-PC Section PCP. (3449430603)
- TO-5.0 Direct the actions required per EOP-PC Section SPL. (3449440603)
- TO-6.0 Direct the actions required per EOP-PC Section SPT. (3449450603)
- TO-7.0 Respond to a high drywell temperature. (3449800403)

B. Enabling Objectives:

- EO-1.0 Explain the purpose of the Drywell Cooling System.
- EO-2.0 Describe the function and operation of each of the following major components and auxiliary systems of the Drywell Cooling System.
 - a. Unit Coolers 3A/3B
 - b. Unit Coolers 1A thru 1D
 - c. Unit Coolers 2A thru 2D
 - d. Back Draft Dampers
- EO-3.0 State the setpoint and purpose for the following interlocks:
 - a. CCP Isolation Valve Interlock
 - b. Drywell Unit Cooler Group 1/2 LOCA Override
 - c. Drywell Unit Cooler Div. I/II LOCA Override
 - d. Fan Motor Overload Trip
- EO-4.0 Describe the interrelationship between the Drywell Cooling System and the following systems.
 - a. Plant Electrical System
 - b. Reactor Building Closed Loop Cooling Water System
 - c. Drywell Floor Drain System



- EO-5.0- Explain the basis for each precaution and limitation listed in N2-OP-60. |6
- EO-6.0 Regarding the Drywell Cooling System, determine and use the correct procedure to identify the actions and/or locate information related to: |
- a. Startup |
 - b. Shutdown |
 - c. Normal |
 - d. Off Normal |
 - e. Annunciator Response procedures |
- EO-7.0 Given a specific set of plant conditions, determine how the Drywell Cooling System responds. |
- EO-8.0 Given a specific set of plant conditions, describe the immediate operator actions required. |
- EO-9.0 Describe how the Drywell Cooling System is utilized during the performance of the EOP's. |
- EO-10.0 (SRO Only) Given NMP2 Technical Specifications and a set of plant conditions, determine the appropriate bases, limiting condition for operations, limiting safety system setting, and/or action statement as appropriate. |



I. INTRODUCTIONA. Trainee Learning ObjectivesB. System Purpose

The purpose of the Drywell Cooling System (DRS) is to condition the air inside the Drywell area and maintain this area within acceptable environmental limits for equipment operation and personnel safety.

C. General Description

1. DRS provides temp. control and air circulation for 3 areas in the drywell:
 - a. Reactor Vessel top head area (UC 3A and 3B)
 - b. Reactor Vessel area (UC 1A thru 1D)
 - c. General Drywell area (UC 2A thru 2D)
2. All cooling coils of the drywell unit coolers are supplied from the Reactor Building Closed Loop Cooling System (CCP).

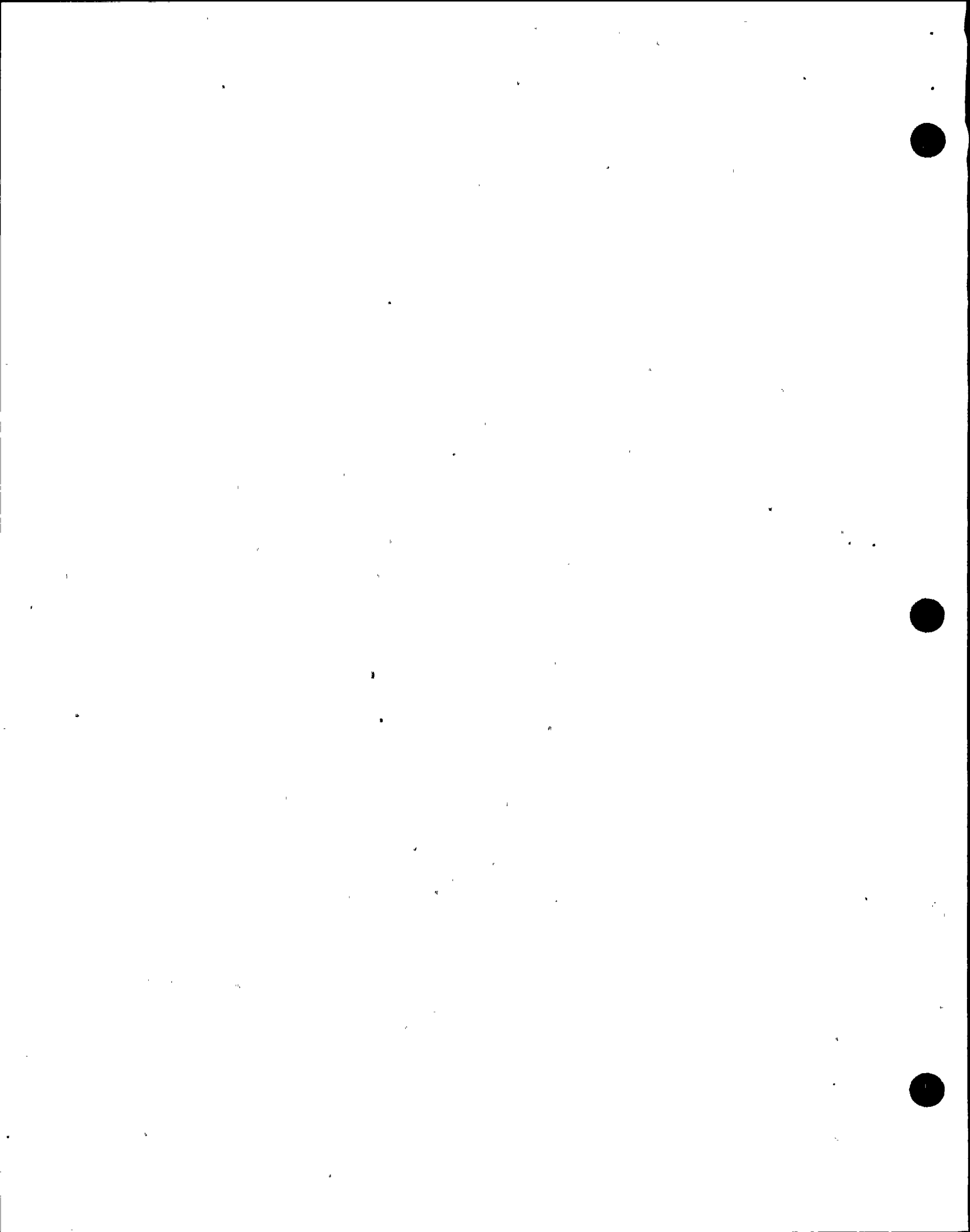
Preliminary Activities

1. Introduce self to class if unfamiliar.
2. Circulate TR for completion.
3. Distribute Course Evaluation Forms
4. Discuss Method of Evaluation
5. Hand out copies of trainee learning objectives.

Review objectives with trainees.

EO-1.0

Designed to maintain Drywell temperature less than 150°F.



II. DETAILED DESCRIPTIONA. Reactor Vessel Top Head Area Cooling

1. UC3A and 3B cool the drywell area located above the vessel head. One unit normally running with the second unit in standby.
 - a. Air drawn from top area of drywell.
 - b. Suction source: vessel top head suction duct.
 - c. Discharge: vessel top head area
2. CCP provides the coolant to cooling coils.
3. Backdraft dampers (DMP 1A and 1B) prevent reverse flow through a fan that is not operating.
4. Two individual ducts combine into one common discharge duct.
5. Common discharge duct branches into three distribution ducts.
6. Each distribution duct has balancing damper to adjust air flow for proper heat removal capacity.
7. Suction duct may be removed so as not to interfere with any operation when the reactor vessel head is removed.

Show TP-1 (Figure 1 of N2-OLT-20)
Point out each system component as discussed.

Each unit cooler rated at 8500 cfm (100% capacity).

Each unit cooler is supplied with a drain line to the Drywell Floor Drain System.

EO-2.0a | 6

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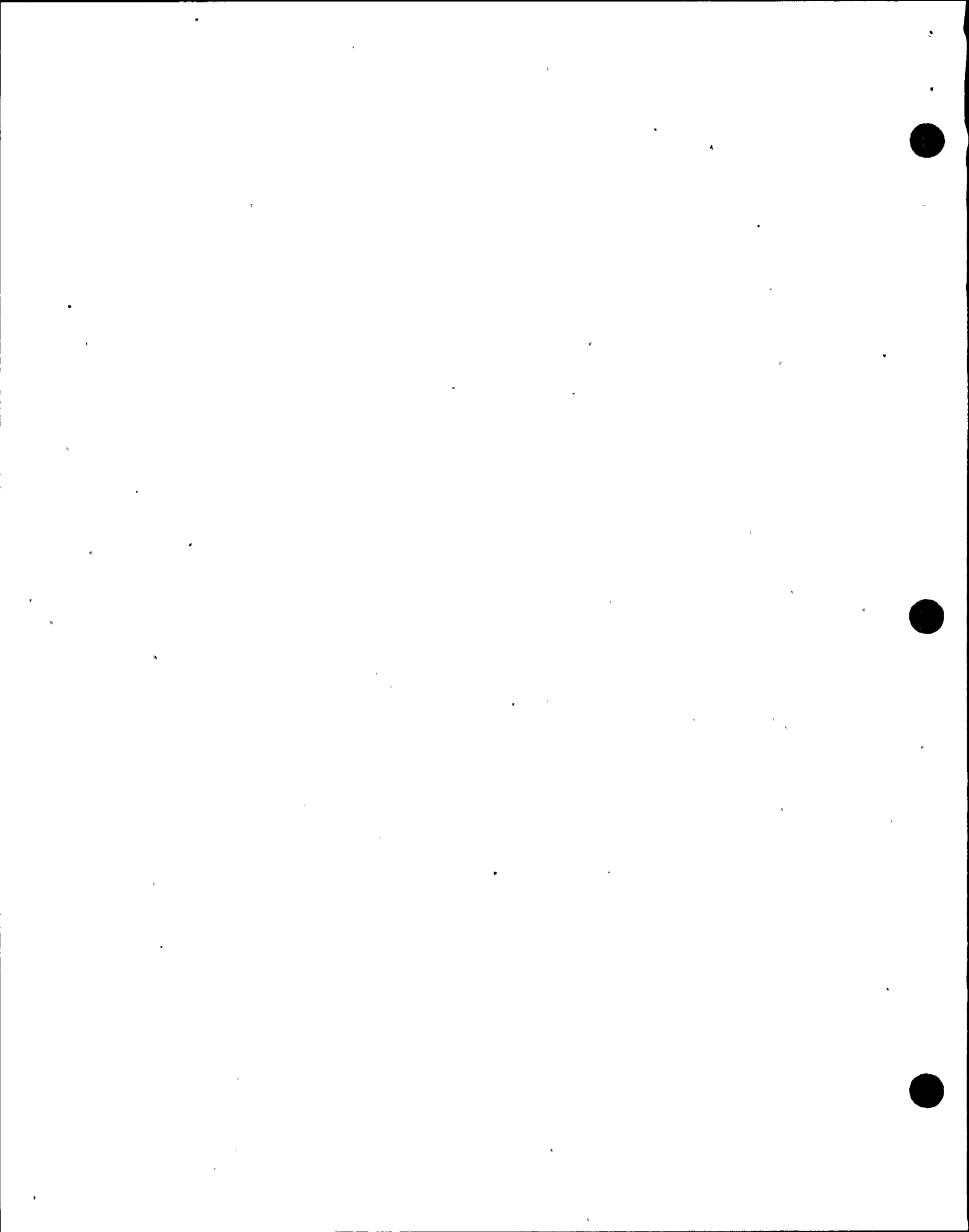
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EO-2.0d |

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B. Reactor Vessel Area Cooling

1. UC1A, 1B, 1C, and 1D cool the reactor vessel area.

Point out components on TP-1 as each is discussed.

EO-2.0b | 6

a. Suction taken from the upper areas of the drywell.

Rated at 11,000 cfm each.

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b. Discharge to:

1) Reactor Pedestal

2) Control Rod Drive Area

Provide vertical circulation of air to prevent stagnation.

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3) RRS Pump Area

4) Annular space between Reactor Vessel and Biological Shield Wall.

2. CCP provides the coolant to cooling coils

3. Branch distribution ducts to the CRD area and vessel support skirt contain balancing dampers.

4. Air supplied to the annular space travels up the annular space inside the shield wall and exhausts into the upper drywell area.

Show flowpaths on TP-1.

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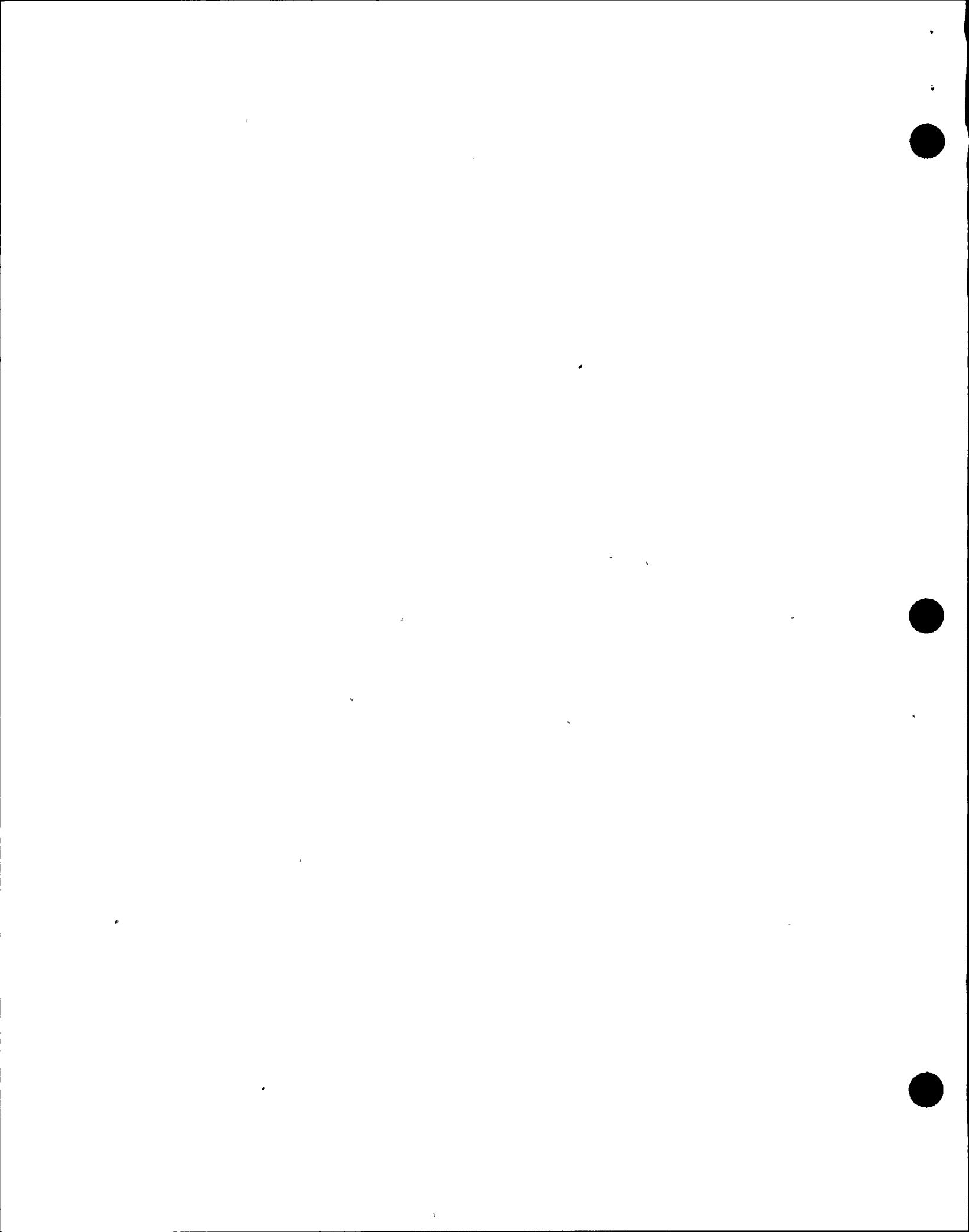
5. Air supplied to the pedestal and CRD area exhausts into the lower drywell area through exhaust ducts in the pedestal.

C. General Drywell Area Cooling

1. UC2A, 2B, 2C and 2D unit coolers are:

EO-2.0c | 6

a. Nonducted



- b. Create a turbulent mixing action to ensure temperature stratification doesn't occur in the upper drywell area.

- 2. Cooled by CCP.

D. Unit Cooler Condensate Drains

- 1. The condensate formed on the cooling coils is routed to the Drywell Floor Drains.
- 2. Loop seal provided in drain to prevent drawing air into drywell from drain system.

III. INSTRUMENTATION, CONTROLS AND INTERLOCKS

A. Instrumentation

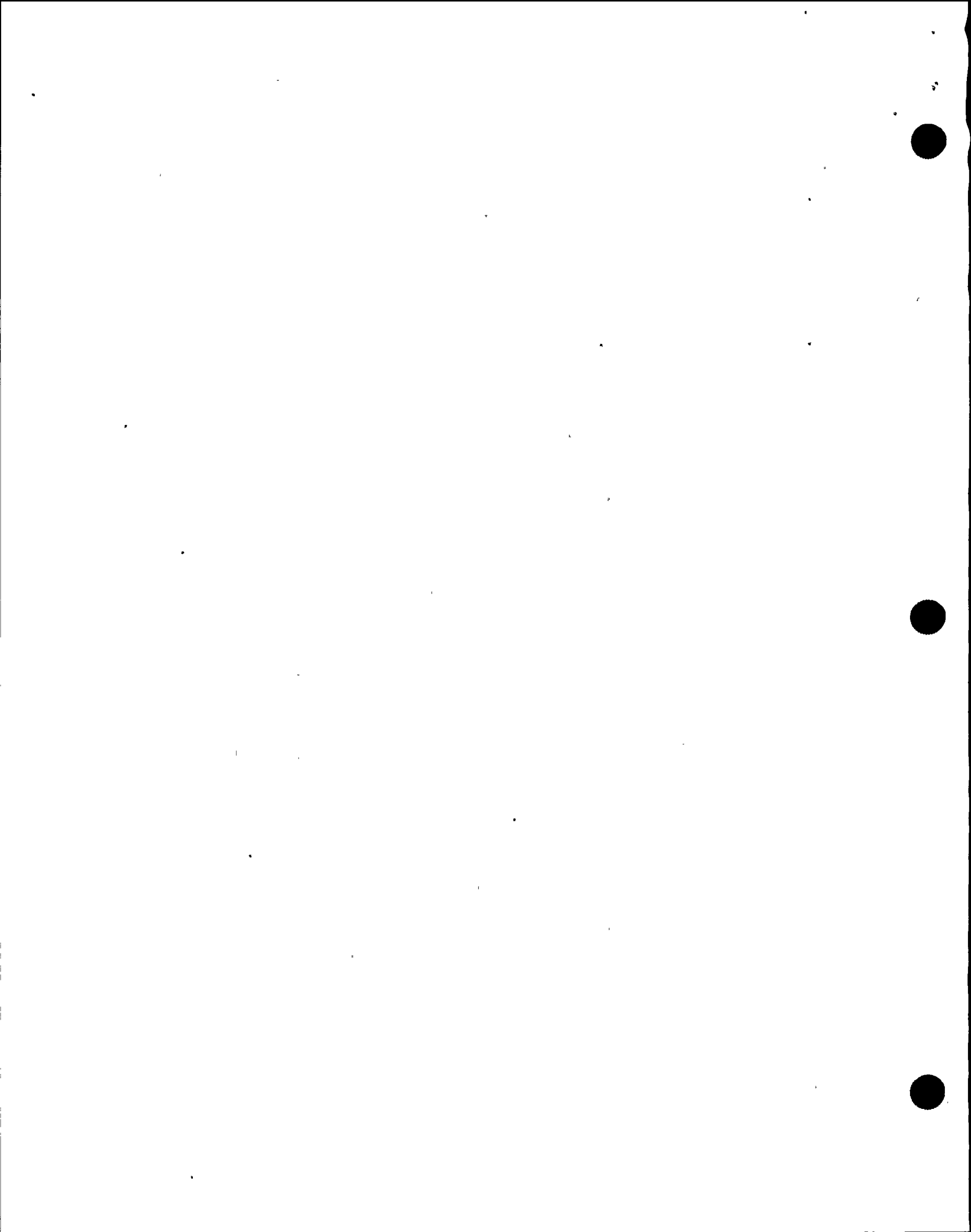
- 1. Two 12-point recorders located on Drywell cooling and Primary Containment Purge Panel (PNL873) in the Main Control Room display inlet/outlet air temp for each drywell cooler.
- 2. Unit coolers discharge air flow is monitored and inputs low flow alarm on PNL873 when cooler is operating and air flow is low.
- 3. UC3A and B are monitored for fan vibration.

A high outlet temperature on an operating unit cooler can be an indication of component failure.

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B. Controls

- 1. Unit Cooler Control Switches
 - a. P873
 - b. START, NORMAL AFTER, STOP positions



- c. Red indicating light - on when fan operating
- d. Green indicating light - on when fan stopped

2. LOCA Override Switches

- a. Drywell Unit Cooler Group 1/2 LOCA Override
 - 1) OVERRIDE and RESET positions
 - 2) Key removable in RESET only
 - 3) P873
- b. Drywell Unit Cooler Div. I/II LOCA Override
 - 1) OVERRIDE and RESET positions
 - 2) Key removable in RESET only
 - 3) P873

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C. Interlocks

- 1. CCP isolation valve interlock
 - a. Trips a running unit fan or prevents starting of a unit fan if all applicable unit isolation valves are not full open.
- 2. Drywell Unit Cooler Group 1/2 LOCA Override
 - a. Allows restart of unit fans without CCP to coolers
- 3. Drywell Unit Cooler Div. I/II LOCA Override
 - a. Allows reopening of CCP isolations with a LOCA signal sealed in.

Show TP-2 (Figure 2 of N2-OLT-20)
Discuss interlock circuit.

EO-3.0 |6

EO-3.0a |

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EO-3.0b |6

EO-3.0c |6



4. A fan motor overload will cause a drywell unit cooler to trip.

EO-3.0d | 6

IV. SYSTEM INTERRELATIONS

- A. Plant Electrical System 600AC power is supplied from 2NHS-MCC011 and MCC012 to operate the drywell unit cooler fan motors
- B. Reactor Building Closed Loop Cooling Water System
The cooling medium to the drywell unit coolers is provided by CCP.
- C. Drywell Floor Drains Systems
The drain path for Unit Cooler condensate drains is provided by the Drywell Floor Drain System.

EO-4.0a | 6

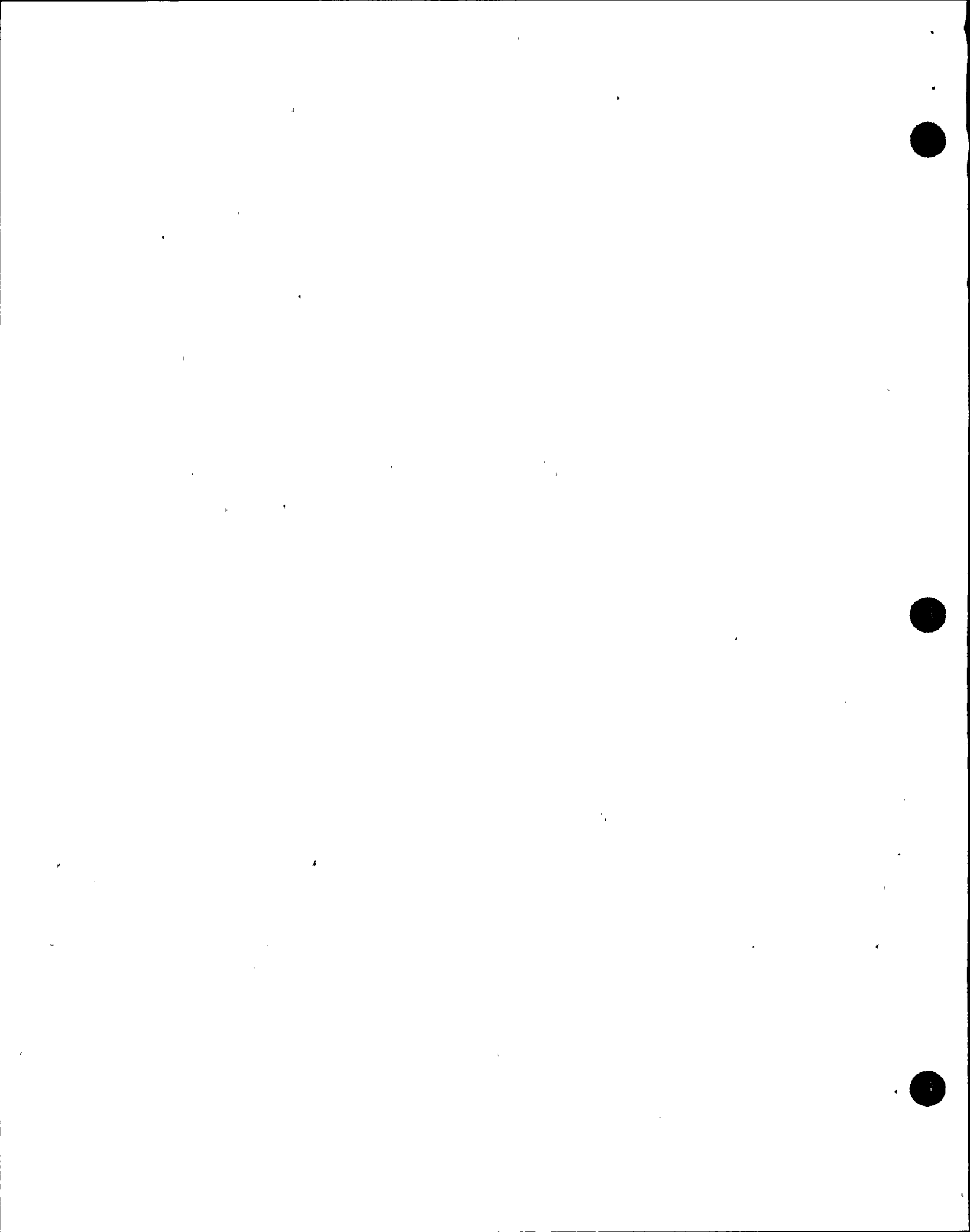
EO-4.0b | 6

EO-4.0c | 6

V. SYSTEM OPERATIONA. Normal Operation

1. All unit coolers fans operating with the exception of one vessel top head area cooling fans. (2DRS-UC3A or 3B)
2. Avg. temp of drywell - <150°F
3. RBCLCW temp - 95°F
4. Temperature regulation of the drywell is accomplished by the number of cooling fans operating.

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5. Relative humidity is maintained between 20 and 50 percent

B. Emergency Operation

1. On receipt of a LOCA signal, CCP inboard and outboard isolation valves will close, thus causing the fans to trip unless the Drywell Unit Cooler Group 1/2 LOCA override keylock on Panel 873 is in OVERRIDE
2. CCP can be restored to the drywell unit coolers by operation of an additional set of LOCA override switches at Panel 873 which allows the CCP isolation valves to be opened with a LOCA signal sealed in.

VI. DETAILED SYSTEM REFERENCE REVIEW

A. Procedures:

1. N2-OP-60 Drywell Cooling
2. N2-OP-13 Reactor Building Closed Loop Cooling
3. N2-EOP-PC Primary Containment Control

B. Technical Specifications:

1. 3.6.16 Drywell Average Air Temperature

Review each of the following referenced documents with the class. Insure discussion includes system startup, shutdown, normal, abnormal, annunciator response procedures.

EO-5.0		6
EO-6.0		
EO-7.0		
EO-8.0		
EO-9.0		
EO-10.0		



VII. RELATED PLANT EVENTS

- A. Review the following LERs with the class.
1. None listed

VIII. SYSTEM HISTORY

- A. Review the following system MODs with the class.
1. PN2Y87MX164

see Addendum A

IX. WRAP-UP

- A. Review the Trainee Learning Objectives.

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VII. RELATED PLANT EVENTS

- A. Review the following LERs with the class.
1. None listed

VIII. SYSTEM HISTORY

- A. Review the following system MODs with the class.
1. PN2Y87MX164

IX. WRAP-UP

- A. Review the Trainee Learning Objectives.

*Addendum Change
6/13/91*



Addendum A

Safety Evaluation Cover Sheet

Plant: Nine Mile Point Unit #2

System: Drywell Cooling System

Modification Title: Ductwork and Air Flow Changes for 2DRS-UC1A through 1D

Modification Number: PN2Y87MX164

Major Order Number: N/A

Safety Evaluation Number: 87-111

Revision Number: 0

Prepared By: Richard T. Misiaszek *Richard Misiaszek*
Licensing Engineer 8/12/87
Date

Reviewed By: Sherad H. P. [Signature]
Modification Engineer 8/12/87
Date

NYC FOR R. HANMANN
Lead Design Engineer 8/12/87
Date

[Signature] / M. Masius
Lead Engineer - Safety Analysis 8/12/87
Date

Approved By: [Signature] / M. Masius
Manager Licensing 8/12/87
Date

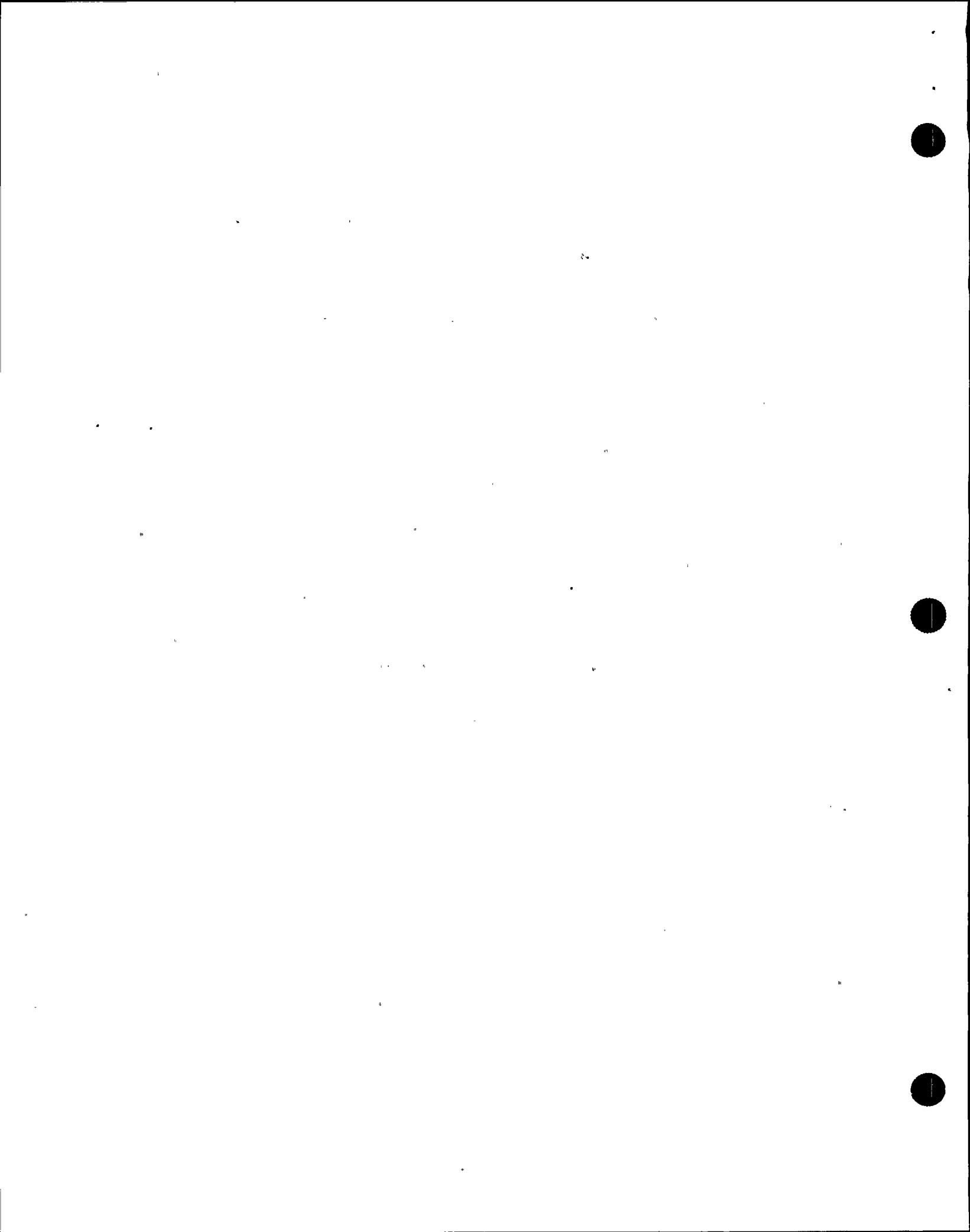
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Disapproved _____ Date: _____

Approved: _____
Date: _____

SRAB Review: _____
SRAB Does Not Concur _____ Date: _____

SRAB concurs: _____
Date: _____

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1.0 Modification Title

Ductwork and Air Flow Changes for 2DRS-UC1A through D

2.0 Modification Background and Scope

The drywell cooling portion of the reactor building HVAC system is designed to provide a temperature environment that ensures optimum performance of equipment.

Local hot spots on el 316 ft of the primary containment have been detected. Colder air is being short circuited through the lower return registers, creating high temperatures on el 316 ft and above. Also, cold spots exist in the reactor pressure vessel (RPV) skirt area.

This modification will make revisions to ductwork and rebalance of air flow of 2DRS-UC1A through D by implementation of the following:

1. Removal of damper and grille assembly from all return air registers above el 316 ft of the return ductwork of the subject unit coolers.
2. Remove all return air registers below el 316 ft of the return ductwork of the subject unit coolers and blank off these duct openings.
3. Rebalance the supply air from the subject unit coolers to provide 10,000 cfm total to the RPV skirt area, and rebalance the supply air to the other areas accordingly.
4. Revise setpoint for low unit cooler discharge air temperature from 100°F to 88°F.

The system and components involved with this modification are not safety related and are designated QA Category II.

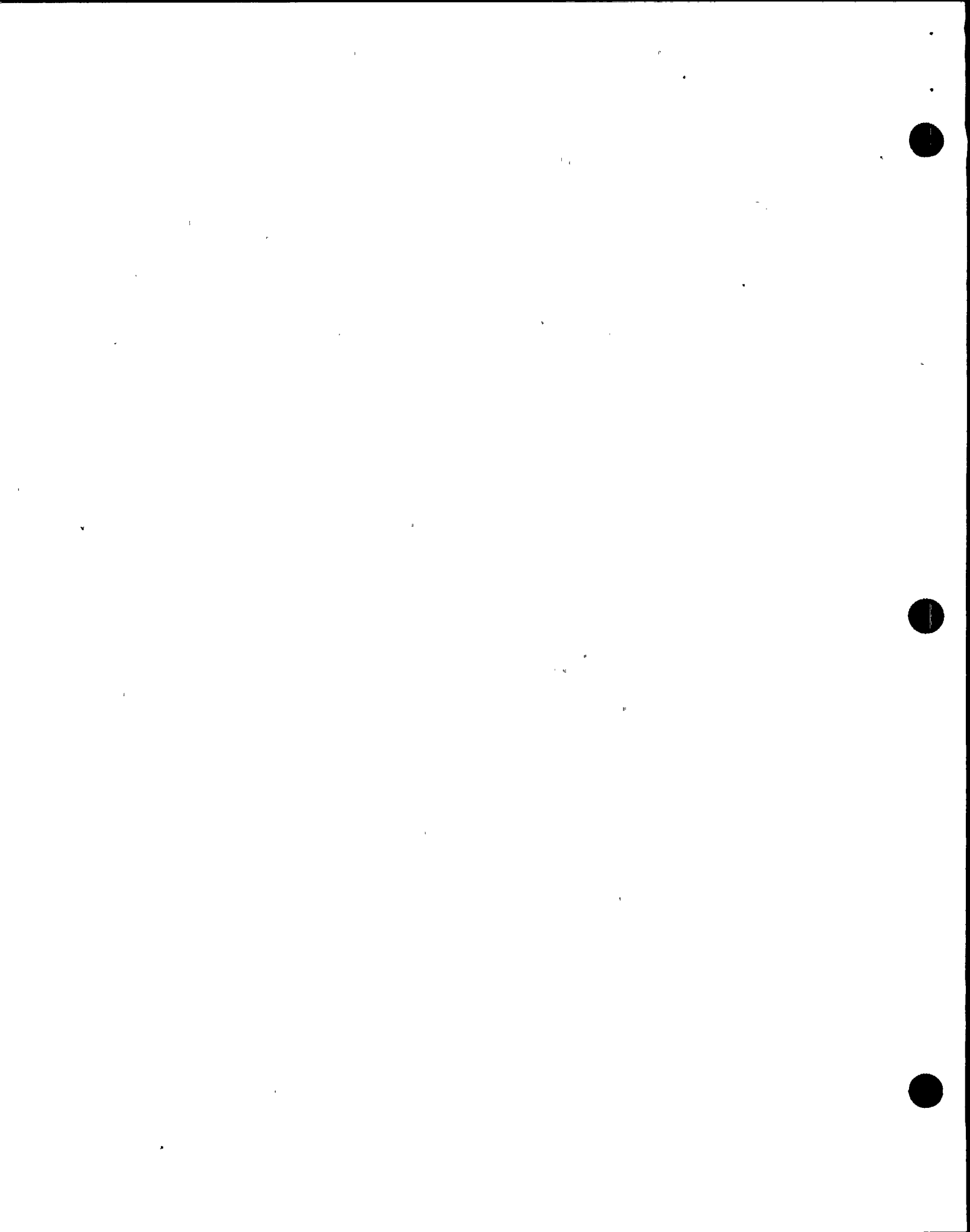
Items 1 and 2 above were previously evaluated under a temporary modification (SER No. 87-099).

3.0 Modification Analysis

The modification is in accordance with the requirements of the Engineering Specification No. P413L, Ventilation and Air Conditioning System Ductwork. A Licensing Document Change Notice (LDCN) has been initiated to revise the FSAR Section 9.4.2.2.1 and Figures 9.4-8j and 9.4-9 (see Attachment 5). The following engineering documents have been generated to implement this modification:

- a. Engineering and Design Coordination Report (E&DCR) No. M10404
- b. Engineering Change Notice (ECN) No. DRS-604

This page added per addendum change 6/13/91



Addendum A (cont)

The drywell cooling system is not required to operate during or after an accident. A failure of this modification will not increase the probability of any accidents considered in the FSAR.

This modification will not result in any transients or cause any scenarios which might affect safe shutdown. It also has no impact on the accidents previously considered in the FSAR.

Implementation of this modification will eliminate local hot spots by increasing air removal capability and air mixture above el 316 ft of the primary containment. It will also increase the RPV skirt area temperature to an acceptable level by providing better air mixing and circulation within the drywell area.

With the reactor building closed loop cooling water at 85°F, it is possible to have supply air less than 100°F. Revising the setpoint for low unit cooler discharge air temperature from 100°F to 88°F will eliminate unnecessary alarms while still maintaining the temperature specified in FSAR Table 9.4-1.

Functional testing of unit coolers is required. Also required is the rebalance of supply air flow rates from each supply register and the return air flow rates of the subject coolers.

This modification does fall into one of the "Jet Zones" identified on Calculation MS-1663. However there will be no changes to the existing configuration of the unit coolers and a plate will be added to the existing ducts. Therefore, a new jet impingement study is not required.

This modification will require work to be performed in the drywell which is a high radiation area (greater than 100 mR/hr). This modification should be installed, tested, inspected and maintained during a plant shutdown and under the auspices of Radiation Work Permits such that the radiation exposure to the workers will be maintained within the ALARA design criteria (see Attachment 3).

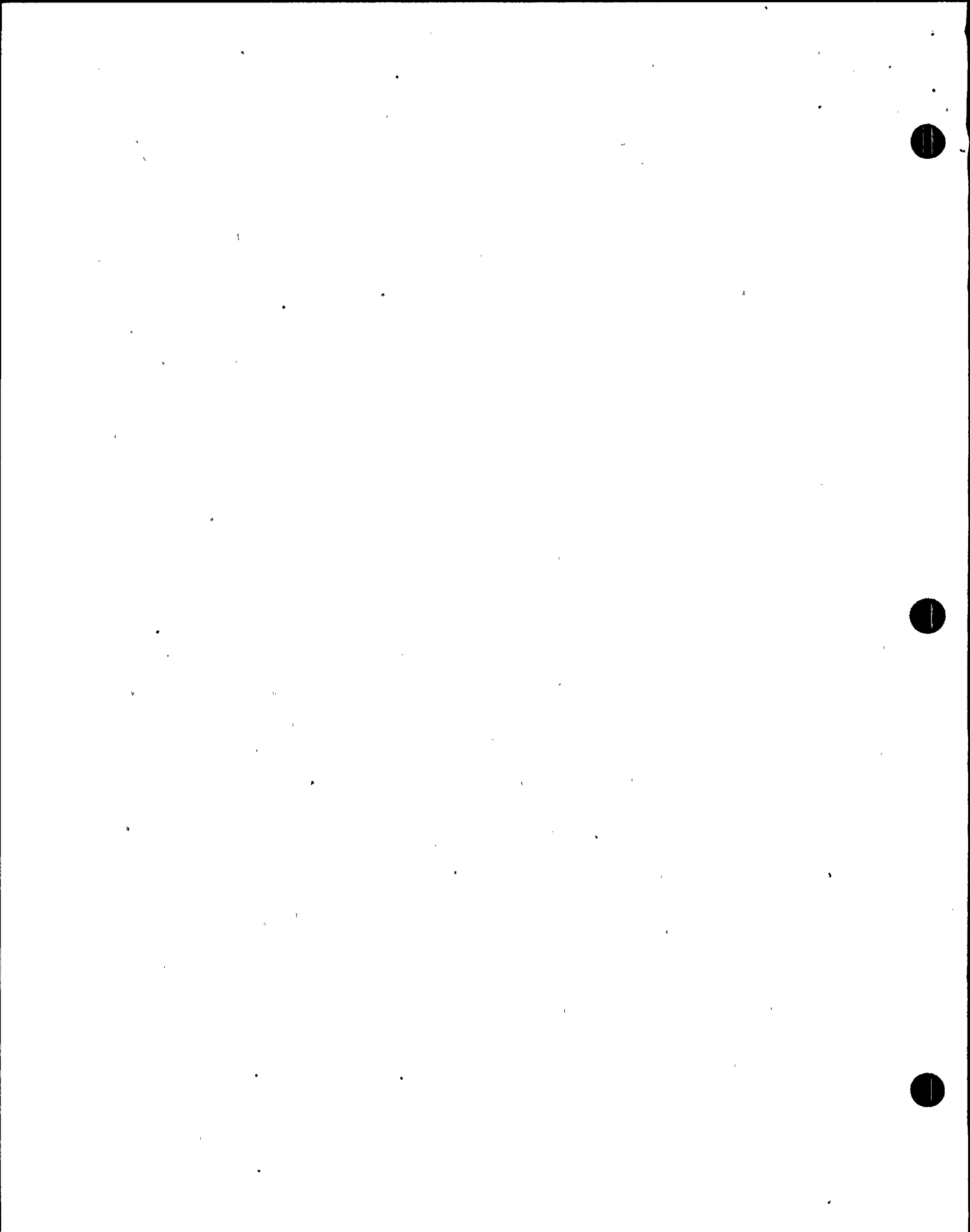
This modification will also not impact equipment clearance, Category II over I, fire protection, human factors, control room habitability, environmental design criteria or equipment qualification.

4.0 Conclusion

The drywell cooling system is designed to non-nuclear safety standards and is not required for safe shutdown of the plant. This modification will improve the drywell cooling and maintain the environmental condition within the limits specified in the FSAR.

Based on the above analysis, this modification does not constitute an unreviewed safety question (see Attachment 1) and will not adversely affect the safe operation or shutdown of the plant.

This page added per addendum change 6/13/91 DDD



Safety Design Basis

1. Provide means to monitor all effluent from the reactor building prior to release for radioactive contamination and to isolate all ventilation openings in the reactor building in the event that radiation levels exceed a predetermined value.
2. During accident conditions, divert recirculated air through a standby gas treatment system (SGTS) (Section 6.5.1) so that offsite radiation doses are maintained below allowable values.
3. Provide seismically qualified ductwork and accessories to protect adjacent safety-related equipment in the event of a design basis earthquake (DBE).

9.4.2.2 System Description

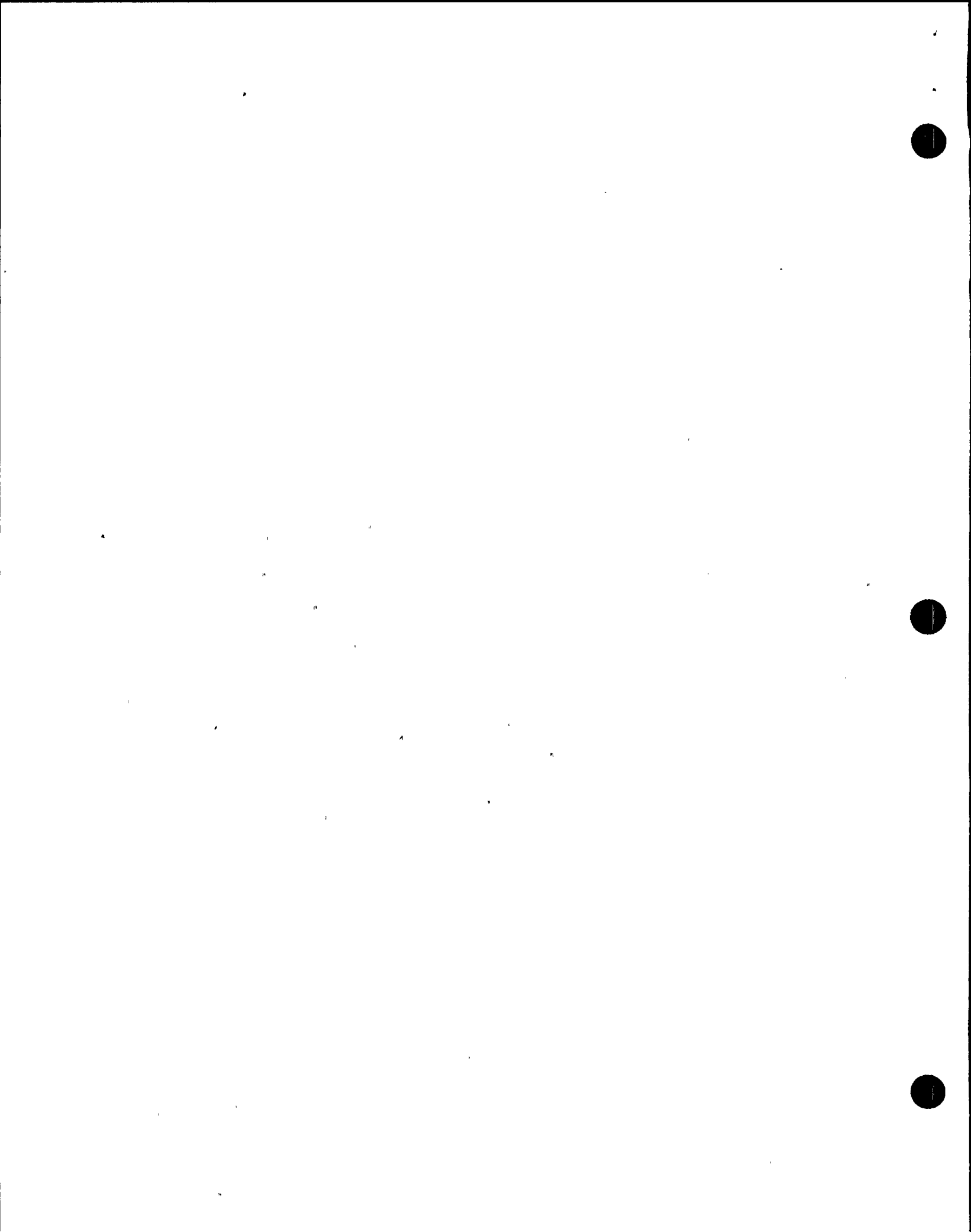
9.4.2.2.1 Drywell Cooling

The drywell cooling system consists of 10 unit coolers containing fans, cooling coils, dampers, and controls, together with ductwork and ductwork accessories. Cooling water is piped to each cooling coil from the reactor building closed loop cooling water system (Section 9.2.2.1). The drywell cooling system is shown schematically on Figure 9.4-8j. The 10 unit coolers are arranged as follows:

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1. Four unit coolers are located on el. 240 ft and serve to cool the RPV control rod drive area, the RPV skirt, and the general drywell areas on el 240 ft and 261 ft. Return air to the unit coolers is ducted from the general drywell areas ~~at~~ ~~el 288 ft 3 in and~~ above el 316 ft.
2. Four unit coolers are located on el 278 ft 6 in and serve to cool the general drywell areas on the same elevation. Supply and return air is nonducted.
3. Two unit coolers are located on el 288 ft 3 in and discharge through a common supply air duct to cool the RPV top head area. Return air from the same area is transmitted through a common return air duct to both unit coolers.

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 02-LOT-001 -222 -2-00 Page A47



Addendum A (CONT)

- CONFIDENTIAL - SECURITY INFORMATION
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1. Blank off register to allow no air flow
 2. Blank off register to allow no air flow
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 4. Blank off register to allow no air flow
 5. Blank off register to allow no air flow
 6. Blank off register to allow no air flow
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 8. Blank off register to allow no air flow
 9. Blank off register to allow no air flow
 10. Blank off register to allow no air flow

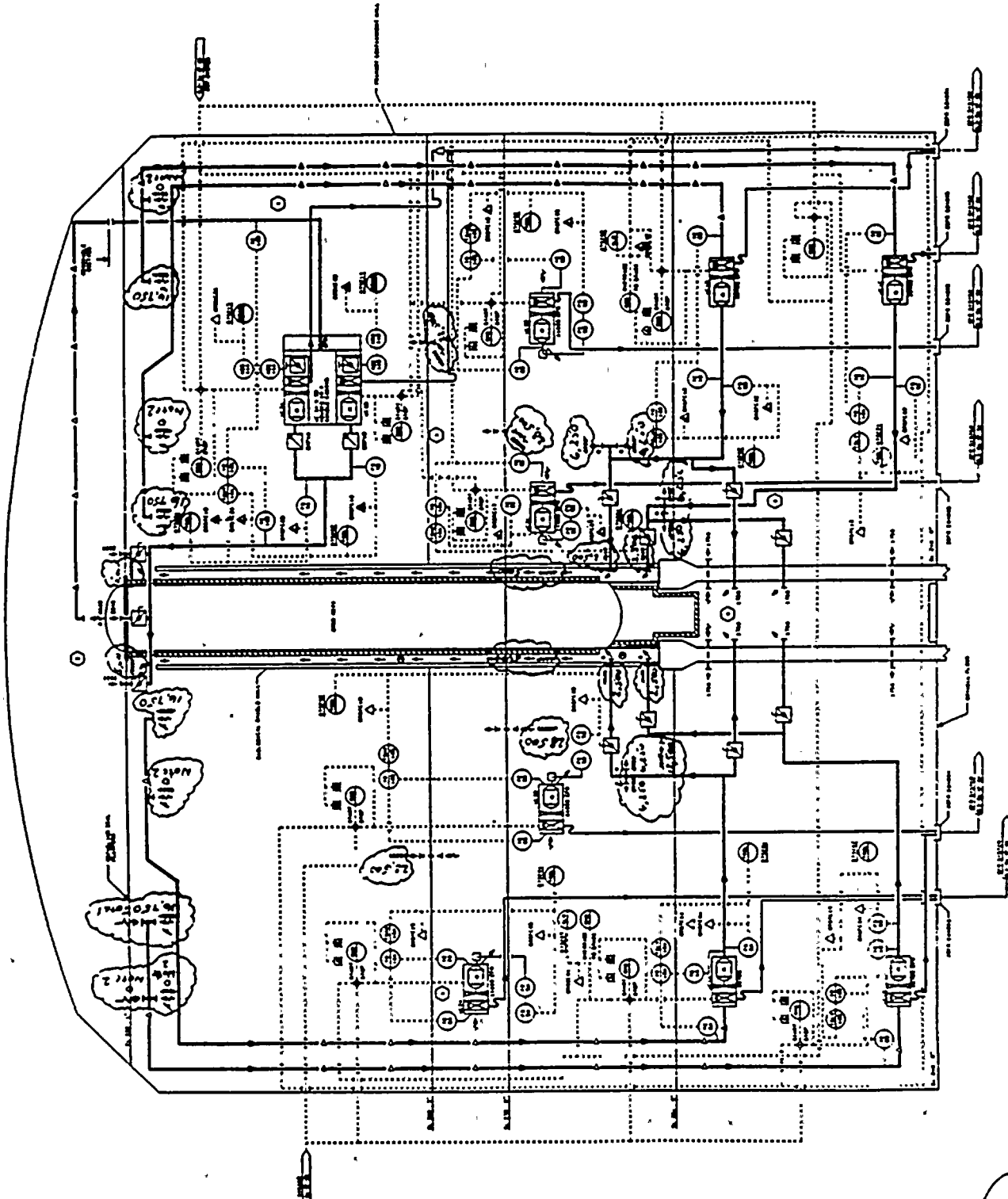
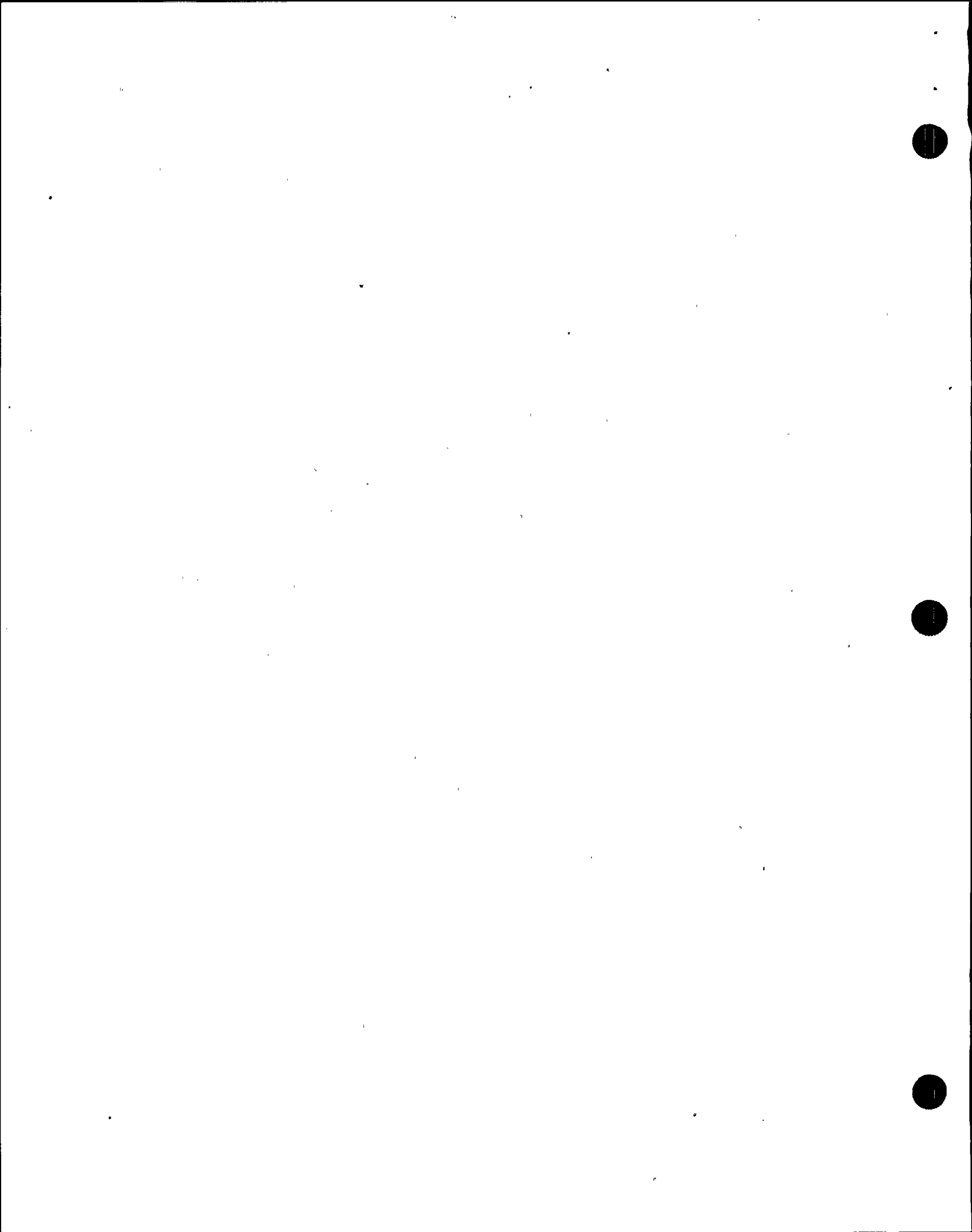


FIGURE 9.4-8)

ORTRILL
COOLING

NINE MILE POINT
NUCLEAR STATION-UNIT 2

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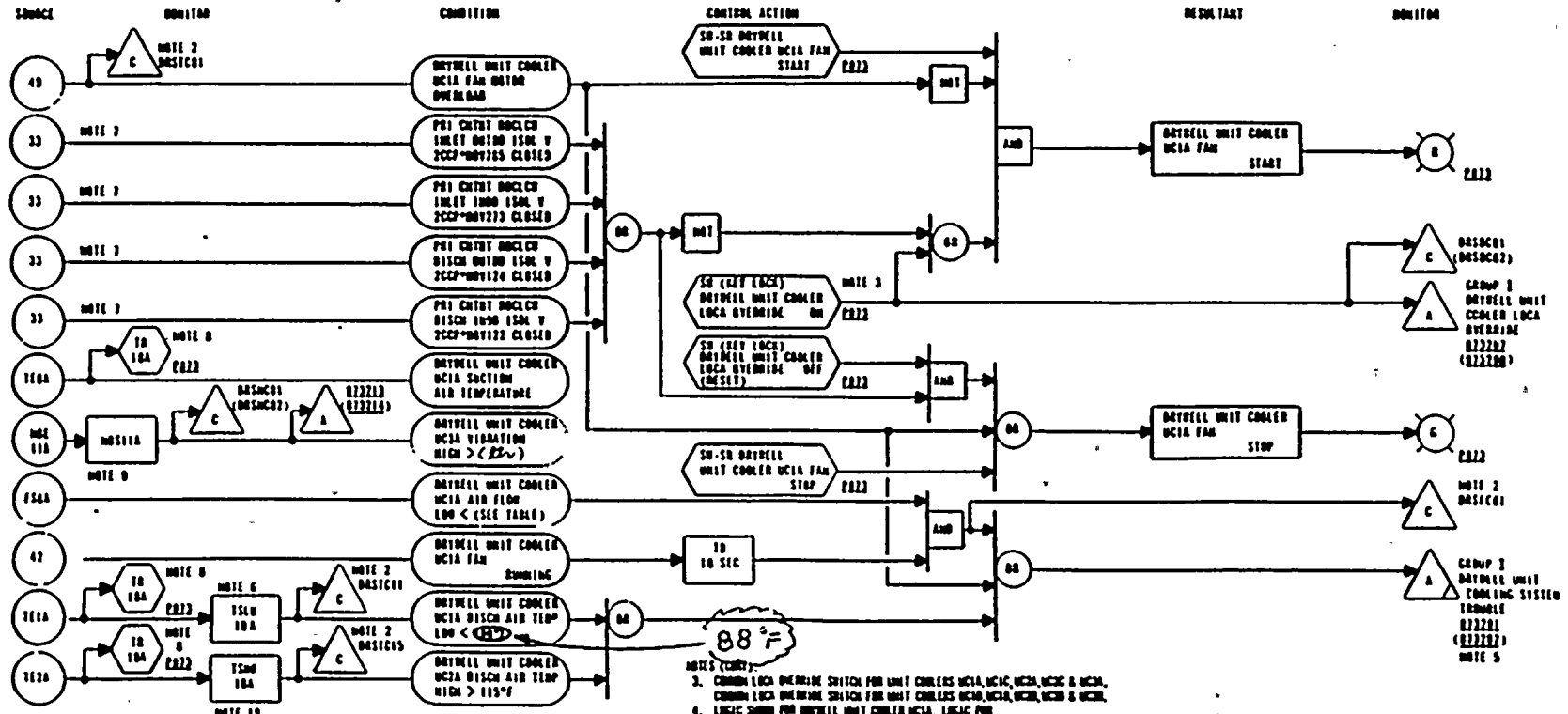


Adendum A' (Cont)

Pg. 2 of 2

02-LOT-001-222-2-00 Page A 6

This page added per Adendum Change 613/61



NOTES

- ALL INSTRUMENT AND EQUIPMENT NUMBERS TO BE PREFIXED WITH "DMS-" EXCEPT WHERE A DIFFERENT PREFIX IS SHOWN.
- ASSOCIATED EQUIPMENT AND INSTRUMENT NAME NUMBERS AND COMPANY PRINT NOS.

GROUP 1		GROUP 2		GROUP 3		GROUP 4		GROUP 5	
DMS-101A	-101A	DMS-102A	-102A	DMS-103A	-103A	DMS-104A	-104A	DMS-105A	-105A
DMS-106A	-106A	DMS-107A	-107A	DMS-108A	-108A	DMS-109A	-109A	DMS-110A	-110A
DMS-111A	-111A	DMS-112A	-112A	DMS-113A	-113A	DMS-114A	-114A	DMS-115A	-115A
DMS-116A	-116A	DMS-117A	-117A	DMS-118A	-118A	DMS-119A	-119A	DMS-120A	-120A
DMS-121A	-121A	DMS-122A	-122A	DMS-123A	-123A	DMS-124A	-124A	DMS-125A	-125A
DMS-126A	-126A	DMS-127A	-127A	DMS-128A	-128A	DMS-129A	-129A	DMS-130A	-130A
DMS-131A	-131A	DMS-132A	-132A	DMS-133A	-133A	DMS-134A	-134A	DMS-135A	-135A
DMS-136A	-136A	DMS-137A	-137A	DMS-138A	-138A	DMS-139A	-139A	DMS-140A	-140A
DMS-141A	-141A	DMS-142A	-142A	DMS-143A	-143A	DMS-144A	-144A	DMS-145A	-145A
DMS-146A	-146A	DMS-147A	-147A	DMS-148A	-148A	DMS-149A	-149A	DMS-150A	-150A

- NOTES (CONT.)**
- COMMON LOCK OVERRIDE SWITCH FOR UNIT COOLERS UCLA, UCLB, UCLC, UCLD & UCLE.
 - COMMON LOCK OVERRIDE SWITCH FOR UNIT COOLERS UCLB, UCLC, UCLD & UCLE.
 - LOGIC SHOWN FOR DRYWELL UNIT COOLER UCLC. LOGIC FOR DRYWELL UNIT COOLERS UCLA, UCLB, UCLD, UCLD & UCLE IS SIMILAR.
 - COMMON ALARM NUMBER FOR EACH GROUP OF UNIT COOLER.
 - TSX UNIT IS SUPPLIED WITH RECORDED.
 - FOR PRIMARY CHARGE DRYWELL INLET & DRYWELL ISOLATION VALVE LOGIC SEE LSK 4-1.
 - TS10A & TS10B ARE TWELVE POINT RECORDERS, SEE NOTE 2 FOR INPUTS.
 - LOGIC SHOWN FOR DRYWELL, LOGIC FOR DRYWELL IS SIMILAR.
 - TSX UNIT IS SUPPLIED WITH RECORDED.

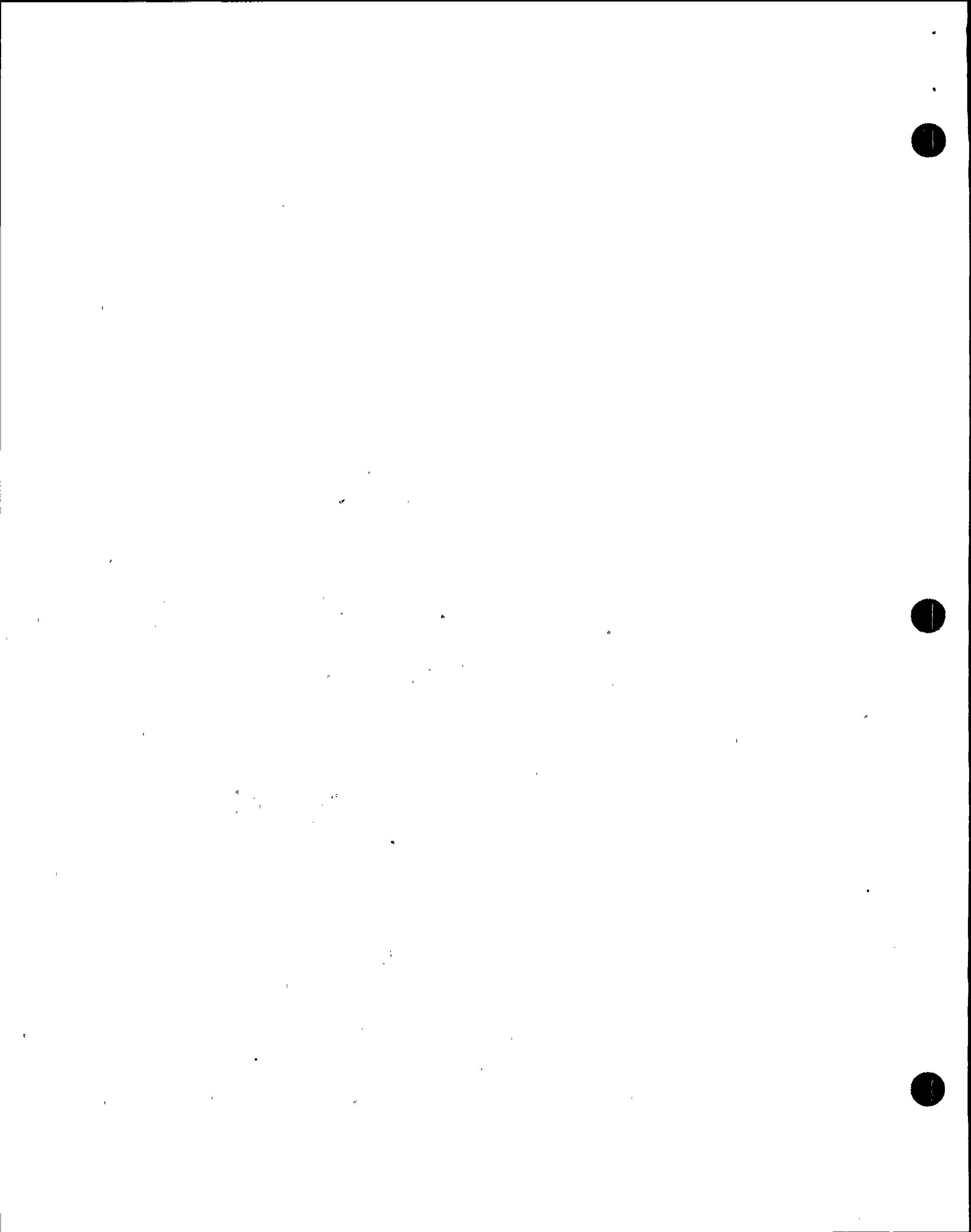
NOTE
FOR LATEST SET POINT INFORMATION, SEE SET POINT DATA SHEET.

SOURCE: 12177-LSK-22-22 REV. 5

FIGURE 9.4-9

REACTOR BUILDING
HVAC SYSTEM
LOGIC DIAGRAM SHEET 21 OF 24

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
CRITICAL SAFETY ANALYSIS REPORT





SYSTEM NAME & NUMBER DRYWELL COOLING		OA CAT II	BIP NUMBER 060.001
ORIGINATOR M. MOJIBIAN	DISCIPLINE POWER SEG	DATE	CHANGETYPE C

DESCRIPTION & REASON FOR CHANGE

1- Blank off one of the two return air registers of unit coolers 2DRS-UC 1A, B, C & D. and...

2- Remove the register from the remaining duct openings (~EL. 320'), allowing the total flow to be returned to UC's through only one duct opening each.

Reason: To eliminate the hot spot on EL. 320' of the primary containment, it is necessary to increase the air exhausted from that elevation. Colder air is being short circuited through the lower return registers, creating high temperature on EL. 320' and above.

3- Revise supply air quantity from area 5 to 10,000 CFM total and rebalance the system accordingly.

Reason: To increase the RPV skirt area temperature and provide a better air mixing & circulation within the drywell area.

4- Show all four return registers to UC 1D instead of 2 registers shown.

Reason: Editorial only

5- Revise set point for Low UC 1A, B, C & D discharge air temp from 100°F to 98°F

Reason: With CCP at 85°F, it is possible to have supply air lower than 100°F. This new set point will eliminate unnecessary alarm.

RECEIVED
J. O. NO. 12
AUG 11 1987
STONE & WEBSTER
ENGR. CORP.
CONCORD, N.H.

APPENDIX "R" IMPACT - N/A

ENGINEERING CHANGE NOTICE (ECN)

NINE MILE POINT-UNIT 2

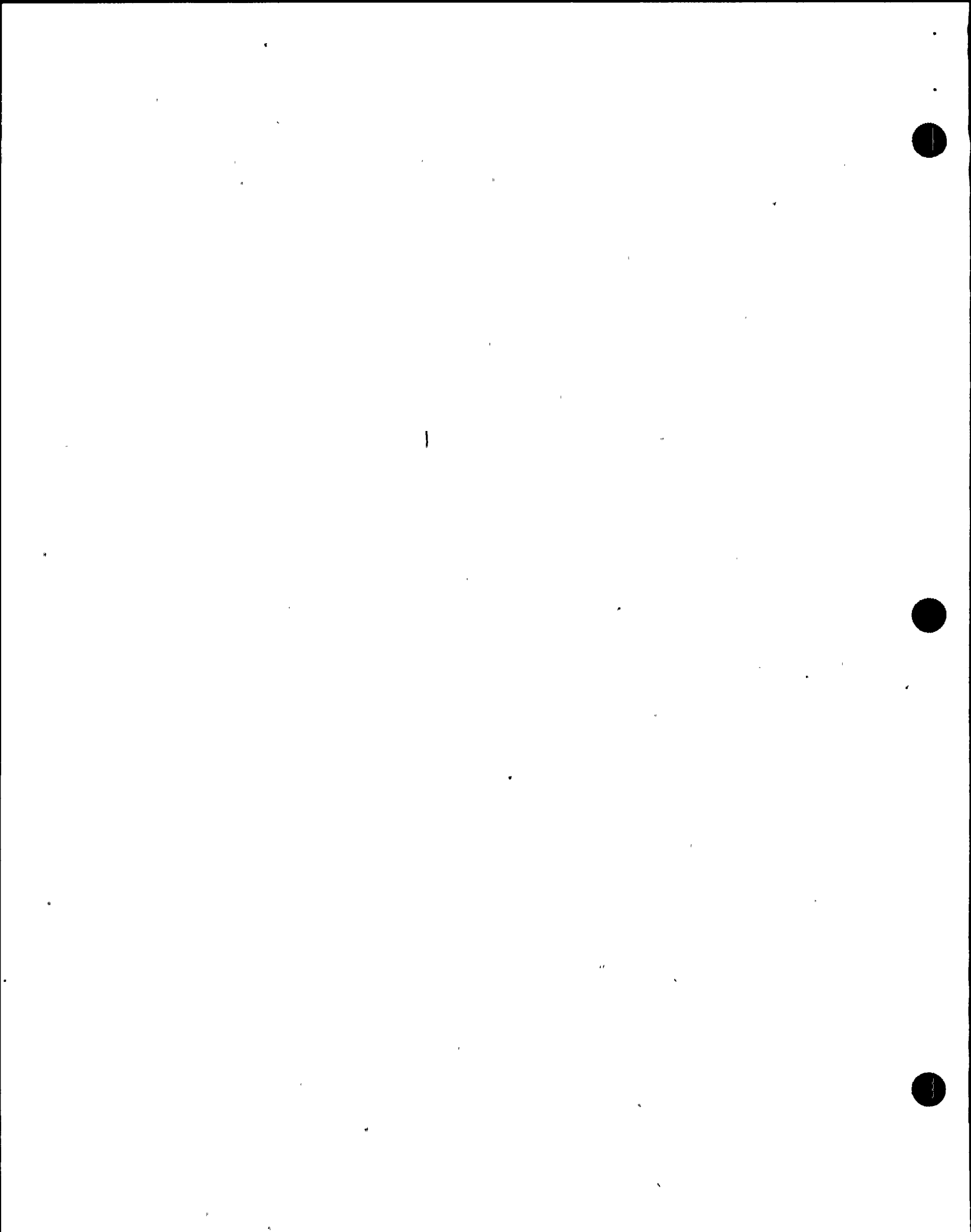
DC# 2702

MEL FORM REQUIRED

YES NO

SWEC APPROVAL (INITIALS/DATES) AND DIAGRAMS IMPACTED: (Circle a Yes, cross out a No)	SOURCE OF CHANGE	NMP TECHNICAL APPROVAL
LPE <u>W/1/87</u> FSK, P&ID LCE <u>MS/1/87</u> (LSK) LOOP-ESK LEE <u>MS/1/87</u> ONE-LINE PE <u>MS/1/87</u>	<input type="checkbox"/> LICENSING. <input type="checkbox"/> OPERABILITY <input type="checkbox"/> DESIGN COMPLETION. <input type="checkbox"/> VENDOR <input type="checkbox"/> CONSTRUCTION/STARTUP <input checked="" type="checkbox"/> AS-BUILT/EDIT (item #4 only) <input type="checkbox"/> OTHER - MOD #PN2Y87MX 164 LF002	<input type="checkbox"/> NOT REQUIRED <input checked="" type="checkbox"/> REQUIRED: - BY: <u>Nina Conlon</u> DATE: <u>8/10/87</u>

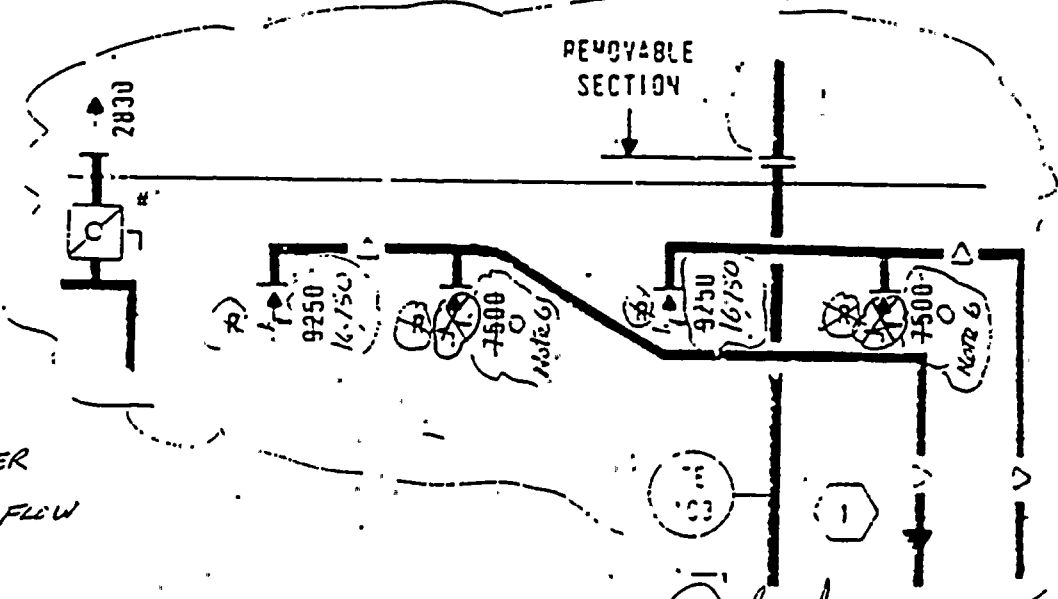
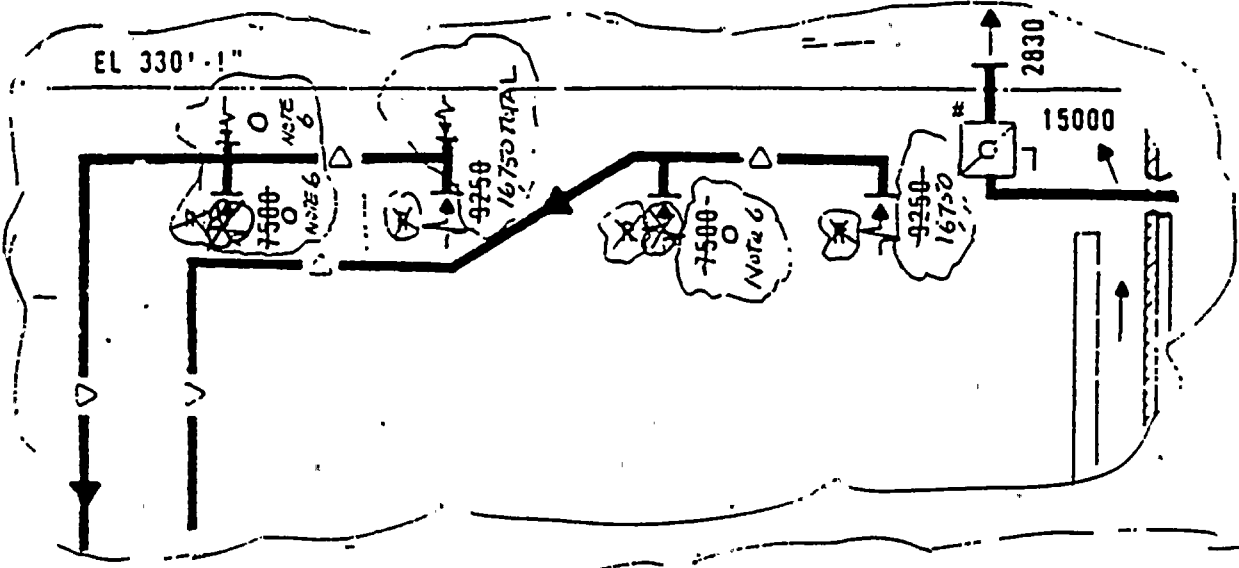
SAR IMPACT	CHANGE CONTROL BOARD (CCB) AUTHORIZATION	AUTHORIZATION NOT REQUESTED (MANDATORY) <input type="checkbox"/> AUTHORIZATION REQUESTED (COST REDUCTION)
<input type="checkbox"/> SUBSTANTIAL/ MAJOR <input type="checkbox"/> NO CHANGE <input checked="" type="checkbox"/> INCOMPLETE P2ID, CDCM	<input type="checkbox"/> IMPLEMENT: _____ DESIGN. _____ PROCUREMENT. _____ ALL <input type="checkbox"/> DEFERRED TO _____ <input type="checkbox"/> REJECTED. <input type="checkbox"/> OTHER - SEE CAP	CCB DISPOSITION: _____ CAP # _____ REV. _____



DOCUMENT NUMBERS IMPACTED FSK-22-22B

DETAILED DESCRIPTION OF CHANGE

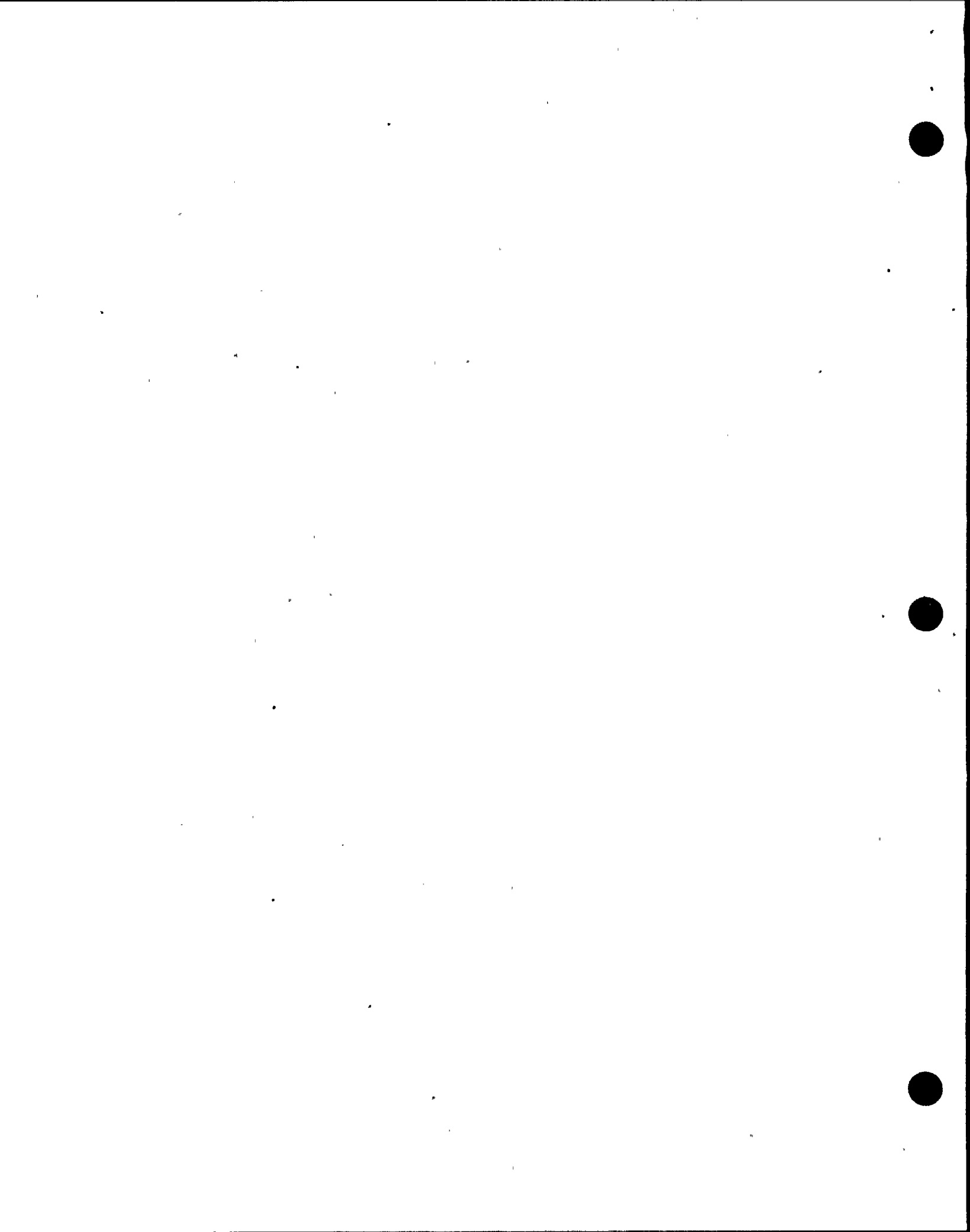
REVISE FSK-22-22B to blank off one out of two return air registers of unit coolers 1A, 1B, 1C & 1D and remove the register from the other duct openings (NEL 325). See the following sketches. Also add note 6.



NOTE 6: BLANK OFF REGISTER
TO ALLOW NO AIR FLOW

This page added per addendum change 6/13/91 + [Signature]

APPROVALS	SIGNATURE	DATE	SIGNATURE	DATE
ORIGINATOR	[Signature]	8/2/87	LEAD ELECTRICAL	[Signature]
RESP. ENGR.	[Signature]	8.2.87	(CAT I ONLY)	
PRIN ENGR.	[Signature]	8/7/87	LEAD CONTROLS	[Signature] 8-5-87
PRIN. PIPING ENGR.	[Signature]	8/7/87	ODR/LEAD PWR	[Signature] 8/3/87
FSK SUPV.	[Signature]	8/7/87	PROJECT ENGR.	[Signature] 8/2/87



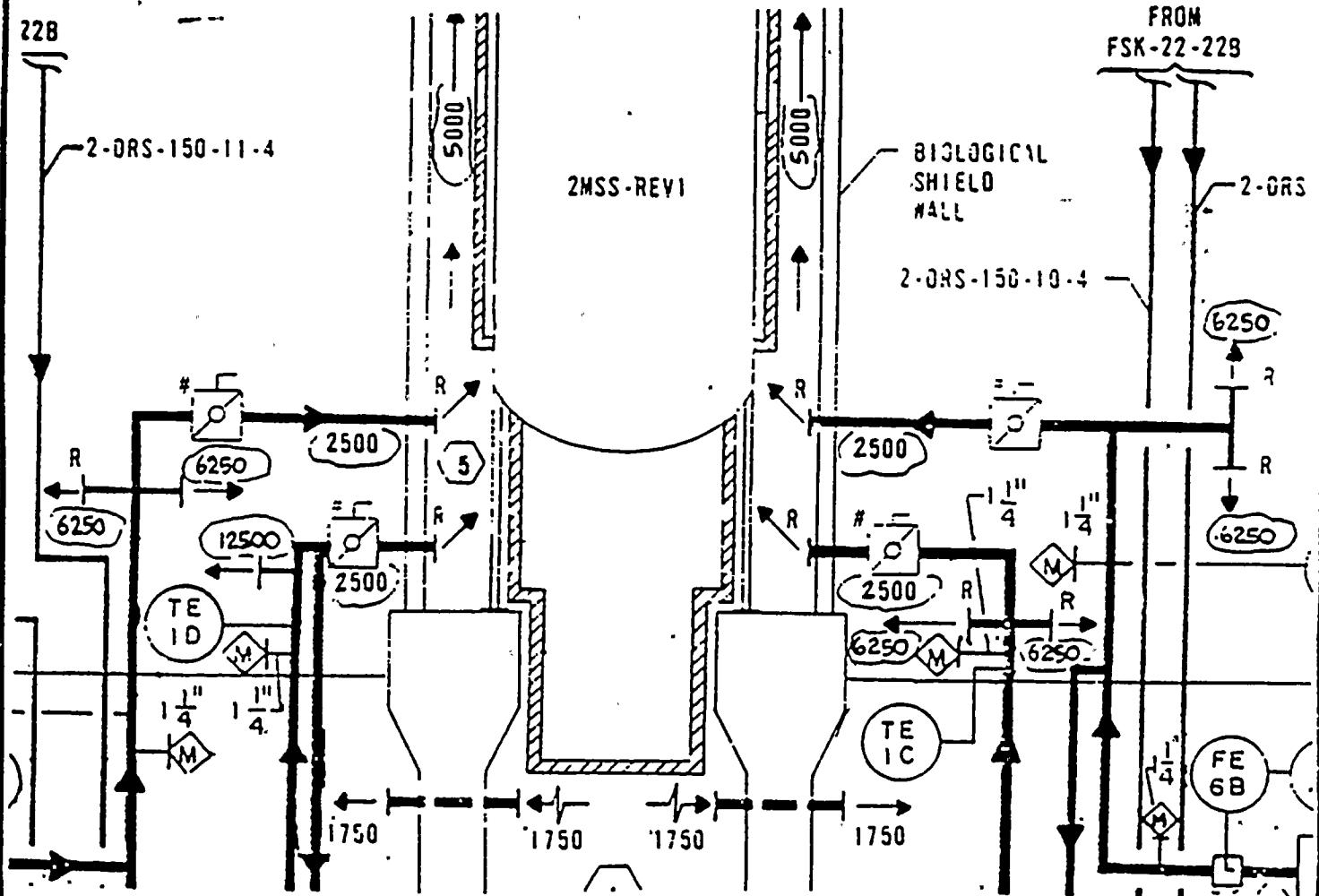
DOCUMENT NUMBERS IMPACTED

FSK-22-22A

Addendum A (CONT)

DETAILED DESCRIPTION OF CHANGE

1) REVISE FSK-22-22A AS FOLLOWS:
 (ZONES E-M / 2-6)



This page added per addendum change 6/13/91 *DAW* *A9*



FSK ESK P&ID
LSK LOOP

CHANGE CONTINUATION

PAGE 4 OF 8

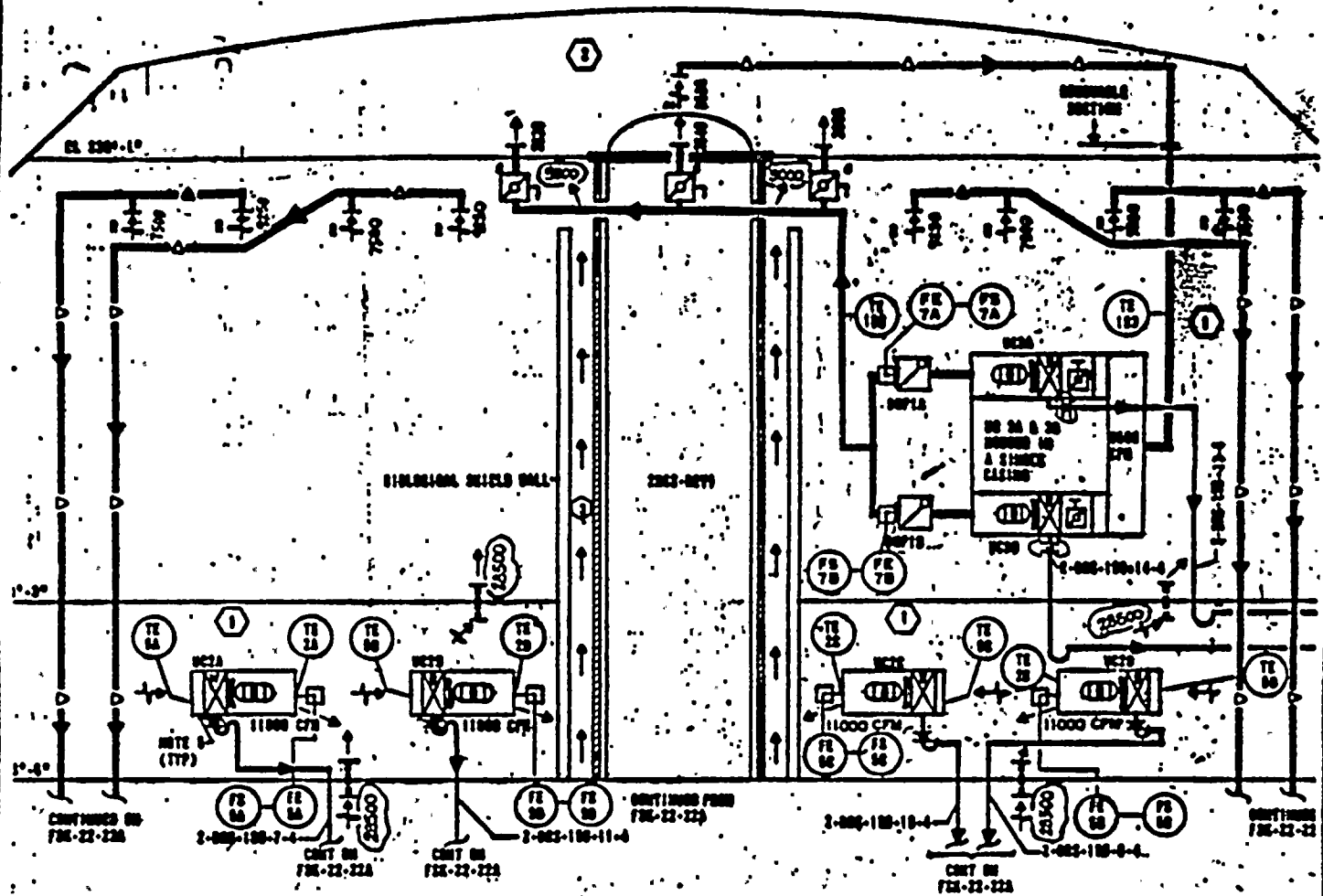
ECN NO. DRS-604

DOCUMENT NUMBERS IMPACTED

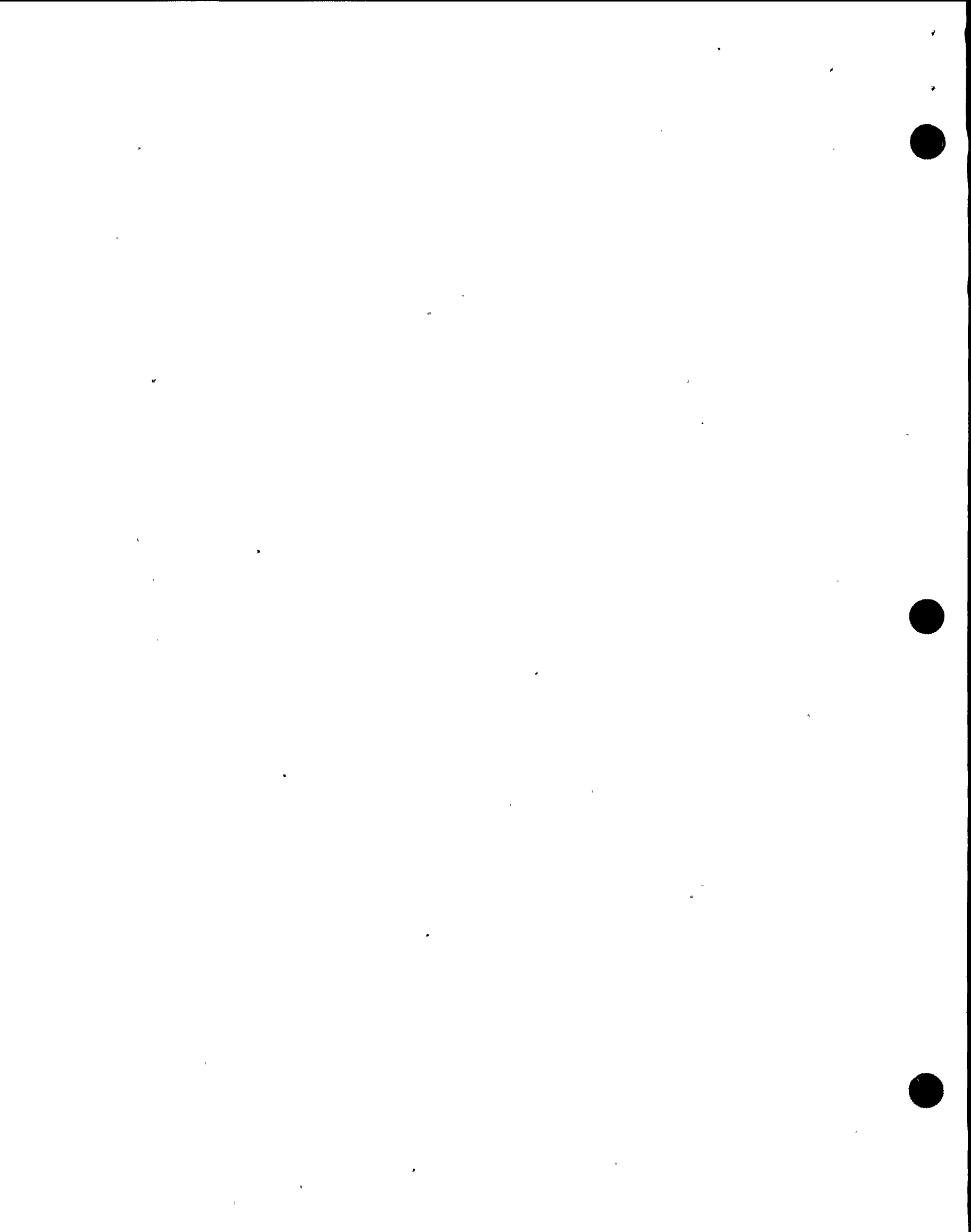
FSK-22-22B Addendum A (CONT)

DETAILED DESCRIPTION OF CHANGE

2) Revise FSK-22-22B (ZONES E-Q/2-9) AS FOLLOWS:



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02-LOT-001-222-2-00 Page *[Signature]*

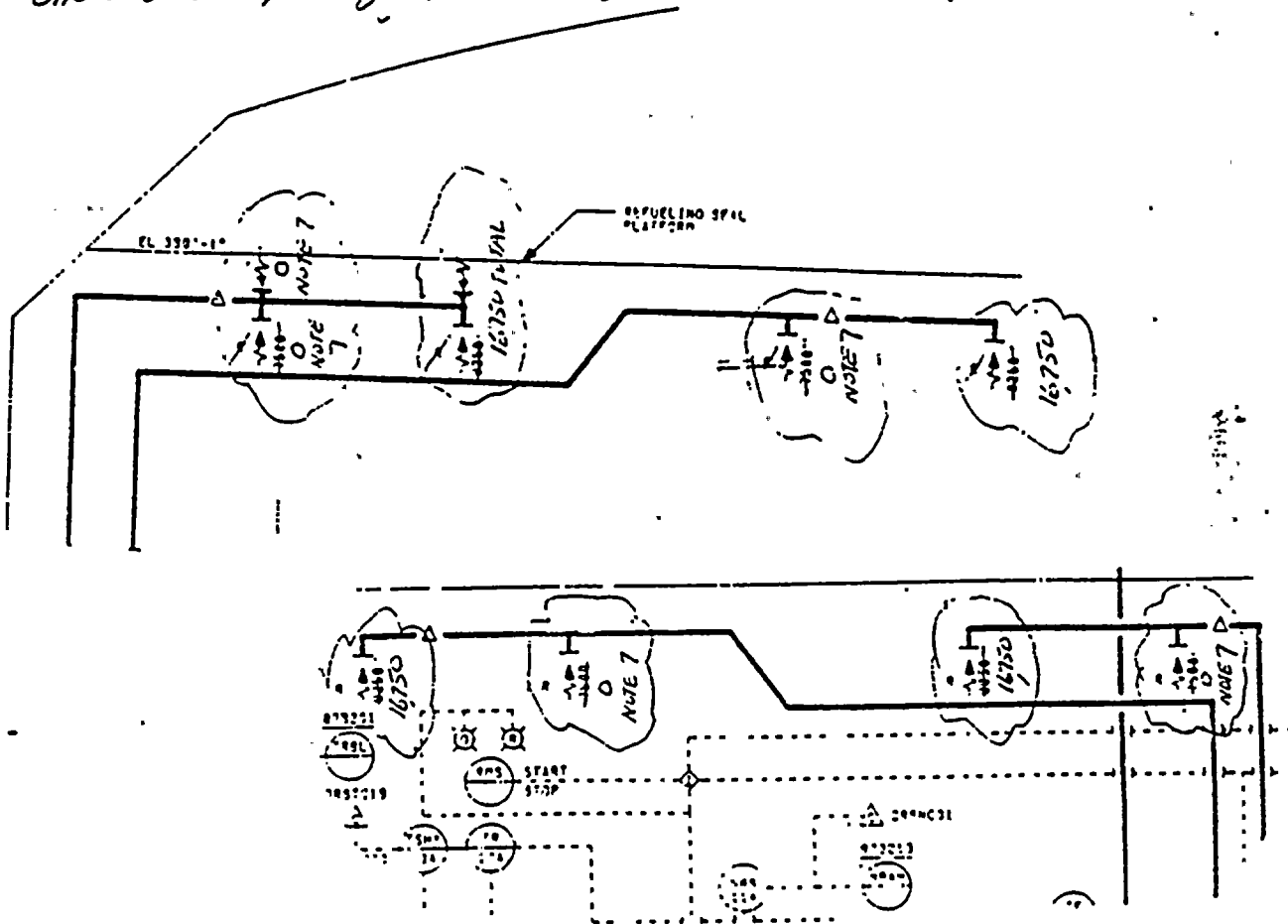


DOCUMENT NUMBERS IMPACTED

P&ID 60A Addendum A (cont)

DETAILED DESCRIPTION OF CHANGE

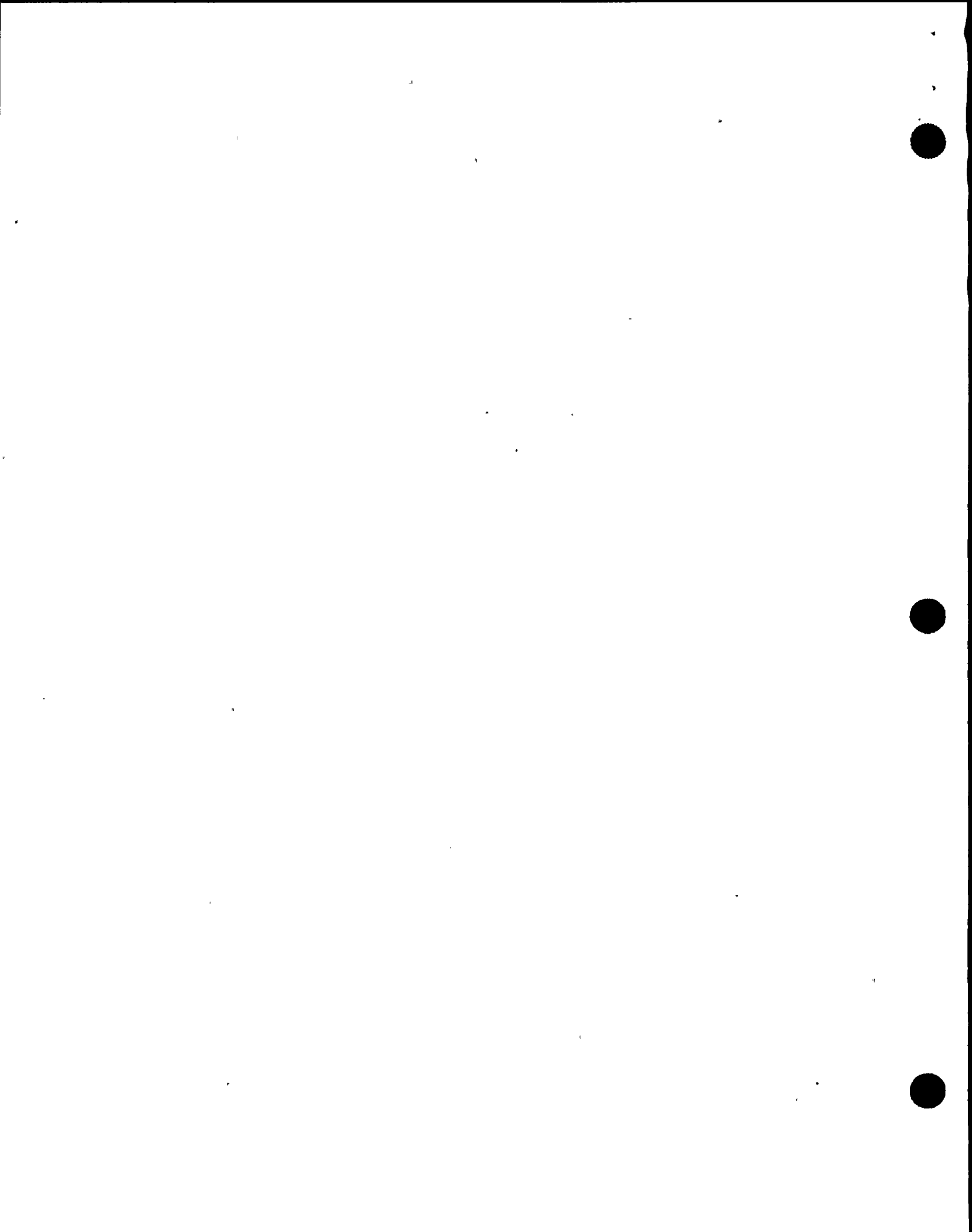
Revise P&ID-60A to blank off one out of two return air registers of unit coolers 1A, 1B, 1C & 1D and remove the register from the other duct openings (EL. ~ 320'). Also add note 7



NOTE 7: Blank OFF REGISTER TO ALLOW NO AIR FLOW

APPROVALS	SIGNATURE	DATE	APPROVALS	SIGNATURE	DATE
RESP. POWER ENGR.	<i>[Signature]</i>	8-2-82	CONT. SYS. ENGR.	<i>[Signature]</i>	8/4/82
PRIN. POWER ENGR.	<i>[Signature]</i>	8/2/82	PRIN. CONTROL SYS. ENGR.	<i>[Signature]</i>	8-5-
LEAD POWER ENGR.	<i>[Signature]</i>	8/7/82	LEAD CONTROL ENGR.	<i>[Signature]</i>	8-5-
PROJECT ENGINEER	<i>[Signature]</i>	3/3/82			

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 02-COT-001-222-2-00 Page A11



FSK ESK P&ID
LSK LOOP

CHANGE CONTINUATION

PAGE 6 OF 8

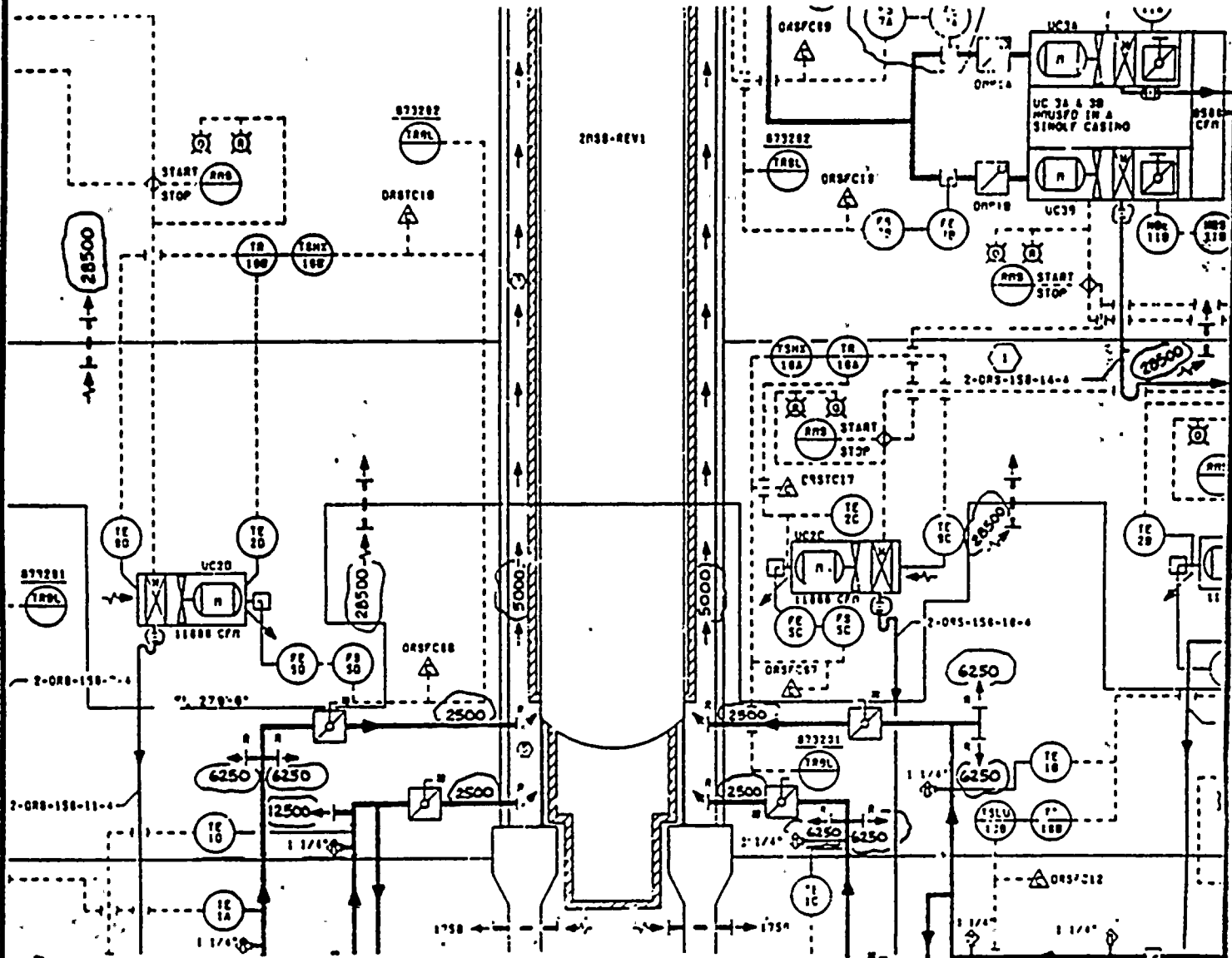
ECN NO. DRS-654

DOCUMENT NUMBERS IMPACTED

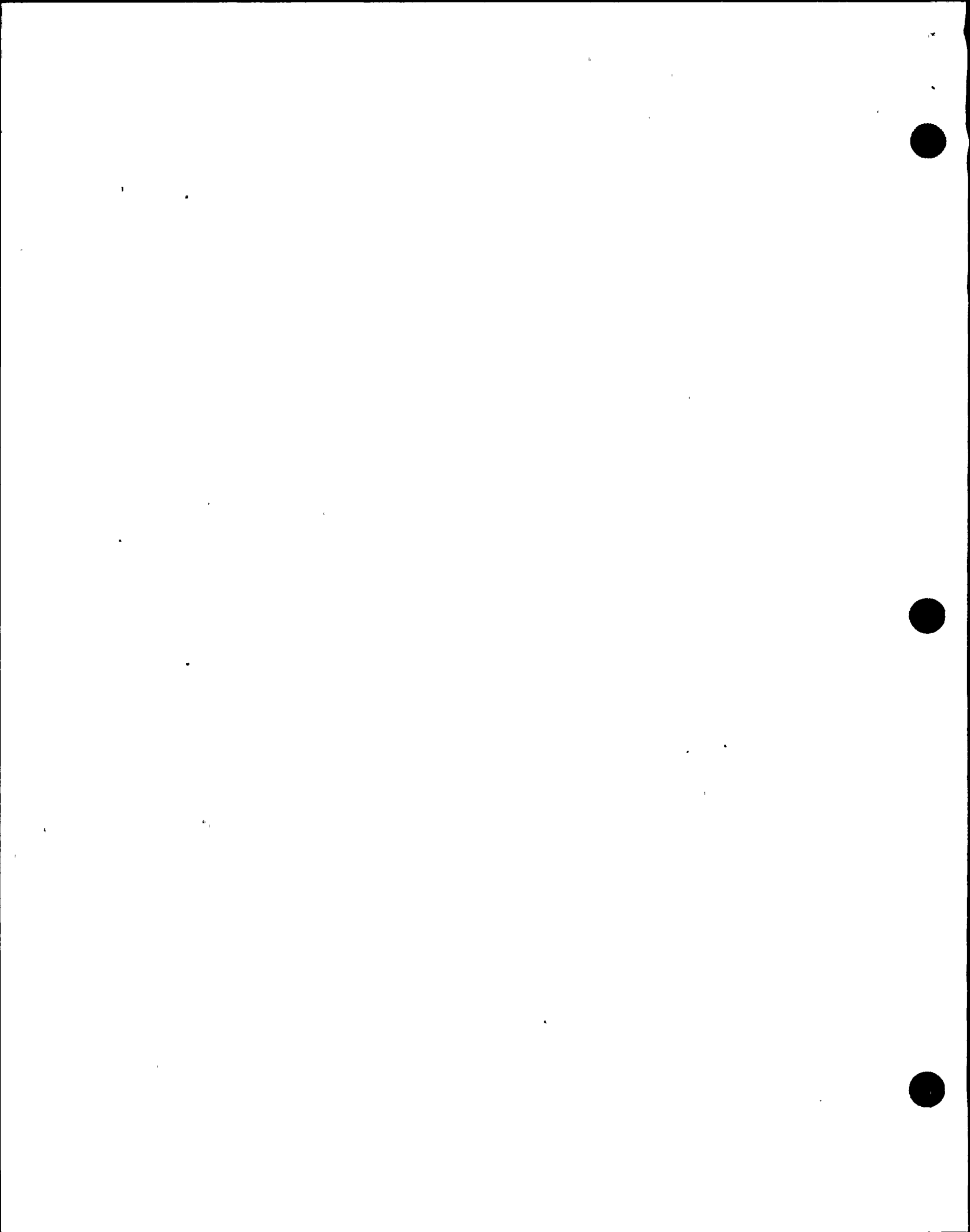
PID-60A Addendum A (CONT)

DETAILED DESCRIPTION OF CHANGE

Revise PID-60A (D-H/4.7) AS FOLLOWS:



This page added per addendum change 6/13/91 *[Signature]*
02-LOT-001-222-2-00 Page A12 ~~10~~



FSK ESK P&ID
LSK LOOP

CHANGE CONTINUATION

PAGE 7 OF 8

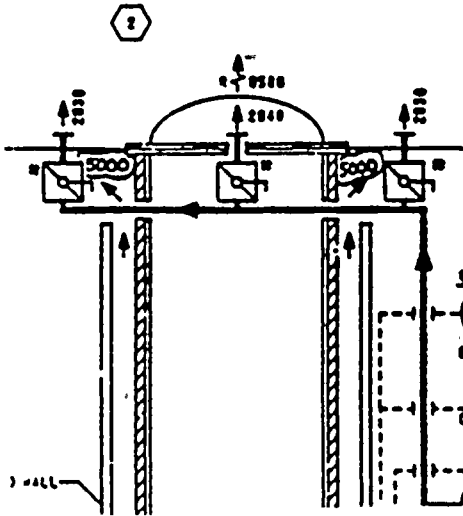
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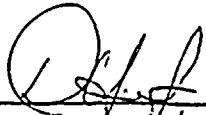
DOCUMENT NUMBERS IMPACTED

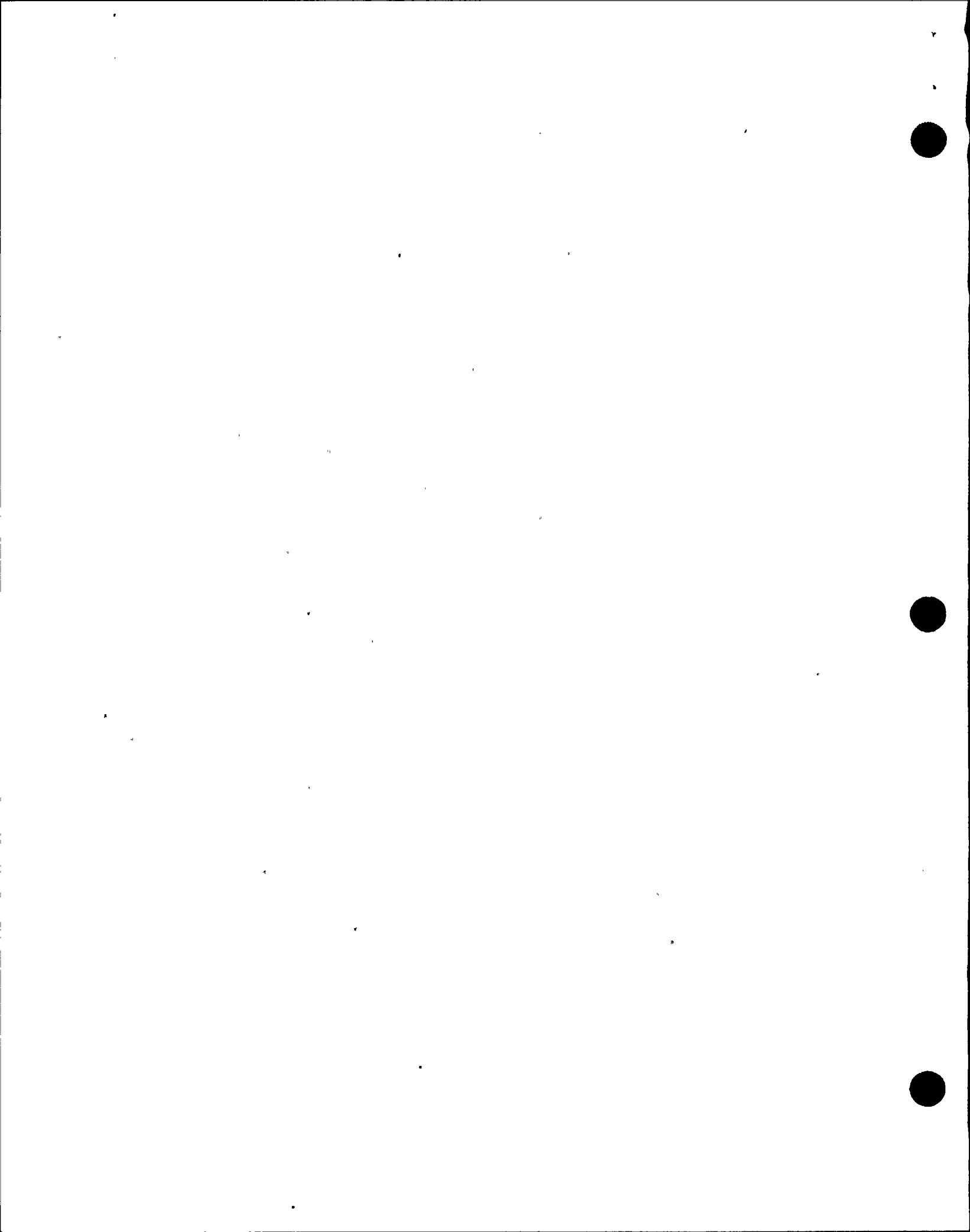
PID-60A Addendum A' (cont)

DETAILED DESCRIPTION OF CHANGE

Revise PID-60A (G-3)



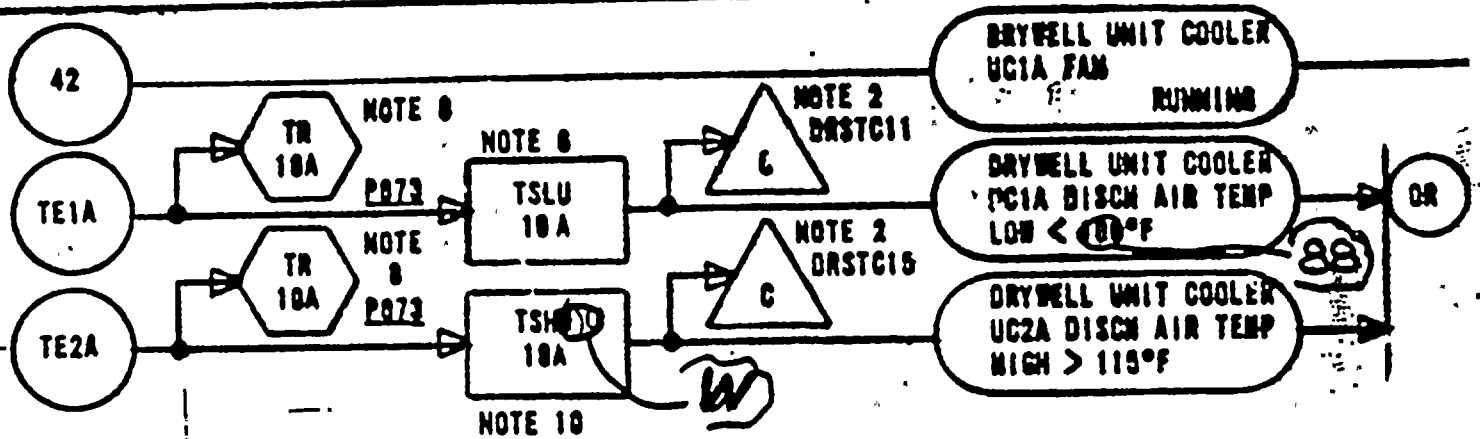
The page added per addendum change 6/13/91 
02-LOT-001-222-2-00 Page A 13



DOCUMENT NUMBERS IMPACTED LSK-22-22

DETAILED DESCRIPTION OF CHANGE Addendum A (cont)

REVISE! LSK-22-22 as shown
Below!



This page added per addendum change 6/13/91

APPROVALS	SIGNATURE	DATE	SIGNATURE	DATE
CONT. SYS. ENGINEER	<u>Brukman</u>	<u>8/4/87</u>		
PRIN. CONT. SYS. ENGINEER	<u>R. Jones</u>	<u>8-5-87</u>	J. Fay / MTS / RL	<u>8-5-87</u>
LEAD POWER OR ELECTRICAL	<u>V. Venckev</u>	<u>8/7/87</u>		
			ODR/LEAD CONTROL	
			PROJECT ENGINEER	<u>8-3-87</u>

02-LOT-001-222-2-00 Page A 2

