PHILADELPHIA ELECTRIC COMPANY
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(215) 841-4502

JOHN S. KEMPER
VICE-PRESIDENT
ENGINEERING AND RESEARCH

February 13, 1985

Mr. A. Schwencer, Chief
Licensing Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Docket Nos.: 50-352
50-353

SUBJECT: Limerick Generating Station
TMI Item III.D.1.1 Primary Coolant Outside Containment

REFERENCE: 1) J. S. Kemper to A. Schwencer letter dated September 12, 1984, "TMI Item III.D.1.1 Primary Coolant Outside Containment"
2) J. S. Kemper to A. Schwencer letter dated October 12, 1984, "TMI Item III.D.1.1 Primary Coolant Outside Containment"

FILE: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

Limerick Generating Station has performed sixteen Surveillance Tests which satisfy the Leakage Reduction Program as described in FSAR Section 6.2.8 and in the reference 1 letter. Eight tests run prior to Unit 1 fuel load and their results have been provided in the reference 2 letter. The results of the eight remaining tests are listed in Attachment 1 to this letter and provided as attachments 2 through 9.

Also enclosed per reference 2 are the results from the Control Rod Drive Scram Discharge Volume Contaminated Pipe Inspection, ST-1-047-700-1, (Attachment 10 to this letter). This test was reperformed after fuel load during operational hydrostatic testing when the volume could be pressurized to operating reactor pressure.

The Contaminated Pipe Inspections for the High Pressure Core Injection and Reactor Core Isolation Cooling Systems were run with an initial steam pressure of 200 psi and then repeated with a reactor operating pressure of 920 psi. The inspection of each Post LOCA Recombiner was performed initially and reperformed following maintenance. For these reasons there are two copies of each of the tests.



A047
1/1

No FSAR page changes are required as a result of this submittal and we now consider item 5.a.IV in attachment no. 1 to facility operating license NPF-27 to be closed.

Very truly yours,

JW Gallagher
for

J. S. Kemper

RJS/cb/01288501
Attachments
Copy to: See Attached Service List

## ATTACHMENT 1

Leakage Reduction Program
Surveillance Tests (After Fuel Load)

| | | |
|---|---|---|
| 1. | ST-1-030-700-1 | Post Accident Sampling System Liquid Sample Contaminated Piping Inspection |
| 2. | ST-1-030-701-1 | Post Accident Sampling System Atmospheric Sample Loops Contaminated Piping Inspection |
| 3. | ST-1-049-701-1 | Reactor Core Isolation Cooling Pump Contaminated Piping Inspection |
| 4. | ST-1-049-702-1 | Reactor Core Isolation Cooling Turbine Contaminated Piping Inspection |
| 5. | ST-1-055-701-1 | High Pressure Core Injection Pump Contaminated Piping Inspection |
| 6. | ST-1-055-702-1 | High Pressure Core Injection Turbine Contaminated Piping Inspection |
| 7. | ST-1-058-701-1 | A Post Accident LOCA Recombiner Contaminated Piping Inspection |
| 8. | ST-1-058-702-1 | B Post Accident LOCA Reconbiner Contaminated Piping Inspection |

RJS/cw/0129ATTACH. 1

cc: Judge Helen F. Hoyt
Judge Jerry Harbour
Judge Richard F. Cole
Troy B. Conner, Jr., Esq.
Ann P. Hodgdon, Esq.
Mr. Frank R. Romano
Mr. Robert L. Anthony
Ms. Phyllis Zitzer
Charles W. Elliot, Esq.
Zori G. Ferkin, Esq.
Mr. Thomas Gerusky
Director, Penna. Emergency Management Agency
Angus R. Love, Esq.
David Wersan, Esq.
Robert J. Sugarman, Esq.
Martha W. Bush, Esq.
Spence W. Perry, Esq.
Jay M. Gutierrez, Esq.
Atomic Safety & Licensing Appeal Board
Atomic Safety & Licensing Board Panel
Docket & Service Section
Mr. James Wiggins
Mr. Timothy R. S. Campbell

ATTACHMENT 2

3850016380

9/25/84
EFFECTIVE DATE

TPC # 728

LIMERICK GENERATING STATION
PORC APPROVAL FORM

R.A. Moore 9.26.84

A-4, Form 1
Revision 1
Page 1 of 1
9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-030-700-1 ; REV. 0.

2. REASON FOR SUBMITTAL: INCLUDE ATTACHMENT "B", DELETE "RT" AND USE "EP" PROCEDURE.

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY 12/10/84

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | LAH | 11/26/84 | E | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | WM | 11/27/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE - - | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ______ ADMIN OR PREPARER | ______ / ______ | #: ______ DATE: ______ |

INSTRUCTIONS TO ADMIN. STAFF:
ISSUE THE ATTACHED DOCUMENT
FILE THE ATTACHED DOCUMENT IN FILE ______
FILE THIS FORM PER ADMIN. PROC. ______
OTHER: ______

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

LM Leitch 10/5/84

P

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-030-700-1 POST ACCIDENT SAMPLING SYSTEM LIQUID SAMPLE LOOPS CONTAMINATED PIPING INSPECTION

Test Freq.: 18 months -OR- Initiating Events: 1. Reason INITIAL RUN
2. MRF No.______

Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.g
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Michael C. Gallagher 11/29/84

Performed By: (Sign/Date) __________ ______

Informed Test Complete: (ACO or CO) (Sign/Date) Ronald W. Monaco 11-29-84
(Time) 13:31

Reviewed By: (SSVN or STA) (Sign/Date) Greg F. Collis 11-29-84

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) __________ ______

Informed of Test Results: (CO or ACO) (Sign/Date) __________ ______
(Time) ______

Shift Supervision: (Sign/Date) __________ ______

Corrective Action: MRF No.: __________

Initiated By: (Sign/Date) __________ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) __________

Date/Time Notified: (Date/Time) __________ ______

Notified By: (Sign) __________

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) Michael C. Gallagher 11/29/84

1.0 PJRPOSE

To inspect and measure any leakage of Post Accident Sampling System's liquid sample loop components that are directly asssociated with system piping that could carry contaminated fluid after a serious accident or transient.

2.0 REFERENCES

2.1 8031-M-30; Post Accident Sampling P & ID.

2.2 8031-M-42; Nuclear Boiler Vessel Instrumentation P & ID.

2.3 NUREG-0737

2.4 RT-5-000-502-0 Post Accident Sampling Station Operability Test

2.5 8031-M-51; Sheets 1 & 2, Residual Heat Removal

2.6 8031-M-52, Core Spray

2.7 8031-M-61, Liquid Radwaste Collection

2.8 8031-M-23, Sheet 3, Process Sampling

3.0 TEST EQUIPMENT

3.1 Graduated Cylinder(s)

3.2 One-Liter Bottle(s)

3.3 Assorted Funnels

3.4 Stopwatch

3.5 Inspection mirror with handle

3.6 Tygon tubing, plastic bags, duct tape and rags as needed.

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.2 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.3 Data Sheet steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 Leakage rates of greater than 5 drops per min (= .25 cc/min) shall be quantified. Use ".25 cc/min" on the Data Sheet Attachment A for components with leakage rates of 5 drops per min or less.

4.5 If any component is found to be exhibiting excessive leakage, notify SSVN immediately.

## 5.0 PREREQUISITES

5.1 Request RWP if required.

5.2 Inspector is familiar with the system location and layout.

5.3 Obtain a copy of the previous inspection's results from ST Coordinator.

HAVE CHEMISTRY GROUP ESTABLISH FLOW OF APPROXIMATLY ONE gpm

5.4 ~~The system should be in operation for RT-5-000-502-0.~~

FROM JET PUMP SAMPLE LINE THROUGH LIQUID RETURN LINE.

~~5.5 Coordinate with the responsible person(s) running RT-5-000-502-0 to allow the applicable sections of the test to be extended for this inspection.~~

LAH
11/26/84

WM
10/27/84

5.5 REACTOR IS AT OPERATING PRESSURE.

5.6 RHR LOOPS A AND B ARE PRESSURIZED, AND RHR SAMPLE ISOLATION VALVES HV-51-1F079 A AND B HV-51-1F080 A AND B, AND 51-1121A AND B ARE OPEN. VALVES HV-51-199A AND B ARE CLOSED.

## 6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

### 6.1 Preparation

SO 6.1.1 Verify all prerequisites are satisfied.

6.1.2 Record appropriate information for each piece of measurement and test equipment used with a PECo number on the Data Sheet.

### 6.2 Shift Permission to Test

SO 6.2.1 Obtain Shift Supervision's permission to start test.

SO 6.2.2 Obtain Control Room Operator's permission to start test.

### 6.3 Post Accident Sampling Station System Contaminated Piping Inspection.

ACTUAL LEAKAGE RATE MEASUREMENT METHODS WILL BE LEFT TO THE DISCRETION OF THE INSPECTOR. THE ONLY GUIDELINES BEING THAT ALL DATA WILL BE MEASURED QUANITY OF FLUID OVER TIME USING A STOPWATCH. DROPS PER MINUTE CAN BE USED AS A MEASUREMENT WHERE 20 DROPS = 1cc. ALL RECORDED DATA SHALL BE IN CUBIC CENTIMETERS PER MIN. (cc/min).

LAH 11/26/84 WM 11/27/84

6.3.1 Begin inspection of each Post Accident Sampling System loop. ~~while it is in operation.~~ Pay particular attention to system components identified as having exhibited measurable leakage in the previous inspection.

6.3.2 For all in-line components within the boundaries of Attachment B which exhibit leakage, record on the Data Sheet Attachment A the leakage rate and a description of the location of the leak.

6.3.3 Verify that Attachment A is complete.

6.3.4 From the leakage rate data on Attachment A, calculate the total system leakage rate and document the results on the Data Sheet section 6.3.

6.4 Test Results Evaluation

SO 6.4.1 Compare the leakage limit in 8.1 to the total system leakage rate. If the limit is exceeded, prepare a MRF to reduce the system leakage rate so that it is within the limit.

6.4.2 If any component's leakage rate has increased significantly since the last inspection, prepare a MRF to repair the component. Note this in the Additional Action/Test Comments section.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit, prepare a MRF for its repair. Note this in the Additional Action/Test Comments section.

## 7.0 RETURN TO NORMAL

SO 7.1 Inform ~~performers of RT-5-000-502-0~~ CHEMISTRY GROUP that Contaminated Pipe Inspection is complete, AND JET PUMP SAMPLE FLOW MAY BE STOPPED.

LAH 11/26/84 WMR 11/27/84

7.2 Inform SSVN and ACO test is complete.

## 8.0 ACCEPTANCE CRITERIA

8.1 The Post Accident Sampling System shall not exhibit a leak rate of greater than (later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

POST ACCIDENT SAMPLING SYSTEM CONTAMINATED PIPING INSPECTION
DATA SHEET (1 of 3) 8 WRL 11/27/84 LAB 11/26/84

ACTION REQUIRED INITIALS

6.0 PROCEDURE

6.1 Preparation

6.1.1 All prerequisites satisfied mfS

6.1.2 Test Equipment mfS

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| STOPwatch | VICTOR wylor | 53-0103 | 4-4-85 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

6.2 Shift Permission to Test

6.2.1 SSVN permission obtained mfS

6.2.2 ACO permission to test Lum
ACO

11-28-84/0400
Date Time

6.3 Post Accident Sampling Station System Containment Piping Inspection.

6.3.3 Attachment A is complete mfS

6.3.4 System Fluid Leakage Rate

0 cc/min

0 GAL/MIN

GAL/MIN - - (1cc/min = .000264 gal/min)

POST ACCIDENT SAMPLING SYSTEM CONTAMINATED PIPING INSPECTION

DATA SHEET (2 of ~~3~~ 8) CAH 11/26/84 WM 11/27/84

ACTION REQUIRED | INITIALS

6.4 Test Results Evaluation

6.4.1 The Total Post Accident Sampling Station Piping leakage Rate is within Acceptable Limit. mfg (*)

7.0 Return to Normal

7.1 SSVN and CO/ACO informed of test completion mfg

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS

HV-30-154 leaking at <.25 cc/min. This was not part of this test, but this valve is located in the liquid sampling cabinet and leakage was through the sampling needle on the bottom of the cabinet. Chemistry was informed and will MRF.

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POST ACCIDENT SAMPLING STATION SYSTEM PIPING INSPECTION

DATA SHEET (3 of 8)

ATTACHMENT A

WMA 11/30/84
LKK 11/29/84

Inspector: M. P. Gallagher

System Mode JET PUMP SAMPLE At 1000PSIG / A&B RHR PRESSURIZED with Condensate TRANSFER   Date 11/29/84

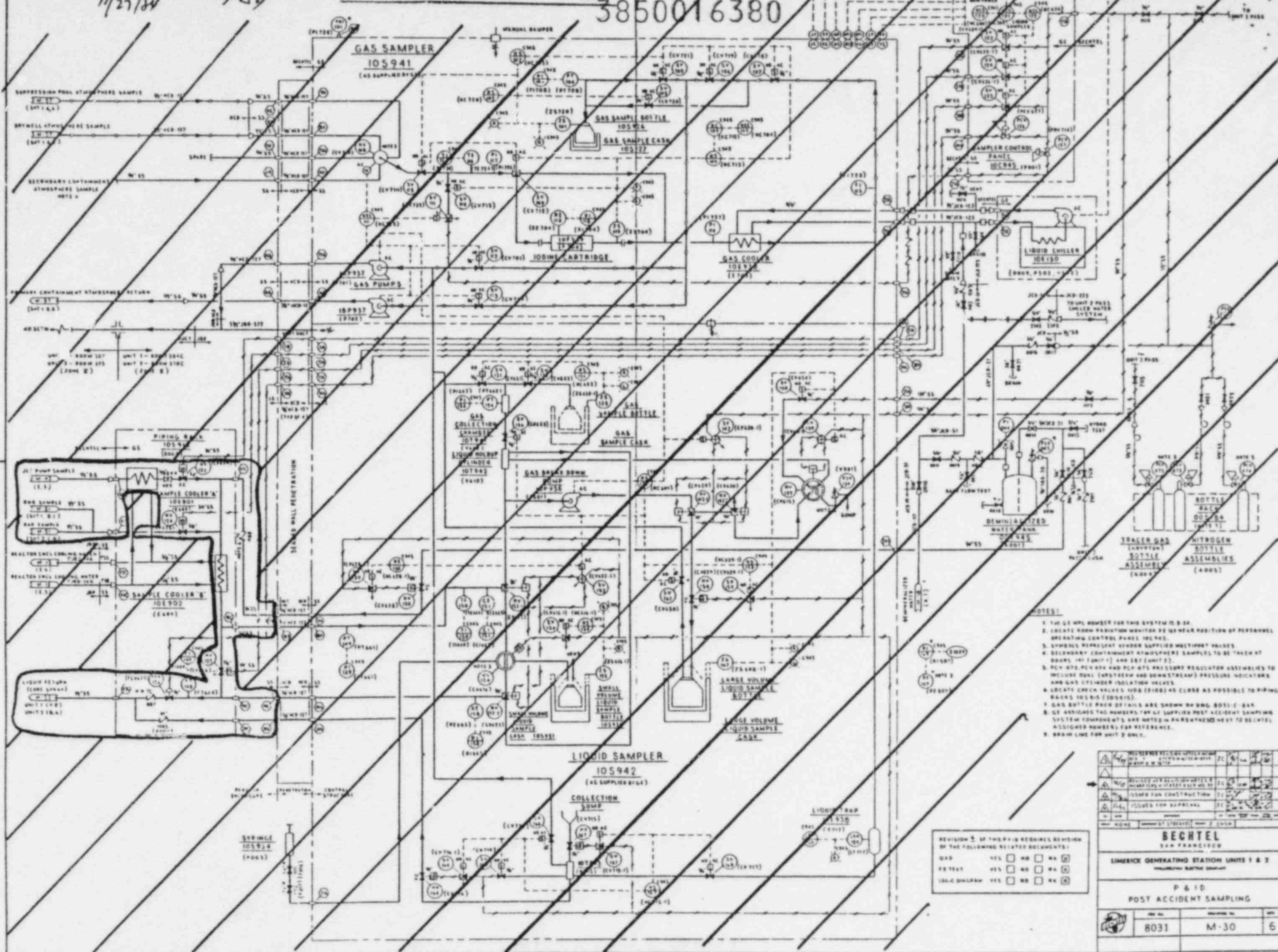
| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| NONE | | | | | |

DATA SHEET (4 + 8)

ATTACHMENT B

WM 11/27/84 11/26/84

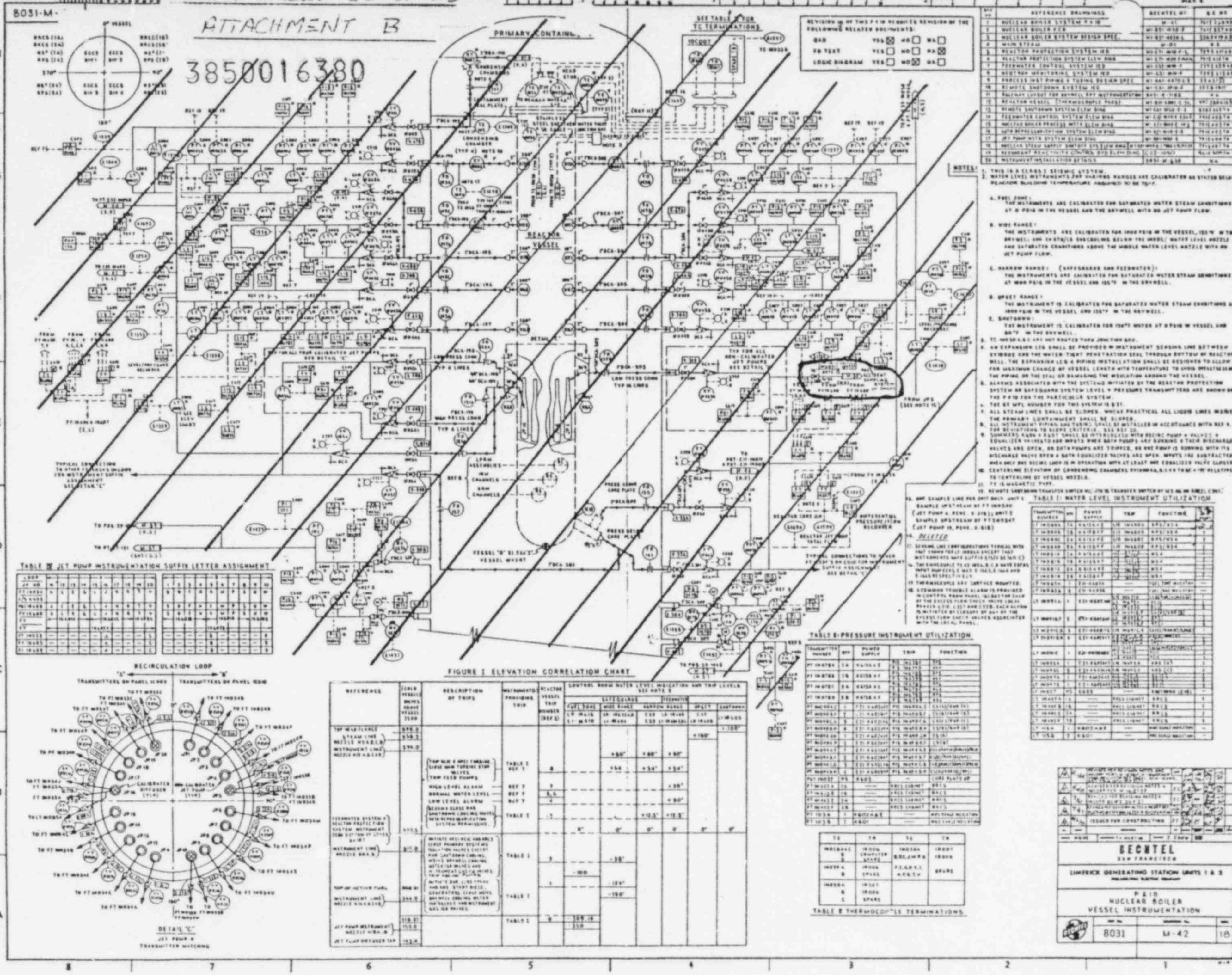
8500016380

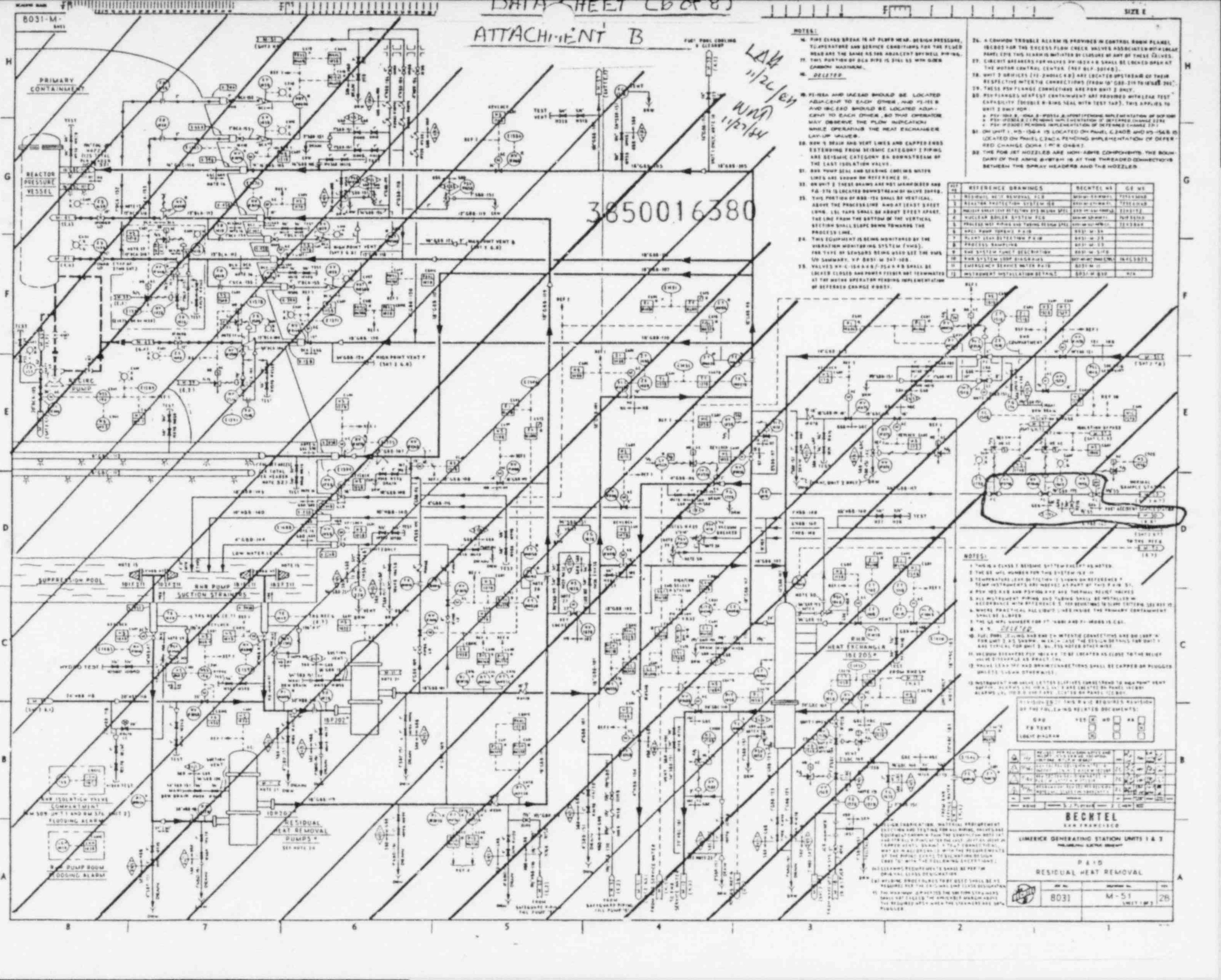


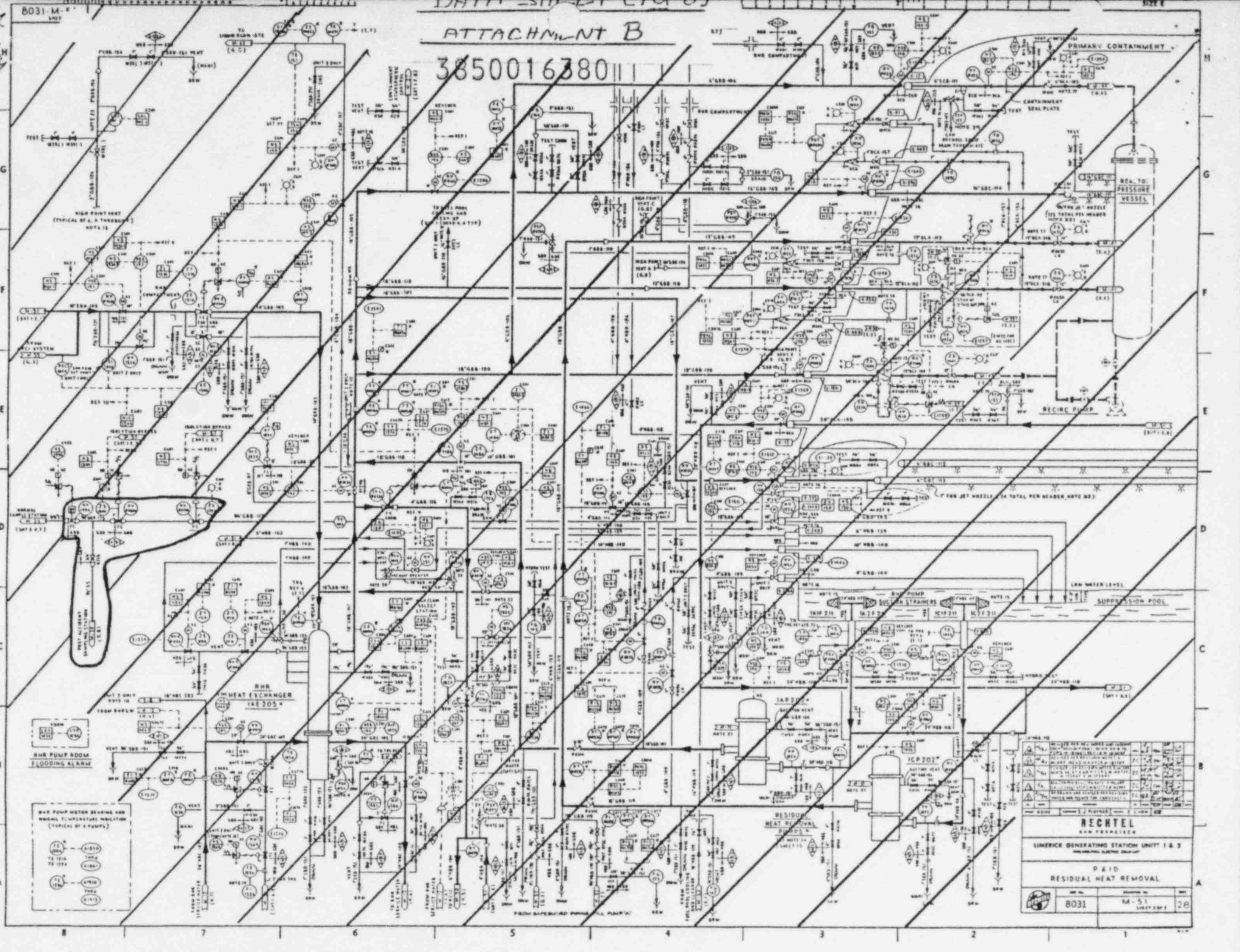
LAG 11/24/84
WMT 11/27/84

ATTACHMENT B

3850016380




DATA SHEET (6 of 8)
ATTACHMENT B
3850016380
LAW 11/26/84
WNM 11/27/84
PRIMARY CONTAINMENT
REACTOR PRESSURE VESSEL
SUPPRESSION POOL
RHR PUMP SUCTION STRAINERS
RHR HEAT EXCHANGER
RESIDUAL HEAT REMOVAL PUMPS
RHR PUMP ROOM FLOODING ALARM
RHR ISOLATION VALVE COMPARTMENT FLOODING ALARM
NOTES:
REFERENCE DRAWINGS
BECHTEL
SAN FRANCISCO
LIMERICK GENERATING STATION UNITS 1 & 2
P & ID
RESIDUAL HEAT REMOVAL
8031
M-51
28
SIZE E


ATTACHMENT B
3850016380
8031-M-51
PRIMARY CONTAINMENT
CONTAINMENT SEAL PLATE
REACTOR PRESSURE VESSEL
RECIRC PUMP
SUPPRESSION POOL
LOW WATER LEVEL
RHR PUMP SUCTION STRAINERS
RHR HEAT EXCHANGER
1AE205
RHR PUMP ROOM FLOODING ALARM
RESIDUAL HEAT REMOVAL PUMPS
1AP202
1CP202
BECHTEL
SAN FRANCISCO
LIMERICK GENERATING STATION UNITS 1 & 2
P&ID
RESIDUAL HEAT REMOVAL
8031
M-51
28

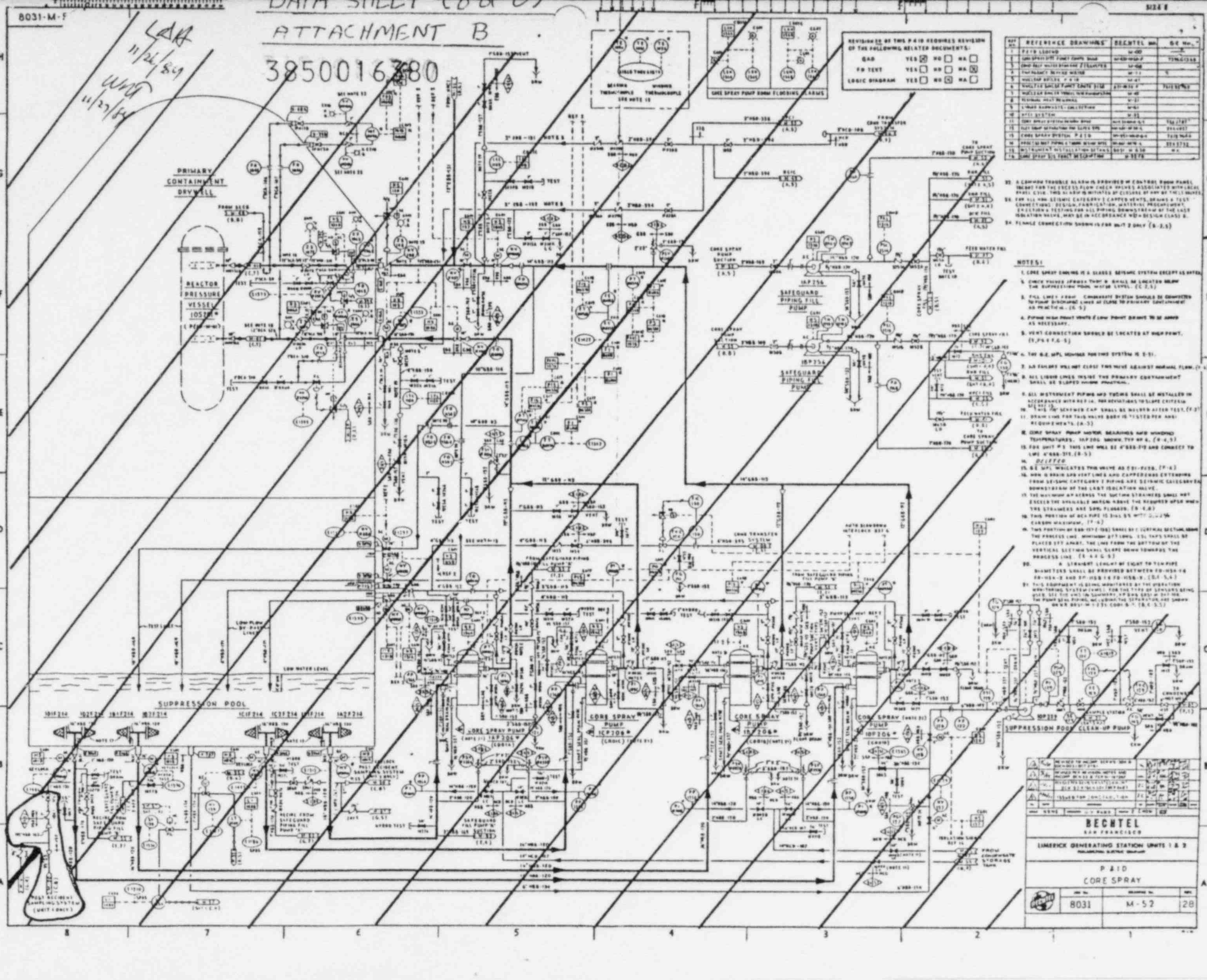
DATA SHEET CO & 07

ATTACHMENT B

3850016380

LAH 11/26/84

WMG 11/27/84



ATTACHMENT 3 3850016380 RHMoore 8-28-8

8-28-84
EFFECTIVE DATE

LIMERICK GENERATING STATION
PORC APPROVAL FORM
FOR INITIAL PERFORMANCE OF
SURVEILLANCE REQUIREMENTS

A-223, Form 2
Revision 0
Page 1 of 1
JAM 8/21/84

RETENTION: LIFE OF PLANT

1. DOCUMENT (TITLE & REV.): ST-1-030-701-1 Rev. 0

2. INITIAL & DATE APPROVAL STATUS:

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | [signature] | 12/20/84 | | |
| ASST SUPT | [signature] | 12/20/84 | | |
| ALT ENG-TECH | WJC | 12/20/84 | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| ENG-HP&C | | | | |
| ENG-ADMIN | | | | |
| PS QAE | | | | |
| ENGR I&C | [signature] | 12/20/84 | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| PERF ENG | LAH | 12/20/84 | | |

P-F 10

3. COMMENTS/CORRECTIVE ACTION:

The above Surveillance Test was determined to be fully/partially/not satisfied. Satisfied requirements listed below are considered "IN SURVEILLANCE" as of 9/20/84 / ~~the date indicated.~~
mo/day/year

| Satisfied Surveillance Requirements | "IN SURVEILLANCE" Date (if Different For Different Requirements) |
|---|---|
| 6.8.4.a | 9 / 20 / 84 |
| FSAR 6.2.8.1.g | ↓ / ↓ / ↓ |
| FSAR 6.2.8.1.h | ↓ / ↓ / ↓ |
| FSAR 6.2.8.3 | ↓ / ↓ / ↓ |

COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED

ADMIN OR PREPARER DATE

SUPT. APPROVAL/DATE [signature] , 12/20/84

PORC MEETING #:
DATE:

DIRECTIONS TO ADMIN. STAFF:
{ } ISSUE THE ATTACHED DOCUMENT
{ } FILE THE ATTACHED DOCUMENT IN FILE ________
{ } FILE THIS FORM PER ADMIN. PROC. ________
{ } OTHER: ________

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO O&SR FOR:
{ } APPROVAL
{ } REVIEW
{ } INFO

3850016380

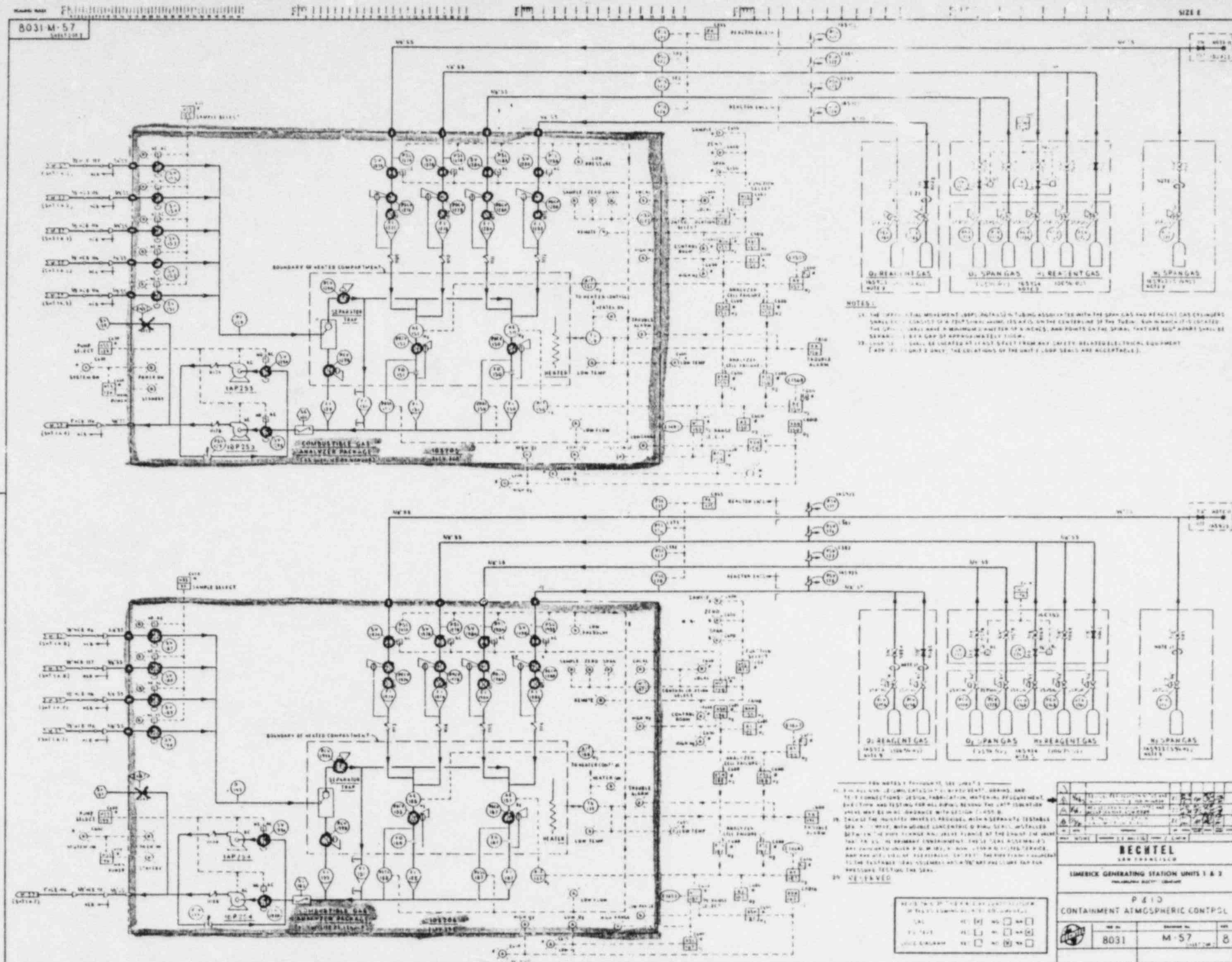
THE PURPOSE OF THIS A-223 PROCEDURE IS TO DETERMINE THE LEAKAGE RATE OF THE CONTAINMENT ATMOSPHERIC CONTROL COMBUSTIBLE GAS ANALYZER PACKAGES 10S205 AND 10S206.

LEAKAGE TESTING OF THE CAC AND OTHER SYSTEMS IS REQUIRED BY TECH. SPEC. 6.8.4.a AND FSAR 6.2.8.1 GUIDELINES.

SURVEILLANCE TEST ST-1-030-701-1 IS USED TO MEET THE LEAKAGE TEST REQUIREMENTS AND USES AN "IN-FLOW" TEST ON THE GAS ANALYZER SKIDS. MAINTENANCE REQUEST FORMS 8403870 AND 8404396 MEET THE SAME REQUIREMENTS USING A "PRESSURE DECAY" TEST ON 10S205 AND 10S206 RESPECTIVELY. COMPARE STEPS 9.4.1.8 TO 9.4.1.16 OF ST-1-030-701-1 TO STEPS 3.1 TO 3.3 OF THE VENDOR PNEUMATIC LEAK TEST PROCEDURE UTILIZED BY THE MRF'S.

SECTION 5 OF MRF 8403870 AND 8404396 DOCUMENT VERIFICATION OF SATISFACTORY TEST RESULTS.

O - OPEN/DISCONNECTED X - CLOSED MRF LEAK TEST LINE-UP 3850016383



PROCEDURES AND PROGRAMS (Continued)

6.8.4 The following programs shall be established, implemented, and maintained:

a. Primary Coolant Sources Outside Containment

A program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. The systems include the core spray, high pressure coolant injection, reactor core isolation cooling, residual heat removal, post-accident sampling system, safeguard piping fill system, control rod drive scram discharge system, and containment air monitor systems. The program shall include the following:

1. Preventive maintenance and periodic visual inspection requirements, and
2. Integrated leak test requirements for each system at refueling cycle intervals or less.

b. In-Plant Radiation Monitoring

A program which will ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions. This program shall include the following:

1. Training of personnel,
2. Procedures for monitoring, and
3. Provisions for maintenance of sampling and analysis equipment.

c. Post-accident Sampling*

A program which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

1. Training of personnel,
2. Procedures for sampling and analysis, and
3. Provisions for maintenance of sampling and analysis equipment.

*Not required until prior to exceeding 5% of RATED THERMAL POWER.

6.2.7.2 Potentially Contaminated Systems

The following systems whose piping penetrates primary containment may contain highly radioactive fluids after an accident. Other systems have been excluded from this list for the reasons discussed in Section 6.2.8.2.

a. Residual Heat Removal System (Figure 5.4-13)

b. Core Spray System (Figure 6.3-9)

c. High Pressure Coolant Injection System (Figure 6.3-7)

d. Reactor Core Isolation Cooling System (Figure 5.4-8)

e. Control Rod Drive Hydraulic System (Scram discharge volume, Figures 4.6-5 and 4.6-6).

f. Safeguard Piping Fill System (Figure 6.3-9)

g. Post-Accident Sampling System (Figure 11.5-2)

h. Containment Atmospheric Control System (Figure 9.4-5)

## 6.2.8 LEAKAGE REDUCTION PROGRAM

To ensure that leakage from systems that may be expected to handle highly radioactive fluids during or after an accident is maintained as low as practical, a leakage reduction program will be established. System isolation provisions have been reviewed in conjunction with this effort and are discussed in Section 6.2.7.

6.2.8.1 Systems to Be Leak Tested

The following systems will be leak tested at 18-month intervals. The test conditions will simulate the expected operating conditions during an accident or transient:

a) Residual Heat Removal System

b) Core Spray System

c) High Pressure Coolant Injection System

d) Reactor Core Isolation Cooling System

e) Control Rod Drive Scram Discharge System

f) Safegaurd Piping Fill System

g) Post-Accident Sampling System (including portions of the Process Sampling System)

h) Containment Atmospheric Control System (recombiner and sample loops only)

6.2.8.2 Systems Excluded From The Program

The following systems are excluded from the leakage reduction program for the reasons given below:

a) Reactor Recirculation System - The interfaces between the recirculation system and the systems outside containment (other than RHR) are isolated by containment isolation valves.

b) Reactor Water Cleanup System (RWCU) - The RWCU system is isolated from the recirculation system by containment isolation valves.

c) Main Steam System - The main steam system is isolated by containment isolation valves and provided with a leakage control system.

d) Feedwater System - The feedwater system is isolated by containment isolation valves.

e) Process Sampling System - Sample lines from potentially contaminated sources inside the containment are isolated by containment isolation valves. Potentially contaminated sample lines from the RHR system, associated with post-accident sampling, will be leak tested with the post-accident sample system.

f) Suppression Pool Cleanup System - The suppression pool cleanup system is isolated by containment isolation valves.

g) Reactor Enclosure RERS and SGTS Systems - The reactor enclosure HVAC supply and exhaust valves will isolate the reactor enclosure upon receipt of high radiation isolation signal. The reactor enclosure recirculation and standby gas treatment systems (RERS and SGTS) will then filter and exhaust air from the reactor enclosure and maintain a subatmospheric pressure. Because the source of radioactivity in these systems is airborne contamination resulting from previous leakage from the containment or contaminated systems, a leakage reduction program for the low pressure RERS/SGTS ducting would not significantly reduce the airborne radioactivity concentrations in the secondary containment. The recirculation and SGTS filters will be tested as described in Sections 6.5.1.3.4 and 6.5.1.1.4.

h) Containment Radiation Sampling System - The containment radiation sampling system, used to provide an indication

of primary leakage during normal operation, is isolated by containment isolation valves.

### 6.2.8.3 Leak Testing Method

System leak test conditions will simulate the expected operating conditions during an accident. Each component in the system will be inspected for leakage. Water leakage will be collected and measured. Steam leakage will be estimated and converted to an equivalent water leak rate. Gas systems will be bubble leak-tested with a zero leakage acceptance criteria or leakage will be quantified by means of a pressure decay or helium leak test.

Leakage rate goals will be established for each system based on baseline data from the first tests. Components whose leakage contributes significantly to the total leak rate or increases substantially between tests will be repaired to maintain total leakage as low as practical.

## 6.2.9 REFERENCES

6.2-1 I.E. Idel'chik, Handbook of Hydraulic Resistance..., AEC-TR-6630, pages 2, 105, 416 (1966)

6.2-2 Flow of Fluids, Crane Technical Paper No. 410, Crane Co., Chicago (1969).

6.2-3 F.J. Moody, "Maximum Two-Phase Vessel Blowdown from Pipes," Topical Report APED-4827, General Electric Company, 1965.

6.2-4 A.J. James, "The General Electric Pressure Suppression Containment Analytical Model," April 1971, (NEDO-10320).

6.2-5 A.J. James, "The General Electric Pressure Suppression Containment Analytical Model," Supplement 1, May 1971 (NEDO-10320).

6.2-6 Takashi Tagami, "Interim Report on Safety Assessment and Facilities Establishment (SAFE) Project", February 28, 1966, Hitachi Ltd., Tokyo, Japan.

6.2-7 Donald J. Wilhelm, Condensation of Metal Vapors: Mercury and the Kinetic Theory of Condensation, ANL - 6948, October 1964.

6.2-8 Philadelphia Electric Co. Limerick Generating Station Design Assessment Report (March 1982).

6.2-9 "Thermal Hydrogen Recombiner System for Water-Cooled Reactors," AI-75-2, Rev. 2 (P), Rockwell International (July 1975).

| | | |
|---|---|---|
| 9.4.1.3 | Install temporary jumpers between terminals 27, 29, 30, 31 and 32 on terminal board 3 in the Hydrogen and Oxygen Analyzer Panel 10S206 | ________ |
| 9.4.1.4 | Lift lead 38 from terminal 36 on TBR-3 in Panel 10S205 | ________ |
| 9.4.1.5 | Lift lead 38 from terminal 36 on TBR-3 in Panel 10S206 | ________ |
| 9.4.1.6 | Install test box to test connection downstream of valve 57-1062 (501-15R-295) and to connection SX-57-159 on panel 10S205. | ________ |
| 9.4.1.7 | At Panel 10C600, place power on to 10S205 by placing HSS-57-126 to the "ANALYZE" position | ________ |
| 9.4.1.8 | Verify SV-57-151, SV- [illegible] -57-153, SV-57-154, and SV-57-155 are open. | ________ |
| 9.4.1.9 | At Panel 10C600, place power on to 10S206 by placing HSS-57-196 to the "ANALYZE" position | ________ |
| 9.4.1.10 | Verify SV-57-187, SV-57-188, SV-57-189 and SV-57-194 are open. | ________ |
| 9.4.1.11 | At Panel 10C945, place power on by placing HSS-30-120 to position "A" or "B" | ________ |
| 9.4.1.12 | Place HSS-30-121 to the Gas position at Panel 10C945 | ________ |

| | | |
|---|---|---|
| 9.4.1.13 | Place HSS-30-111 to the Drywell position on 10C945 | ______ |
| 9.4.1.14 | Place HS-30-109 to the CIRC. gas position on Panel 10C945 | ______ |
| 9.4.1.15 | Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate | ______ |
| 9.4.1.16 | Verify system leak rate is less than (later) | ______ |
| 9.4.1.17 | The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.1.19 and mark Step 9.4.1.19 N/A | ______ |
| 9.4.1.18 | Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attach[illegible]. Document all components exhibiting leakage on Attachment A. | ______ |
| 9.4.1.19 | Isolate the test box and vent the volume. Close and cap valve 57-1062 and 57-1047 | ______ |
| 9.4.1.20 | Place HSS-30-120 on Panel 10C945 to the "OFF" position | ______ |
| 9.4.1.21 | Reattach the thermal overload for pump 1BP937 at Panel 10C945 | ______ |

# PNEUMATIC LEAK TEST PROCEDURE

3.0 PROCEDURE

2 3.1 Slowly, in 10 psig increments, apply pressure to the system until the 90 psig pressure is attained. Allow one minute for the pressure to stabilize between these pressure increments.

3.2 Beginning with the test connection bulkhead fittings, apply a bubble forming leak detector solution such as SNOOP manufactured by Nupro. Verify the leak integrity of all fittings that were broken or made to set-up this test.

3.3 Isolate the pressure source from the system for a period of 10 minutes. No decrease in pressure should be observed on a pressure gauge with 1 psig increments during the 10 minute test duration.

3.4 If a noticable pressure decrease is observed, then the systematic application of the leak test solution must be initiated on a fitting by fitting basis.

3.5 Any fitting found to be leaking should be tightened until the system is capable of holding the 90 psig test pressure with no visible pressure decrease within a 10 minute period.

2 3.6 Slowly, in 10 psig increments, decrease the pressure applied to the system. Allow one minute for pressure stabilization between each incremental decrease in pressure. Decrease the system pressure until a 0 psig pressure is attained.

3.7 Uncap the pressure gauge tubing and reconnect this tubing to the systems integral pressure gauge. Repeat the pressurization process used in paragraph 3.1 above with the exception of a 60 psig input pressure rather than the previous 90 psig.

3.8 Repeat the system isolation and 10 minute drop test described in paragraph 3.3 above at the 60 psig pressure.

ORIGINAL

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LIMERICK GENERATING STATION
MAINTENANCE REQUEST FORM

UNIT 1

MRF# 8403870

---------------------------SECTION 5---------------------------

CAUSE OF FAILURE/DEFECTS FOUND:

TYPE OF FAILURE: |__| |__|

FAILURE CATEGORY: |__| |__|

CORRECTIVE ACTION/WORK PERFORMED/HISTORY DATA:

PERFORMED PNEUMATIC TEST # 1M-73C-32 PER NCR # 10291 AND VENDOR REQUIREMENTS. RESULT WERE ACCEPTABLE AND VERIFIED BY Q.C. PER ATTACHED TEST PACKAGE
D.S. Good x 4716

CAUSE OF FAILURE: |__| |__| |__|

CORRECTIVE ACTION: |__| |__| |__|

EQUIP TROUBLE TAG REMOVED? |__|

ADDITIONAL SHEETS? |__|

FOREMANS COMMENTS: J F K

| GROUP | NOS MEN | TTL MAN HRS | TTL MAN REM |
|---|---|---|---|
| LEAD GP | 2 | 32. | . |
| SUB GP 1 | | . | . |
| SUB GP 2 | | . | . |
| SUB GP 3 | | . | . |
| SUB GP 4 | | . | . |
| SUB GP 5 | | . | . |

| TEST EQUIP/ TOOL ID USED: | DATE USED |
|---|---|
| 1. | / / |
| 2. | / / |
| 3. | / / |
| 4. | / / |
| 5. | / / |

WORK COMPLETE SIGN-OFFS:

| | CRAFT | (DATE) | QC |
|---|---|---|---|
| SUB GP 1 | Matt F. Allen | 12/4/84 | Matt F. Allen |
| SUB GP 2 | | / / | |
| SUB GP 3 | | / / | |
| SUB GP 4 | | / / | |
| SUB GP 5 | | / / | |

LEAD GROUP, WORK COMPLETE/AREA CLEAN: John Franklin (DATE) 12/4/84 QC SIGN-OFF FOR LEAD GP: Matt F. Allen

---------------------------SECTION 6---------------------------

|✓| OPERATION VERIFICATION FORM ATTACHED

SHIFT SUPERVISION ACCEPTANCE: Gregg F. Calley (DATE) 12/7/84 (TIME) 0902

NEW MRF INITIATED? |__|

---------------------------SECTION 7---------------------------

REVIEWED BY: ______________ __/__/__ (DATE)

FOLLOW-UP: |__| |__|

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LIMERICK GENERATING STATION
MAINTENANCE REQUEST FORM

UNIT 1

MRF# 8404396

---SECTION 5---

CAUSE OF FAILURE/DEFECTS FOUND:

TYPE OF FAILURE: |__| |__|

FAILURE CATEGORY: |__| |__|

CORRECTIVE ACTION/WORK PERFORMED/HISTORY DATA:

PERFORM PNEUMATIC TEST
LLRT-23C-31

CAUSE OF FAILURE: |__| |__| |__|

CORRECTIVE ACTION: |__| |__| |__|

EQUIP TROUBLE TAG REMOVED? |__|

ADDITIONAL SHEETS? |__|

FOREMANS COMMENTS:

J F King

| GROUP | NOS MEN | TTL MAN HRS | TTL MAN REM | TEST EQUIP/ TOOL ID USED: | DATE USED |
|---|---|---|---|---|---|
| LEAD GP | | . | . | | |
| SUB GP 1 | 2 | 60 . | . | 1. | / / |
| SUB GP 2 | | . | . | 2. | / / |
| SUB GP 3 | | . | . | 3. | / / |
| SUB GP 4 | | . | . | 4. | / / |
| SUB GP 5 | | . | . | 5. | / / |

WORK COMPLETE SIGN-OFFS:

| | CRAFT | (DATE) | QC |
|---|---|---|---|
| SUB GP 1 | Mark F. Allen | 12/11/84 | Mark F. Allen |
| SUB GP 2 | | / / | |
| SUB GP 3 | | / / | |
| SUB GP 4 | | / / | |
| SUB GP 5 | | / / | |

LEAD GROUP,
WORK COMPLETE/AREA CLEAN: Charles I. Romberger 16:15 (DATE) 12/11/84

QC SIGN-OFF FOR LEAD GP: Mark F. Allen

---SECTION 6---

N/A OPERATION VERIFICATION FORM ATTACHED [signature] 12/13/84

SHIFT SUPERVISION ACCEPTANCE: Gregg F. Collins (DATE) 12/15/84 (TIME) 1046

NEW MRF INITIATED? |__|

---SECTION 7---

REVIEWED BY: ______ __/__/__ (DATE)

FOLLOW-UP: |__| |__|

12/10/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-057-701-1 P.A.S.S & C.A.C SAMPLE LOOPS CONTAMINATED PIPING INSPECTION

Test Frequency: 18 months -OR- Initiating Events: 1. Reason ______
Tech Spec.: 6.8.4a 2. MRF No. ______
FSAR 6.2.8.1.g
FSAR 6.2.8.1.h
FSAR 6.2.8.3

Test Results:

Section A. All Asterisked (*) Steps Completed SATISFACTORILY

Performed By: (Sign/Date) ________________ ______

Performed By: (Sign/Date) ________________ ______

Informed Test Complete:(ACO or CO) (Sign/Date) ________________ ______
(Time) ______

Reviewed By: (SSVN or STA) (Sign/Date) ________________ ______

---

Section B. One or More Asterisked (*) Steps Test Results UNSATISFACTORILY

Performed By: (Sign/Date) ________________ ______

Informed of Test Results: (CO or ACO)(Sign/Date) ________________ ______
(Time) ______

Shift Supervision (Sign/Date) ________________ ______

Corrective Action: MRF No.: ________________ ______

Initiated By: Sign/Date) ________________ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________________________

Date/Time Notified: (Date/Time) ________________ ______

Notified By: (Sign) ________________________

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) ________________ ______

1.0 PURPOSE

The purpose of this test is to determine the leakage rate of the Post Accident Sample System and Containment Atmospheric Control sample loops and to inspect associated components if the leakage is above the specified limit.

2.0 REFERENCES

2.1 Generic LLRT Procedure ST-1-LLR-001-1

2.2 8031-M-30; Post Accident Sampling

2.3 8031-M-57, Containment Atmospheric Control, Sheets 1 and 2

2.4 NUREG-0737

2.5 8031-M-235-8-12

2.6 8031-M-235-26-11 and 10

3.0 TEST EQUIPMENT

3.1 Per Generic Procedure ST-1-LLR-001-1

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Per Generic Procedure ST-1-LLR-001-1 and Item I of Specific Procedure Section 9.0

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## 5.0 PREREQUISITES

5.1 Plant conditions are such that testing will not interfere with planned operations. Backup system availability has been established per Section 9.1. Request permission of Shift Supervision and ACO/CO to begin this test.

_______________/_____
Initials Date

_______________/_____
ACO/CO Date

5.2 RWP obtained if required. _______________

5.3 Obtain chemistry personnel assistance to operate the P.A.S.S. panel.

5.4 Safety permit issued if required per Section 9.5 or as determined by Results Engineer or alternate. Yes ____ No ____

If Yes: Permit No. ____________

## 6.0 GENERAL LEAK TEST PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

INITIALS

6.1 Read Specific Procedure. Follow procedure for system draining and venting (Section 9.2) and valve lineup (Section 9.3). ________

6.2 With the box set up for a "FLOW IN TEST" and connected to the penetration test tap, perform leak test per ST-1-LLR-002-1. Record leakage on the Test Data Sheet attached to this procedure. ________

6.3 Perform leak test per Section 9.4 _____/____

## 7.0 PROCEDURE

### 7.1 Flow in Test (Test Volume Filled with Air)

7.1.1 Verify that the test volume is drained of water.

THE FOLLOWING STEPS ARE THE INITIAL SET UP OF VOLUMETRICS LEAK RATE MONITOR (LRM). SEE FIGURE 1.

7.1.2 Prior to performing leakage test or integrity check, set the LRM controls as follows:

| CONTROL | PRESSURE REGULATOR (V-1) | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|---|
| POSITION | FULL DECREASE (CCW) | CHARGE | DECAY | TEST |

7.1.3 Connect the LRM to a 110 volt, 60 Hz electrical power source. Press the power switch; allow a ten (10) minute warm-up period before proceeding with Section 7.1.5.

DUE TO THE NATURE OF THE THERMAL MASS FLOW TRANSDUCERS USED IN THE LRM, THE FLOW RATE INDICATOR MAY DISPLAY A READOUT OF -006 TO +006 AT A NO LEAK CONDITION. THIS IS A NORMAL INDICATION, AND DOES NOT AFFECT CALIBRATION OF THE LRM.

7.1.4 Apply clean, dry facility test gas supply pressure to INLET port and pressurize from 85 to 150 PSIG. (Use nitrogen on electrical penetrations)

7.1.5 Upon completion of warm-up period, adjust ZERO control as necessary to obtain a readout of $\pm$ 0.00 on the PRESSURE indicator. Be sure the TEST port is open to atmosphere.

7.1.6 Connect TEST port to the test volume.

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7.1.7 Zeroing of the desired flow range(s) on the display must be completed before any flow measurements from that range are taken. The LRM MUST be isolated from the test volume by setting the ball valves as in Section 7.1.2. Adjust zero on all flow ranges, selecting each individually with the RANGE switch.

THERE MUST BE A CONSTANT SUPPLY PRESSURE OF 85-150 PSI CONNECTED TO THE INLET OF THE LRM FOR ZEROING OF THE FLOW DISPLAY.

THE FOLLOWING STEPS ARE THE LEAK TEST OPERATING SEQUENCE OF LRM.

7.1.8 Set the TEST LEVEL ball (V-4) valve to the CLOSED position. Set the TEST ball valve (V-3) to the FLOW position. Adjust the PRESSURE REGULATOR (V-1) to the test pressure of 44 psig as displayed on the PRESSURE indicator. Set the RANGE SELECTOR switch and RANGE SELECTOR valve (V-2) to LOW RANGE and observe FL for any possible internal LRM leakage. Return the TEST LEVEL valve (V-4) to the TEST position. Return RANGE SELECTOR valve (V-2) to CHARGE position. The test volume should now be charging.

THE PRESSURE INDICATOR WILL SHOW A DROP IN PRESSURE UNTIL THE TEST VOLUME IS COMPLETELY CHARGED.

7.1.9 If the pressure within the test volume will not reach the desired test level (due to an excessive leakage rate), increase the REGULATOR control setting as necessary to obtain the desired test level pressure.

7.1.10 After the test volume is fully charged, set ball valves as follows:

| BALL VALVE | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|
| POSITION | HIGH | FLOW | TEST |

ALLOW A TEN (10) MINUTE (MINIMUM) TEMPERATURE STABILIZATION PERIOD.

7.1.11 Upon completion of temperature stabilization period, place the RANGE switch in the HIGH position and observe the FLOW RATE indicator for the leakage flow rate.

7.1.12 If the indicated leakage rate value is sufficiently low, set the RANGE switch to MID and the RANGE valve to MID for greater accuracy. If low range is desired, set RANGE switch to LOW and the RANGE valve (V-2) to LOW.

7.1.13 Verify the position of the following valves on LLRT Data Sheet.

Range Selector Switch
Range Selector Valve (V-2)
Test Valve (V-3)
Test Level Valve (V-4)

7.1.14 If leakage is evident but is below the calibrated range of the LRM, either assign a test leakage rate at the minimum calibrated range (20 sccm) or impose a known flow to raise total indicated flow rate to within the calibrated range of the LRM. This is done by closing the test connection valv s and opening a vent valve between the test nection valves and valve V-4 on the LRM. Thr le the vent valve to attain a flow rate (L within the calibrated range of the LRM. After flow has stabilized, open the test connection valves and observe the total flow rate.

WHEN IMPOSED FLOW IS USED, THE MEASURED LEAKAGE (Lm) IS THE DIFFERENCE BETWEEN THE TOTAL FLOW AND THE IMPOSED KNOWN FLOW (Lo).

7.1.15 Read and record on Test Data Sheet the indicated flow and pressure at a minimum of 5-minute intervals for 15 minutes after stabilization. A minimum of 4 readings should be taken.

## 8.0 RETURN TO NORMAL

8.1 When test is completed, consult Health Physicist or alternate concerning venting the test volume.

9.0 SPECIFIC PROCEDURE

9.1 Backup System Availability and Requirements:

9.1.1 The Post Accident Sampling System will be out of service for the duration of this test.

9.1.2 Both H2/O2 analyzers 10S205 and 10S206 will be out of service for the duration of this test.

9.2 System Draining and/or Venting:

SYSTEM IS A NON-PRESSURIZED AIR-FILLED SYSTEM AND NEED NOT BE DRAINED.

9.3 Valve Lineup: INITIALS

9.3.1 Complete the applicable section of the Leak Rate Tag Accountability Log, position valves and switches, and hang LLRT tags. ________

9.4 Procedure:

PERFORM LEAK RATE USING THE FOLLOWING PREFERRED METHOD(S). ALTERNATE METHODS AS DESCRIBED IN GENERIC PROCEDURE ST-1-LLR-001-1 MAY BE USED WHEN NEEDED AND SHALL BE ATTACHED TO AND FORM A PART OF THIS PROCEDURE ONLY WHEN USED.

9.4.1 Perform a flow in test on the P.A.S.S and C.A.C atmosphere sample loops.

INITIALS

9.4.1.1 Remove thermal overload from contactor for pump 1BP937 at Panel 10C945 ________

9.4.1.2 Install temporary jumpers between terminals 27, 28, 29, 30, 3 and 32 on terminal board 3 in the Hydrogen and Oxygen Analyzer Panel 10S205 ________

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9.4.1.3 Install temporary jumpers between terminals 27, 29, 30, 31 and 32 on terminal board 3 in the Hydrogen and Oxygen Analyzer Panel 10S206 ________

9.4.1.4 Lift lead 38 from terminal 36 on TBR-3 in Panel 10S205 ________

9.4.1.5 Lift lead 38 from terminal 36 on TBR-3 in Panel 10S206 ________

9.4.1.6 Install test box to test connection downstream of valve 57-1062 (501-15R-295) and to connection SX-57-159 on panel 10S205. ________

9.4.1.7 At Panel 10C600, place power on to 10S205 by placing HSS-57-126 to the "ANALYZE" position ________

9.4.1.8 Verify SV-57-151, SV-57-152, SV-57-153, SV-57-154, and SV-57-155 are open. ________

9.4.1.9 At Panel 10C600, place power on to 10S206 by placing HSS-57-196 to the "ANALYZE" position ________

9.4.1.10 Verify SV-57-187, SV-57-188, SV-57-189 and SV-57-194 are open. ________

9.4.1.11 At Panel 10C945, place power on by placing HSS-30-120 to position "A" or "B" ________

9.4.1.12 Place HSS-30-121 to the Gas position at Panel 10C945 ________

9.4.1.13 Place HSS-30-111 to the Drywell position on 10C945 ________

9.4.1.14 Place HS-30-109 to the CIRC. gas position on Panel 10C945 ________

9.4.1.15 Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate ________

9.4.1.16 Verify system leak rate is less than (later) ________

9.4.1.17 The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.1.19 and mark Step 9.4.1.19 N/A ________

9.4.1.18 Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A. ________

9.4.1.19 Isolate the test box and vent the volume. Close and cap valve 57-1062 and 57-1047 ________

9.4.1.20 Place HSS-30-120 on Panel 10C945 to the "OFF" position ________

9.4.1.21 Reattach the thermal overload for pump 1BP937 at Panel 10C945 ________

9.4.1.22 Place HSS-30-170 on Panel 10C945 to the ON position and verify pump 1BP937 starts ________

9.4.1.23 Place HSS-30-120 on Panel 10C945 to the "OFF" position. ________

9.4.1.24 Place HSS-57-126 on Panel 10C600 to the "OFF" position ________

9.4.1.25 Place HSS-57-196 on Panel 10C600 to the "OFF" position ________

9.4.1.26 Reconnect lead lifted in step 9.4.1.4 ________

9.4.1.27 Reconnect lead lifted in step 9.4.1.5 ________

9.4.1.28 Remove temporary jumpers between terminals 27, 29, 30, 31 and 32 on TRB-3 in Panel 10S206 ________

9.4.1.29 Remove temporary jumpers between terminals 27, 28, 29, 30, 31 and 32 on TRB-3 in Panel 10S205 ________

9.4.1.30 Place HSS-57-126 to the "ANALYZE" position and then using pump selector HSS-57-129 verify that pumps 1AP253 and 1BP253 operate correctly. This verifies lead lifted in step 9.4.1.4 restored ________

9.4.1.31 Verify only one sample inlet valve to panel 10S205 is open ________

9.4.1.32 Return HSS-57-126 to the "OFF" position ________

9.4.1.33 Place HSS-57-196 to the "ANALYZE" position and then using pump selector HSS-57-199 verify that pumps 1AP254 and 1BP254 operate correctly. This verifies lead lifted in step 9.4.1.5 restored ________

9.4.1.34 Verify only one sample inlet valve to panel 10S206 is open ________

9.4.1.35 Return HSS-57-196 to the "OFF" position ________

9.5 Block Required

None

9.6 Restoration:

9.6.1 At the conclusion of the test, isolate and vent the test box and the test volume separately. Disconnect test box from the test volume, close test connection valves and remove hoses. ________

CAUTION

CONTACT HEALTH PHYSICS PRIOR TO DRAINING OR VENTING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.6.2 Restore valve line up at test completion per Tag Accountability Log to "AS FOUND" position, recording final position in the "AS LEFT" column, or as directed by Shift Supervision. Have second verification performed by a qualified individual designated by the results Engineer or his alternate. If any valve is restored to a position other than the "AS FOUND" position, note it accordingly in the Additional Action/Test Comments section. ________

9.6.3 Complete IVOR. ______

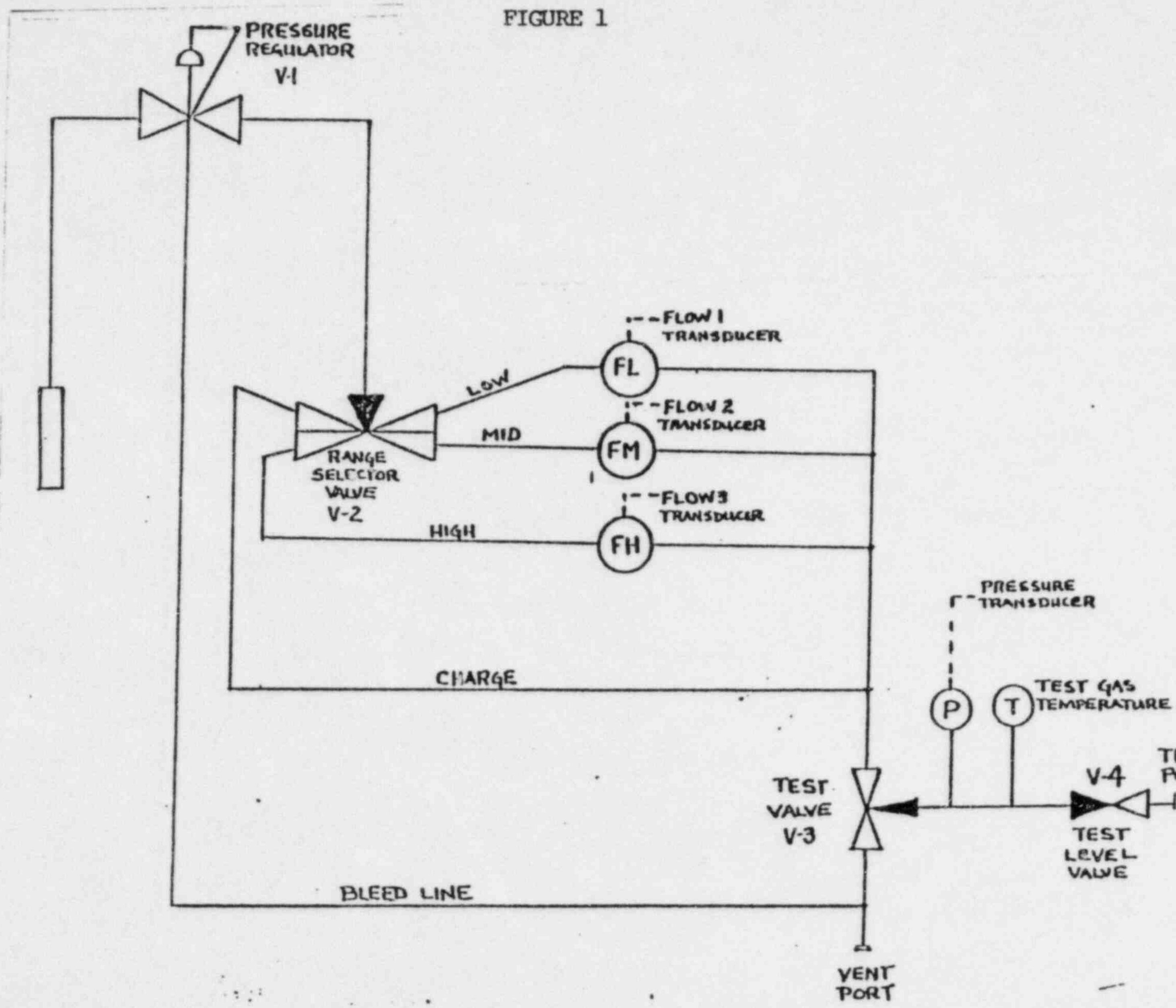
9.6.4 Return system to normal per Section 8.0 or as directed by Shift Supervision. ______

9.7 Inform Shift Supervision of results of test (Note above asterisked step) and fill out the data sheets. Have operator review accountability log. ______

AT TEST COMPLETION, ENSURE THAT COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

VOLUMETRICS LEAK RATE MONITOR (LRM)

FIGURE 1



TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C        P&ID M-57, SH. 1

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| 57-1084 | | CLOSED | 27001 | | | | |
| 57-1086 | | CLOSED | 27002 | | | | |
| 57-1050 | | CLOSED | 27003 | | | | |
| 57-1089 | | CLOSED | 27004 | | | | |
| 57-1062 (Test) | | UNCAPPED OPEN | 27005 | | CLOSED/ CAPPED | | |
| SV-57-133 | | OPEN | 27006 | | | | |
| SV-57-150 | | OPEN | 27007 | | | | |
| SV-57-143 | | OPEN | 27008 | | | | |
| SV-57-159 | | OPEN | 27009 | | | | |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 1

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-195 | | OPEN | 27010 | | | | |
| SV-57-145 | | OPEN | 27011 | | | | |
| 57-1047 | | CLOSED/ CAPPED | 27012 | | CLOSED/ CAPPED | | |
| 57-1043 | | CLOSED/ CAPPED | 27013 | | CLOSED/ CAPPED | | |
| 57-1044 | | CLOSED/ CAPPED | 27014 | | CLOSED/ CAPPED | | |
| SV-57-185 | | OPEN | 27015 | | | | |
| 57-1083 | | CLOSED | 27016 | | | | |
| 57-1088 | | CLOSED | 27017 | | | | |
| 57-1061 | | CLOSED | 27018 | | | | |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C

P&ID M-57, SH. 1

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-134 | | OPEN | 27019 | | | | |
| SV-57-132 | | OPEN | 27020 | | | | |
| SV-57-142 | | OPEN | 27021 | | | | |
| SV-57-144 | | OPEN | 27022 | | | | |
| SV-57-146B | | OPEN | 27023 | | | | |
| 57-1071 | | CLOSED | 27024 | | | | |
| SV-57-183 | | OPEN | 27025 | | | | |
| SV-57-191 | | OPEN | 27026 | | | | |
| SV-57-184 | | OPEN | 27027 | | | | |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C    P&ID M-57, SH. 1

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-186 | | OPEN | 27028 | | | | |
| SV-57-147A | | OPEN | 27029 | | | | |
| SV-57-181 | | OPEN | 27030 | | | | |
| 57-1087 | | CLOSED | 27031 | | | | |
| SV-57-141 | | OPEN | 27032 | | | | |
| SV-57-190 | | OPEN | 27033 | | | | |
| 57-1091 | | OPEN | 27034 | | | | |
| SE-57-101 | | CLOSED | 27035 | | | | |
| SE-57-102 | | CLOSED | 27036 | | | | |

TAG ACCOUNTABILITY LOG

P&ID M-57

PENETRATION NO.: P.A.S.S & C.A.C

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| 57-1051 | | CLOSED/ CAPPED | 27037 | | CLOSED/ CAPPED | | |
| 57-1045 | | CLOSED/ CAPPED | 27038 | | CLOSED/ CAPPED | | |
| 57-1046 | | CLOSED/ CAPPED | 27039 | | CLOSED/ CAPPED | | |
| 57-1070 | | CLOSED/ CAPPED | 27040 | | CLOSED/ CLOSED | | |
| 57-1027 | | CLOSED/ CAPPED | 27041 | | CLOSED/ CAPPED | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 2

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-187 | | AS REQUIRED | 27042 | | | | |
| SV-57-188 | | AS REQUIRED | 27043 | | | | |
| SV-57-189 | | AS REQUIRED | 27044 | | | | |
| SV-57-194 | | AS REQUIRED | 27045 | | | | |
| 57-1063 | | CLOSED | 27046 | | | | |
| 57-1013 | | OPEN | 27047 | | | | |
| SV-57-151 | | AS REQUIRED | 27048 | | | | |
| SV-57-152 | | AS REQUIRED | 27049 | | | | |
| SV-57-154 | | AS REQUIRED | 27050 | | | | |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 2

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-153 | | AS REQUIRED | 27051 | | | | |
| SV-57-155 | | AS REQUIRED | 27052 | | | | |
| SV-57-199A | | CLOSED | 27053 | | | | |
| SV-57-199B | | CLOSED | 27054 | | | | |
| SV-57-129A | | CLOSED | 27055 | | | | |
| SV-57-129B | | CLOSED | 27056 | | | | |
| | | | | | | | |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C

P&ID M-30, M-57

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| HSS-30-120 | | AS REQUIRED | 27057 | | | | |
| HSS-30-111 | | AS REQUIRED | 27058 | | | | |
| HSS-30-109 | | AS REQUIRED | 27059 | | | | |
| HSS-30-121 | | AS REQUIRED | 27422 | | | | |
| HSS-57-129 | | AS REQUIRED | 27060 | | | | |
| HSS-57-126 | | AS REQUIRED | 27061 | | | | |
| HSS-57-199 | | AS REQUIRED | 27062 | | | | |
| HSS-57-196 | | AS REQUIRED | 27063 | | | | |
| | | | | | | | |

LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops

TEST BOUNDARIES See Attachment B (P&ID's)

TESTED BY ______________ DATE ______________

| TIME | PRESSURE (psig) | FLOW (scc/min) |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

AVERAGE FLOW=_______scc/min

| LLRT Test Box No. | Cal. Due Date |
|---|---|
| | |

VOLUMETRICS LRM VALVE/SWITCH POSITIONS

| RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
|---|---|---|---|
| | | | |

ACCEPTANCE CRITERIA: Later

TEST TAP VALVES: 57-1061

| TESTED PER PROCEDURE ST-1-057-701-1 | LEAKAGE RATE = scc/min |
|---|---|

ADDITIONAL ACTION/TEST COMMENTS

Additional Action:

Additional Action required if other portions of test did not function properly or other discrepancies were noted during test.

1. MRF Submitted___ (MRF - Number)_________________ _____

2. Other Action___(Signature - Time/Date)_________________ _____

TEST COMMENTS

If ANY entry is made on this page, sign bottom of cover sheet.

P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

ATTACHMENT A

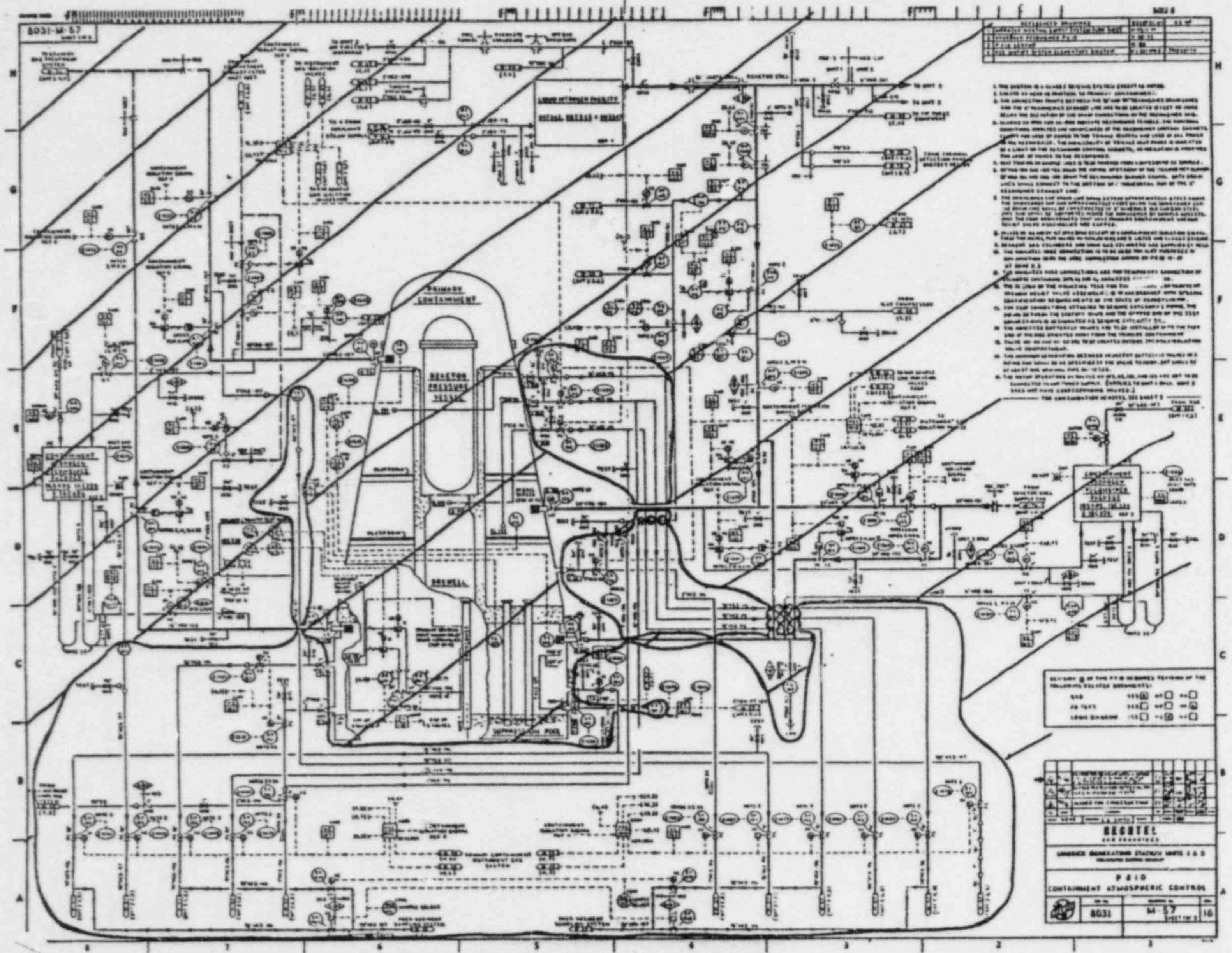
Inspector: ____________________

System Mode: ____________________ Date: __________

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | | | | | |

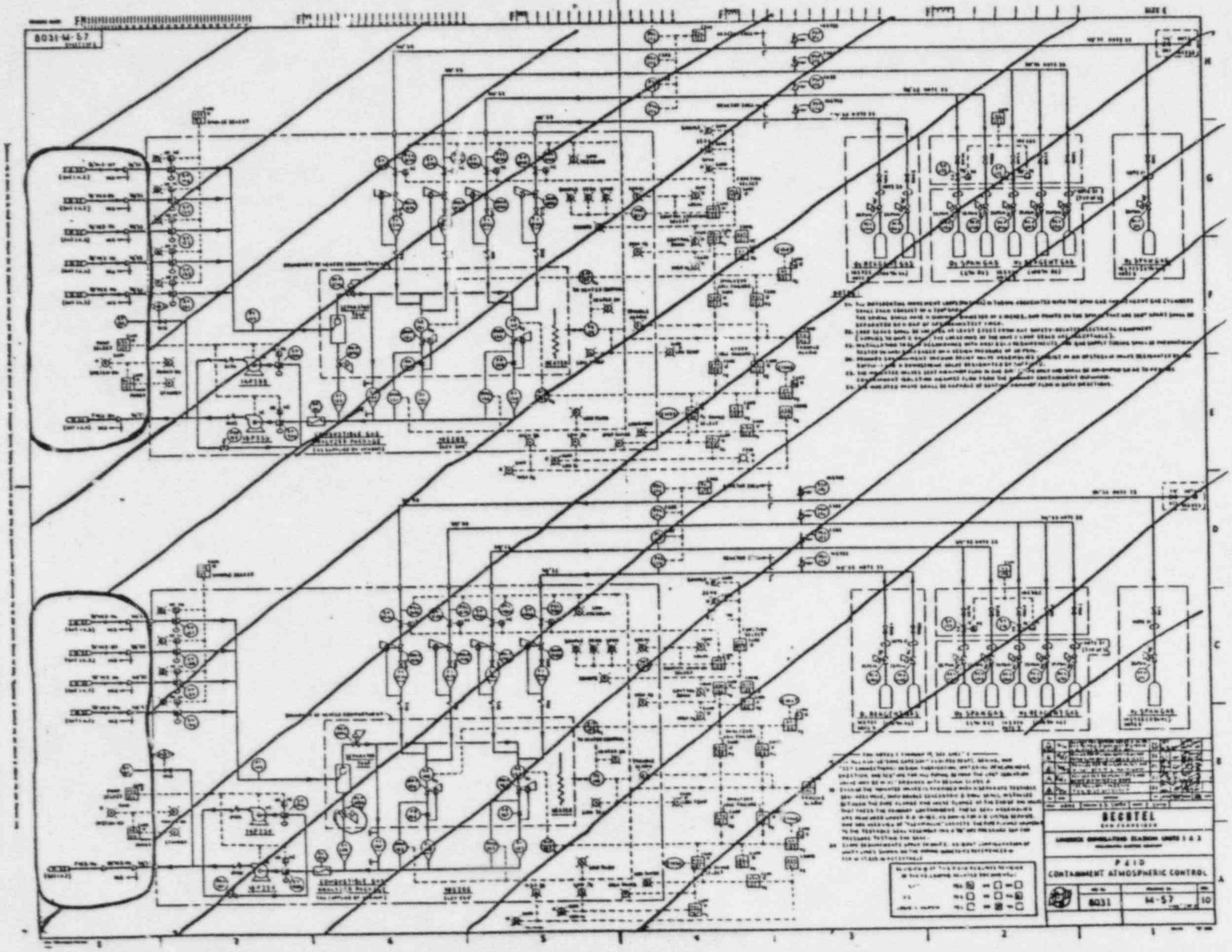
ATTACHMENT B

(Page 1 of 3)



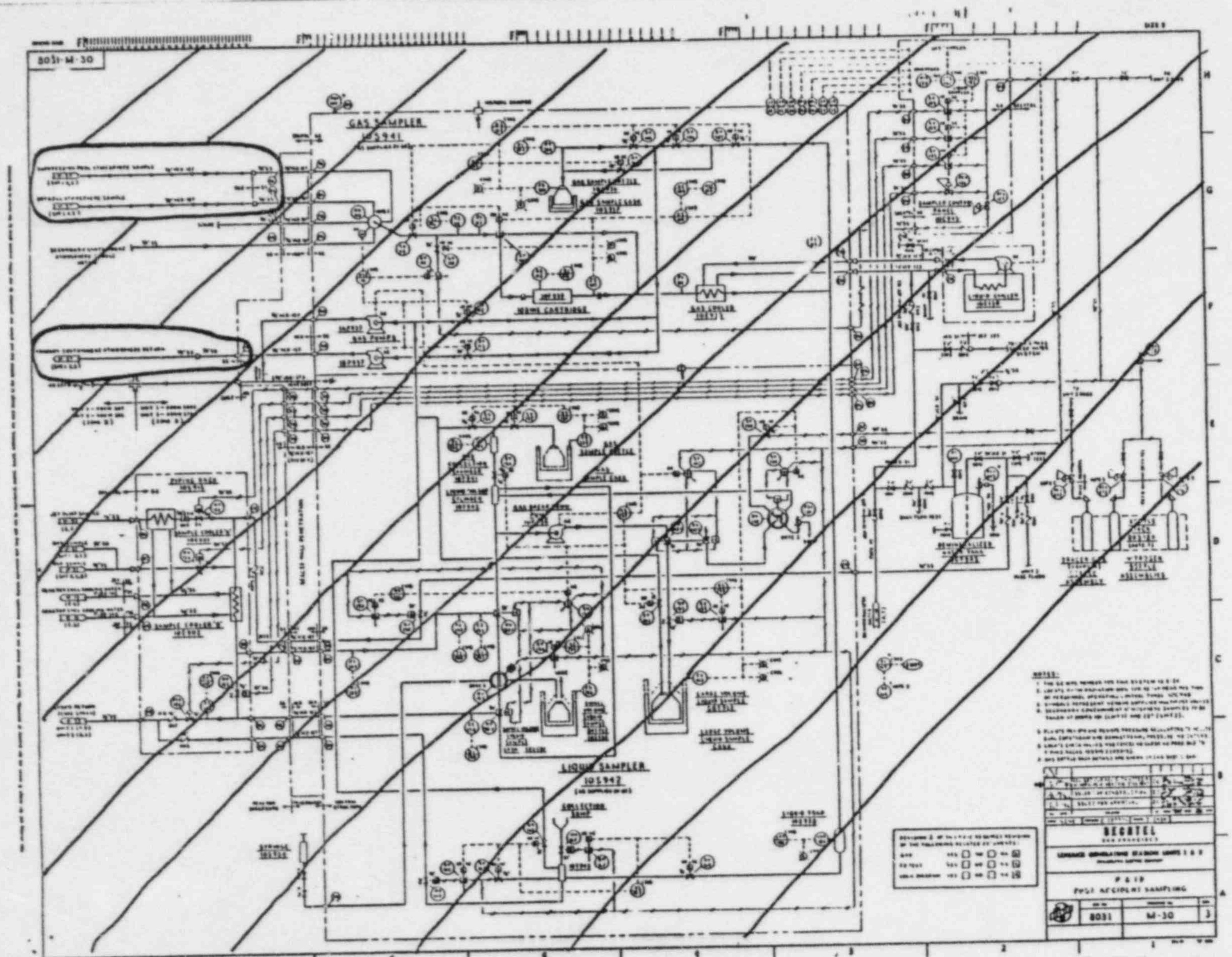
ATTACHMENT B

(Page 2 of 3)



ATTACHMENT B

(Page 3 of 3)



P.A.S.S & C.A.C SAMPLE LOOPS CONTAMINATED

PIPING INSPECTION

DATA SHEET (1 of 1)

"IVOR"

(INDEPENDENT VERIFICATION OF RESTORATION)

The following identified steps in the procedure require an independent verification of completion.

| Step No. | Action | INITIALS |
|---|---|---|
| 9.4.1.21 | Thermal Overload REATTACHED | ________ |
| 9.4.1.26 | Lead RECONNECTED | ________ |
| 9.4.1.27 | Lead RECONNECTED | ________ |
| 9.4.1.28 | Temporary Jumpers REMOVED | ________ |
| 9.4.1.29 | Temporary Jumpers REMOVED | ________ |

INIT CRIT 6 11/21 3

Issued: LIMERICK GENERATING STATION UNIT 1
111684 1700 MAINTENANCE REQUEST FORM
(Date) (Time) 3850016380 MRF# 8404396

Equip------------------------SECTION 1------------------------
No. 10-S206 System# 057 NPRDS? NO Status at
Equip SUPRESSION POOL Ser# Failure:
Name OXYGEN/HYDROG R PKG. System Name: Fail Effect on
CNTMT ATMOS CONTROL Det: System:
Lctn: 15 -253 Fail Effect on
Problem: Mode: Plant:
NCR-10291 CATALYST BEDS FOR HYDROGEN OXYGEN Reqd Equip Trbl
ANALYZERS 10-S206 WERE INSTALLED WITHOUT for S/U? Y Tg# NONE
QC INSPECTION S/U 73C; PSCL-73C-85; TS LCO Equip
WP#73C-0010; 4-8 HR SHIFTS Item? Y Status: O
Assoc.
Identified by: Group: (Date) (Time) Equip Inop? N
M. ALDEN 2472 CONSTR-P 110884 1100 Immed.
Verified by: V. CWIETNIEWICZ 111384 1400 Attn? N

------------------------SECTION 2------------------------
Task Type: PSCL Task Freq: Last Done: Mod#
Q-List Class Envir Proc Outage
Item? Y 1E? NO Qual? N Reqd? YES Type: NONE Pri: 3
Required NO SPECIAL CONDITIONS Comments:
Plant
Restraints

Timing: COMPLETE IN 72 HOURS Resp Dept: CONSTR
Account Number: Staff Approval: (Date) (Time)
091101-034 VINCENT J. CWIETNIEWICZ 111684 1645

------------------------SECTION 3------------------------
Planned Corrective Action:
TO PERFORM PNUEMATIC TEST PER NCR 10291; DISPOSITION PROCEDURE ATTACHED.

RWP# NONE Standard Blocking Seq# Parts List Attached? N
CSE Permit Reqd? N NONE Procedure List:
LD Permit Reqd? N Lead Group: CONSTR-P ATTACHED TO NCR-10291
Ignition Control Sub Grp 1: CONSTR-P PG.4 & 5
Permit Reqd? N Sub Grp 2:
Local Permit Reqd? Y Sub Grp 3:
Sub Grp 4:
Permits to be Sub Grp 5:
Ready by: QC (Date) (Time)
Approval: MARK F. ALDEN 111684 1645
(Date) (Time) Planning
Approval: MARK F. ALDEN 111684 1645

------------------------SECTION 4------------------------
CSE Permit# Comments:
LD Permit#
Igni. Control
Permit#
Local Permit# 1-57-0057 SSVN Approval: (Date) (Time)
Local Permit# Greg F. Colley 11-21-84 2104
Local Permit#
Eq/Work Area Identified by: Gamble of Operating
(Date) (Time)
To: Behn of Maint/Lab/Const on 11-23-84 0845

3850016380

LIMERICK GENERATING STATION
MAINTENANCE REQUEST FORM

UNIT 1

MRF# 8404396

---SECTION 5---

CAUSE OF FAILURE/DEFECTS FOUND:

TYPE OF FAILURE: |__| |__|

FAILURE CATEGORY: |__| |__|

CORRECTIVE ACTION/WORK PERFORMED/HISTORY DATA:
PERFORM PNEUMATIC TEST
LN7-73C-31

CAUSE OF FAILURE: |__| |__| |__|

CORRECTIVE ACTION: |__| |__| |__|

EQUIP TROUBLE TAG REMOVED? |__|

ADDITIONAL SHEETS? |__|

FOREMANS COMMENTS:
J F King

| GROUP | NOS MEN | TTL MAN HRS | TTL MAN REM |
|---|---|---|---|
| LEAD GP | \|___\| | \|____.__\| | \|____.__\| |
| SUB GP 1 | 2 | 60 . | \|____.__\| |
| SUB GP 2 | \|___\| | \|____.__\| | \|____.__\| |
| SUB GP 3 | \|___\| | \|____.__\| | \|____.__\| |
| SUB GP 4 | \|___\| | \|____.__\| | \|____.__\| |
| SUB GP 5 | \|___\| | \|____.__\| | \|____.__\| |

| TEST EQUIP/ TOOL ID USED: | DATE USED |
|---|---|
| 1. | / / |
| 2. | / / |
| 3. | / / |
| 4. | / / |
| 5. | / / |

WORK COMPLETE SIGN-OFFS:

| | CRAFT | (DATE) | QC |
|---|---|---|---|
| SUB GP 1 | Mark F. Alden | 12/11/84 | Mark F. Alden |
| SUB GP 2 | | / / | |
| SUB GP 3 | | / / | |
| SUB GP 4 | | / / | |
| SUB GP 5 | | / / | |

LEAD GROUP, WORK COMPLETE/AREA CLEAN: Charles T. Rosenberger 16:15 (DATE) 12/11/84

QC SIGN-OFF FOR LEAD GP: Mark F. Alden

---SECTION 6---

N/A OPERATION VERIFICATION FORM ATTACHED

John C. [illegible] 12/13/84

SHIFT SUPERVISION ACCEPTANCE: Gregory L. Collins (DATE) 12/15/84 (TIME) 1046

NEW MRF INITIATED? |__|

---SECTION 7---

REVIEWED BY: ________ (DATE) __/__/__

FOLLOW-UP: |__| |__|

3850016380

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
OPERATION VERIFICATION FORM

UNIT 1

EQUIPMENT NO. 10-S206

ATTACHMENT TO MRF# 8404396

OPERATION VERIFICATION METHOD:
NONE

TEST TO BE PERFORMED BY: OPER ACCOUNT NUMBER: 091101-335

| APPROVED BY: | GROUP: | (DATE) | (TIME) |
|---|---|---|---|
| @ SSVN DIRECTION/MS-SHFCK | STA | 121484 | 1735 |
| SSVN APPROVAL: @ SSVN DIRECTION/MS-SHFCK | | 121484 | 1735 |

(OVF METHOD COMPARED TO WORK DONE AND APPROVED OR APPROVED WITH CHANGES)

OPERATION VERIFICATION TESTS AND RESULTS SUMMARY:

NONE

| GROUP: | NOS MEN | TTL MAN HRS | TTL MAN REM |
|---|---|---|---|
| STA | 0 | 0 .0 | . |
| | | . | . |
| | | . | . |
| | | . | . |
| | | . | . |
| | | . | . |

| TEST EQUIP/ TOOL ID USED: | DATE USED: |
|---|---|
| 1. | / / |
| 2. | / / |
| 3. | / / |
| 4. | / / |
| 5. | / / |

TEST PERFORMED BY: N/A GROUP: STA (DATE) 12/14/84 (TIME) 18:25

RESULTS: |✓| SATISFACTORY
|__| UNSATISFACTORY (NEW MRF INITIATED)

TEST REVIEWED/FORM VERIFIED BY: ____________ GROUP: OPER (DATE) 12/14/84

DOUBLE VERIFICATION: |__| PERFORMED
|✓| NOT APPLICABLE

|__| ADDITIONAL SHEETS ATTACHED
(WRITE MRF# ON ADDED SHEETS)

Bob Lac - 5018

4948 Tom Pratt 4718

BECHTEL MAINTENANCE AND MODIFICATION PROCEDURES

LIMERICK GENERATING STATION 3850016380

| | | |
|---|---|---|
| Sht. 1 of 1 | PSCL Work Package Cover Sheet | 1. PSCL: 73C-85 |
| 9. System Name<br>Containment Atmos. Control | | 2. MRF: # or N/A<br>8404396 |
| 10. Reason/Reference for Work<br>PSCL. # 73C-85 | | 3. WP: # or N/A<br>73C-0010 |
| | | 4. FCCF: # or N/A<br>402-50 |
| | | 5. Room No. 402 Area/El. 15-253 |
| 11. Work Description<br>Preform Pneumatic test<br>1M-73C-31 | | 6. Modification Yes __ No X<br>If Yes Mod # |
| 12. Post Work Testing Yes __ No X<br>If Yes, description | | 7. Cat. I Dwg. Yes __ No ✓<br>If Yes, List in Block 26 |
| 13. Dura. (8 hr. shifts)<br>4 Shifts 11-2-82 | 14. Supt. | 8. X Q-Listed<br>__ ASME __ BOP |
| 15. Originator<br>Lou Averill 4716 | Date<br>11-2-84 | Time |

16. REQUEST FOR ACCESS APPROVAL Yes __ No ✓

| | |
|---|---|
| 17. Special instructions for access | 18. Tag Number<br>Key Number<br>Equipment Number<br>Start Date |

| | | |
|---|---|---|
| 19. CDE Approval [signature] | Date 11/12/84 | Time 1100 |
| 20. Work Completed [signature] | Date 12-9-84 | Time 6:07 |
| 21. Construction Post Work Testing Complete N/A | Date | Time |
| 22. QC Complete [signature] | Date 12/11/84 | Time 10:30 A.M. |
| 23. QC Post Work Testing Complete N/A | Date | Time |
| 24. OP Verif.(MRF Only) Acceptable __ | Unacceptable __ | Initiate New MRF |
| 25. CDE Auth. Clo. (Access Req Only) [signature] | Date 12/12/84 | Time 0900 |

CTR 12-11-84 16:15

26. Continuation of Items 7, 10, 11, 12, 17.

Exhibit 1
Revision 11
25

LIMERICK GENERATING STATION 3850016380

UNITS I & II

JOB 8031

To: J. WALTERS / J. MCVEIGH Date: 11-26-84

From: A.M. MARTINEZ Start-up System No. 73C

Subject: PRESSURE TEST NO. 1M-73C-31

Piping has been inspected where shown by color code on the attached marked-up print of the latest revision of drawing M-57 RV.2 available, and all drains, vents instrument connections (including the second valve on double valved connections) and the branch piping out to the indicated boundaries are installed. Items installed per FCR's and DCN's, and not yet shown on the drawing, have also been marked on the above print. Piping and instrument lines that will be filled and/or pressurized during testing which exceed the area to be tested are shown uniquely color coded as required and have been walked down to ensure the piping is adequately supported and isolated.

Hangers and supports are installed to provide support for hydro-testing. Spring hangers have travel stops positioned per the appropriate hanger specification. This includes hangers and supports for piping to be filled but not actually under test.

Please complete your required pre-test inspection of the piping shown on the attached drawing, including verifcation that all welding, post weld heat treatment and non-destructive examination is complete (except pressure test) including that required for all hanger, support and seismic restraint attachments welded to pipe and/or pressure retaining components, except that on piping which is to be filled and/or pressurized but not documented. Also verify that ASME nameplates or stand-off attachments have been inspected for injurious surface defects and, where found, repaired, non-destructively examined and accepted.

Valve packings have been installed, including those in piping to be filled which will not actually be under test.

Flushing as required prior to testing has been accomplished and piping, including that to be filled but not actually under test, meets the required cleanliness criteria.

Welds have not been covered with insulation.

Where piping is embedded in structural concrete, the concrete has reached design strength.

Wall and floor penetration seals have been welded to pipe where required.

The required completion date for the test is 11-26-84.

Signed: A.M. Martinez
(Pressure Test Engineer)

Signed: [signature]
(LMSCE or Designee)

LIMERICK GENERATING STATION

UNITS I and II

JOB 8031

Pre-Test Meeting
Reference: 8031-JR-M-1

Date 11 26 84

Start-Up System 73C

Test No. 1M-73C-31

P&ID(s) M-57 SH. 2

The undersigned have met and reviewed Piping Test No. 1M-73C-31 and are in agreement that subject test is in accordance with Specification P 323 A and applicable code ANSI.

The Pneumatic or Hydrostatic Test Procedure and Report and the Valve and Component Check List were reviewed with the marked-up P&ID's for the subject test in conjunction with the manner in which the test will be implemented and monitored. A review was also made to assure the concrete was checked for design strength where piping is embedded in structural concrete.

Deviations to Specification P323. are as follows:

1. CONSIP INC. TEST PROCEDURE. NCE # 10291

Deviations Approved By: (specify approval document)

2. NCR- 10291

Authorized to proceed with test:

LMSCE or His Designee [signature]

PTE [signature] 11/26/84

PFQCE or His Designee R. Weigand 11-28-84

PECo Representative J. Watten — In Attendance ☐ / Attendance Waived ☒

Authorized Inspector N/A G.M.M. 11/26/84

LIMERICK GENERATING STATION

UNITS I & II

JOB 8031

Pneumatic or Hydrostatic Test Procedure and Report

27

Reference: 8031-JR-M-1

Date 9-13-84

ASME III, XI, Q, R, S, BOP Q

PART I - TEST PROCEDURE (To be filled out in ink)

1. Specification : P-323 Design Press : See Vendor Procedure

2. Applicable Code: ANSI B.31.1 Nuclear Class: —

3. Start-Up No. : 73 C Test No. 1M-73C-31

4. Service : CONT. ATMOS CONTROL

5. Boundaries : See EXHIBIT IV

6. Type Test : Hydrostatic [ ]; Pneumatic [X]; Other [ ] ______

7. Test Medium : Air/Nitrogen (specify whether water, air, etc.)

8. Water analysis and temperature requirements: N/A
______ ° Min ______ ° Max

9. Air Requirements Clean ...

10. Lay-up with inert fluid is [ ], is not [ ], N/A [X] required after test.
Lay-up shall be with N/A (specify lay-up medium) at ____ PSIG

Piping is [X], is not [ ] to be ~~drained~~ Depressurized after test N/A [ ].
For Lay-up information, see marked-up P&ID's N/A

11. Install Safety Tags on all check points.
For check point location, fill locations, boundaries and any special test set-up see marked-up P&ID's M-57 SHT 2

Instrument tubing from root valve to instrument valve is [ ], is not [ ] included N/A [X].

27

12. Required test pressure ~~(1.5, 1.25, 1.2 or 1.1 X Design as applicable)~~ See Vendor Procedure is 90/6 PSIG.

13. Elevation difference ( EL) between test gauge and high point is N/A feet or N/A PSIG.

14. Required gauge pressure (lines 12 & 13) is 90/60 PSIG for 10 minutes (Note: No inspection shall take place until specified time has elasped).

Pneumatic or Hydrostatic Test Procedure and Report

Test No. 1M-73C-31

15. Elevation difference ( $\Delta$El) between high point and low point of permanent piping is N/A feet. Total static head N/A PSIG.

16. A) Test tolerance minus Line 15 is 5.4/3.6 PSIG.
B) Minimum test pressure at gauges is 90/60 PSIG (Line 14).
C) Maximum test pressure at gauges is 95.4/63.6 PSIG (Line 14 plus line 16A)

17. Relief valve is [X], is not [ ] required.
Set relief valve to relieve at 95/64 PSIG prior to subjecting any part of the system to pressure.

18. Pressure regulator is [X], is not [ ] required N/A [ ].
Pressure regulator is to maintain pressure at 90/60 PSIG.

19. Test gauges shall have a range from:

0 to 142.5/94.5 minimum (1 1/2 times maximum test pressure per applicable code.)
0 to 380/252 maximum (4 times maximum test pressure per applicable code.)

20. The system is to be pressurized to required pressure in stages as follows:

| | | | |
|---|---|---|---|
| Initial Test Pressure | 10/10 PSIG | 4th Test Pressure | 40/40 PSIG 7th - 70/. |
| 2nd Test Pressure | 20/20 PSIG | 5th Test Pressure | 50/50 PSIG 8th - 80/. |
| 3rd Test Pressure | 30/30 PSIG | 6th Test Pressure | 60/60 PSIG 9th - 90/. |

21. Examination of piping is to be performed at *90/60 PSIG (Line 12 x .75 + Line 13) after required test pressure of 90/60 PSIG is held for a minimum of ten minutes.

22. Comments FOLLOW ATTACHED VENDOR PROCEDURE FOR TESTING 90# TEST W/ INSTRUMENTS ISOLATED, THEN 60# TEST W/ INSTRUMENT CONNECTED.

Prepared By D. S. Hood

Date 11-29-84

*NOTE: When hydrostatically testing Nuclear Class I Piping or pneumatically testing ASME Piping, examination of piping shall be performed at design pressure plus Line 13.

PART II - TEST REPORT (To Be Filled Out In Ink) Test No. 1M-73C-31

1. Verify that screwed instrument conn's,as applicable, are disconnected.

   YES [X] NO [ ] N/A [ ]

2. Verify all safety tags are installed and valves are positioned: YES [X] NO [ ]

3. Notify QC Representative JOE JOHNSON YES [X] NO [ ] N/A [ ]
   Name

4. Verify test gauges installed:
   Bechtel gauge No. P-63 Mfrg. USG Range 0-160 Cal. valid to 3-10-85
   Bechtel gauge No. P-64 Mfrg. USG Range 0-160 Cal. valid to 3-10-85

5. Verify test medium used NITROGEN (specify)

6. Verify test medium temperature N/A °F (specify) Thermometer No. —
   Cal. Due Date —

7. Verify relief valve setting popped at: 95 PSI / N/A PSIG

8. Verify pressure regulator setting ~~95~~ 90 / 60 PSIG (pneumatic test only)

9. Verify water analysis: Clarified water [ ], Demineralized water [ ], Other [X],
   specify other
   Batch No.
   Actual PPM TSP

10. Verify temporary piping is flushed YES [X] NO [ ]

11. Notify client representative YES [X] NO [ ] FRED ECKHERT
    Name

12. Notify Authorized Code Inspector YES [ ] NO [X] N/A
    Name

13. Verify gauge reading at 0 pressure
    Bechtel gauge No. P-63, 0 PSIG
    Bechtel gauge No. P-64, 0 PSIG

14. Verify proper filling, venting and pressurizing:
    Initial test pressure 90/ PSIG 4th test pressure N/A PSIG
    2nd test pressure N/A PSIG 5th test pressure N/A PSIG
    3rd test pressure N/A PSIG 6th test pressure N/A PSIG

15. Test was [ ], was not [X] terminated to repair weld joint(s) after reaching 90/60 PSIG. Leaking joint(s) was weld no.(s) on dwg. date .

16. Record the gauge reading at the required test pressure prior to reducing pressure for examination. (ASME piping systems only) N/A [X] N/A
    Bechtel gauge No. N/A PSIG N/A
    Bechtel gauge No. N/A PSIG N/A

17. Required test pressure was held for 10/10 minutes prior to examination (All piping systems)

18. Record the gauge reading during examination of system. (All piping systems)
    Bechtel Gauge No. P-63, 90/60 PSIG
    Bechtel Gauge No. P-64, 91/61 PSIG

Pneumatic or Hydrostatic Test Procedure and Report

Test No. 1M-73C-31

19. Remarks: Describe leaks observed on mechanical joints and ANSI B31.1 weld joints, which require repair: N/A

20. Date(s) and time of pressure test (start and finish) 12-10-84
Date

Start 11:00 Am. Finish 5:00 Pm.

21. Test accepted by visual examination:
Bechtel Field Engineer D. S[illegible] Date 12-10-84
Bechtel QC Engineer R. A[illegible] for ERC. Date 12/10/84
Client Const. or Startup Rep. N/A Date —
Authorized Code Inspector N/A Date —

22. Items noted in Item 19 have been repaired.

N/A
Bechtel Field Engineer Date

N/A
Bechtel QC Engineer Date

PART III - DRAINING AND RESTORATION (To be filled out in ink)

1A. Verify ~~draining~~ DEPRESSURIZATION is required (see Part I, Item 10) YES [X] NO [ ] N/A [ ]
1B. Draining waived N/A
Asst. Project Startup Eng./Designee

2. Verify water with TSP is drained to holding pond YES [ ] NO [ ] N/A [X]

3. Verify vents opened and system ~~drained~~ DEPRESSURIZED YES [X] NO [ ] N/A [ ]

4. Verify system is completely drained except for small pipe low points where no practical method for draining exists. YES [ ] NO [ ] N/A [X]

5. Verify safety tags removed and restoration items noted on Exhibit IV restored YES [X] NO [ ]

6. Accepted:
Bechtel Field Engineer D. S[illegible] Date 12-10-84
Bechtel QC Engineer R. A[illegible] Date 12/10/84

3850016380

[illegible] 1M-73C-31

1. Verify drawing available to describe lay-up ______ YES [ ] NO [ ]

2. Verify safety tags installed ______ YES [ ] NO [ ]

3. Verify system filled with proper fluid ______ (specify)

4. Lay-up accepted:

   Bechtel Field Engineer ______ Date ______

   Bechtel QC Engineer ______ Date ______

N/A [X] PART V - INITIAL SERVICE LEAK TEST (To be filled out in ink)

1. Repairs to tested piping.

   a. Verify repairs noted in Part II, Item 19 have had an in-service leak check and were found [illegible]

      Bechtel Field Engineer ______ Date ______
      See Test Number ______ (In Service Package)

2. Initial Service Leak Testing In-Lieu of Hydrotest

   a. Verify drawings are available to describe piping to be so tested.

      YES [ ] NO [ ]

   b. Verify piping is brought up to design pressure or maximum obtainable system operating pressure of (See Exhibit X) PSIG.

   c. Verify all joints are leak-tight ______ YES [ ] NO [ ]
      (If NO, complete 2.d)

   d. Remarks: Describe leaks observed on mechanical joints and welds which require repair for completion of this test ______

      ______

      ______

      ______

   e. Verify repairs noted in 2d have been repaired and re-leak checked

      YES [ ] NO [ ]

   f. In-Service leak test accepted:

      Bechtel Field Engineer ______ Date ______

      Bechtel QC Engineer ______ Date ______

      Client Constr. or Startup Rep. ______ Date ______

LIMERICK GENERATING STATION

UNITS I & II

JOB 8031

VALVE AND COMPONENT CHECK LIST

8031-JR-M-1
EXHIBIT IV
Rev. 5 22

3850016380

Start-up No. 73 C
Test No. 1M-73C-31
Date 9/20/84


Specification No. P-323 Responsible Engineer TOM PLATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE, COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| REV 11 M-57 SHT 2 | RACK 10S206 | | | See P+ID | | |
| | 3/8" TUBING | | | DISCONNECT AT PANEL UPSTREAM OF | SV-187 | FILL POINT |
| | | | | SV-187 | | OPEN |
| | | | | DISCONNECT AT PANEL UPSTREAM OF | SV-188 | FILL POINT |
| | | | | SV-188 | | OPEN |
| | | | | DISCONNECT AT PANEL UPSTREAM OF | SV-189 | FILL POINT |
| | | | | SV-189 | | OPEN |
| | | | | DISCONNECT AT PANEL UPSTREAM OF | SV-194 | FILL POINT |
| | | | | SV-194 | | OPEN |
| | | | | | PI-199 | HOOKUP AT 60 PLUG AT 90 # |
| | | | | SEPARATOR TRAP | | FLOW THRU. |
| | | | | PCV-199A | | OPEN |
| | | | | | AE-188 | FLOW THRU |
| | | | | PDCV-188 | | OPEN |
| | | | | FO-188 | | FLOW THRU. ~~FILL POINT~~ |
| | | | | | PDSL-188 | HOOKUP AT 60 PLUG AT 90 # |
| | | | | | FI-188 | FLOW THRU. |
| | | | | | AE-187 | FLOW THRU |
| | | | | PDCV-187 | | OPEN |
| | | | | FO-187 | | FLOW THRU. |
| | | | | | PDSL-187 | HOOKUP AT 60 PLUG AT 90 # |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

LIMERICK GENERATING STATION

UNITS I & II 3850016380

JOB 8031

VALVE AND COMPONENT CHECK LIST

8031-JR-M-1
EXHIBIT IV
Rev. 5 22

Start-up No. 73C
Test No. 1M-73C-31
Date 9/20/84
Page 2 of 4

Specification No. P-323 Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE, COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| Rev. 11 M-57 Sh 2 | RACK 105206 | | | | 1 | |
| | | | | | FI-187 | FLOW THRU |
| | | | | | FI-180 | FLOW THRU |
| | | | | REMOVE CAP | | FILL POINT |
| | | | | | FI-199 | |
| | | | | PCV-199B | | OPEN |
| | | | | SC-102 | | INSTALLED |
| | | | | SV-199B | | OPEN |
| | | | | 1BP-254 | | FLOW THRU |
| | | | | SV-199A | | OPEN |
| | | | | 1AP-254 | | FLOW THRU |
| | | | | 1118 B | | INSTALLED |
| | | | | 1118A | | INSTALLED |
| | | | | PSV-199 | | INSTALLED |
| | | | | 1063 | | SHUT |
| | | | | DISCONNECT 3/8" TUBING AT PANEL DOWNSTREAM OF VLV 1118B | | FILL POINT |
| | | | | DISCONNECT TUBING A PANEL UPSTREAM OF VLV. SV-197A | | FILL POINT # |
| | | | | SV-197A | | OPEN |
| | | | | | PSL-197A | HOOKUP AT 60 PLUG AT 90 # |
| | | | | PDCV-197A | | OPEN |
| | | | | 1079 | | OPEN |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

LIMERICK GENERATING STATION

UNITS I & II 3850016380

8031-JR-M-1
EXHIBIT IV
Rev. 5
22

JOB 8031

VALVE AND COMPONENT CHECK LIST

Start-up No. 73
Test No. M-73C-31
Date 9/20/84
Page 3 of 4

Specification No. P-323 Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE,COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| REV. 11 M-57 SH. 2 | RACK 105206 | | | | FI-197A | |
| | | | | 1113 | | INSTALLED |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-197B | | FILL POINT. # |
| | | | | SV-197[illegible] | | OPEN |
| | | | | | PSL-197B | [illegible] AT 60 PLUG AT 90 |
| | | | | PDCV-197B | | OPEN |
| | | | | 1080 | | OPEN |
| | | | | | FI-197B | |
| | | | | 1114 | | INSTALLED |
| | | | | DISCONNECT TUBING UP STREAM OF VLV. SV-198A | | FILL POINT. # |
| | | | | [illegible]8A | | OPEN |
| | | | | | PSL-198A | HOOK UP AT 60 PLUG AT 90 # |
| | | | | PDCV-198A | | OPEN |
| | | | | 1081 | | OPEN |
| | | | | | FI-198A | |
| | | | | 1115 | | INSTALLED |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-198B | | FILL POINT # |
| | | | | SV-198B | | OPEN |
| | | | | | PSL-198B | HOOK UP AT 60 PLUG AT 90 # |
| | | | | PDCV-198B | | OPEN |
| | | | | 1082 | | OPEN |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

LIMERICK GENERATING STATION

UNITS I & II 3850016380

JOB 8031

VALVE AND COMPONENT CHECK LIST

8031-JR-M-1
EXHIBIT IV
Rev. 5
22

Start-up No. 73
Test No. 1M-73C-31
Date 9/20/84
Page 4 of 4

Specification No. P-323 Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE, COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| REV. 11 M-57 SH. 2 | RACK 10S204 | | | | FT-198B | |
| | | | | 111C | | INSTALLED |
| | | | | | A-199 | |
| | | | | | | |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

LIMERICK GENERATING STATION

UNITS 1 & 2

JOB 8031

To : J. WALTERS / J. MCVEIGH Date: 11.26.84

From : A.M. MARTINEZ
(PTE)

Subject: Notification of Pressure Test

Please be informed that piping test No. 1M-73B-31, start-up system No. 13B for which the pre-test meeting was held on 11.26.84 will be pressurized and ready for witnessing on 11.26.84 at approximately 4.00 (a.m., p.m.)

Please indicate below whether you wish to witness this test or not and return this notification for attachment to the test record package.

YES, witnessing by (PECo) (Authorized Code Inspector) is required.

NO, witnessing by (PECo) (Authorized Code Inspector) is not required and is waived.

Signed N/A A.M.M. 11.26.84
(Authorized Inspector)

Signed J.E. Walters
(PECo LQCE or his Designee)

Comsip, inc.
instrument and control systems
HEADQUARTERS • 3030 Red Hill Lane, Whittier, CA 90601 (213) 892-9021 Telex: 67-4784

# K-III/K-IV

# PNEUMATIC LEAK TEST PROCEDURE

1.0 SCOPE

This procedure is designed to completely verify the leak integrity of the tubing/components within the Model K-III/K-IV System. This is accomplished by pressurizing all system entries, exits and internals. This test should be done prior to initial start-up and before system calibration.

2.0 PREPARATION

2.1 Connect a regulatable pressure source capable of a 90 psig pressure to the sample entry, sample exit and reagent and calibration gas bulkhead fitting entries. These fittings are located at the top of the panel. Connect this same 90 psig pressure source to the lower test tee located adjacent to the analyzer bypass flowmeter (rear of panel).

2.2 Disconnect the tubing running to the system integral pressure gauge at the gauge and cap the tubing.

2.3 Completely open, the system flow indicating controllers (reagent and calibration, located on the panel front and the analyzer bypass, located at the rear of the panel).

2 2.4 Open the reagent and calibration solenoid valves by disconnecting the existing hot and neutral wires running to the solenoid valves terminal strip. Connect an external source of power to these solenoid valves, which will energize and open the valves.

Sheet 3 of Cc

# PNEUMATIC LEAK TEST PROCEDURE

## 3.0 PROCEDURE

3.1 Slowly, in 10 psig increments, apply pressure to the system until the 90 psig pressure is attained.
2 Allow one minute for the pressure to stabilize between these pressure increments.

3.2 Beginning with the test connection bulkhead fittings, apply a bubble forming leak detector solution such as SNOOP manufactured by Nupro. Verify the leak integrity of all fittings that were broken or made to set-up this test.

3.3 Isolate the pressure source from the system for a period of 10 minutes. No decrease in pressure should be observed on a pressure gauge with 1 psig increments during the 10 minute test duration.

3.4 If a noticable pressure decrease is observed, then the systematic application of the leak test solution must be initiated on a fitting by fitting basis.

3.5 Any fitting found to be leaking should be tightened until the system is capable of holding the 90 psig test pressure with no visible pressure decrease within a 10 minute period.

3.6 Slowly, in 10 psig increments, decrease the pressure applied to the system. Allow one minute
2 for pressure stabilization between each incremental decrease in pressure. Decrease the system pressure until a 0 psig pressure is attained.

3.7 Uncap the pressure gauge tubing and reconnect this tubing to the systems integral pressure gauge. Repeat the pressurization process used in paragraph 3.1 above with the exception of a 60 psig input pressure rather than the previous 90 psig.

3.8 Repeat the system isolation and 10 minute drop test described in paragraph 3.3 above at the 60 psig pressure.

## PNEUMATIC LEAK TEST PROCEDURE

3.5 The system leak integrity has now been verified. Slowly, in 10 psig increments, decrease the pressure being applied to the system. Allow one
2 minute for pressure stabilization between incremented pressure drops until the pressure is released from the system.

## 4.0 ACCEPTANCE

After no detectable leakage as defined above is observed, the system is considered acceptable. For pneumatic leak tests done at the Comsip, Inc. facilities, the attached Test Report shall be completed and signed off.

Sheet 5 of

ISSUED: LIMERICK GENERATING STATION . UNIT 1
112184 0900 MAINTENANCE REQUEST FORM
(DATE) (TIME)
EQUIP---------8850016380-SECTION 1--UNIT CRIT--------------------- MRF# 8403870

NO. 10-S205 SYSTEM# 057 NPRDS? NO STATUS AT
EQUIP CONTAINMENT ATMOS. SER# FAILURE:
NAME CONTROL HYDROGEN SYSTEM NAME: FAIL EFFECT ON
OXYGEN ANALYZERS CNTMT ATMOS CONTROL DET: SYSTEM:
LCTN: ~~15~~ -283 FAIL EFFECT ON
PROBLEM: 12-295 MH MODE: PLANT:
N.C.R. 10291 CATALYST BEDS FOR HYDROGEN & REQD EQUIP TRBL
OXYGEN ANALYZERS-10S205 INSTALLED WITHOUT FOR S/U? Y TG# NONE
Q.C. INSPECTION S/U 73C PSCL#73C-85 TS LCO EQUIP
W.P. 73C-006. DURATION 4-8 HOUR SHIFTS. ITEM? N STATUS: O
ASSOC.
IDENTIFIED BY: GROUP: (DATE) (TIME) EQUIP INOP? N
MARK ALDEN CONSTR-P 102984 1500 IMMED.
VERIFIED BY: W. CWIETNIEWICZ 110684 0930 ATTN? Y

-----------------------------SECTION 2-----------------------------

TASK TYPE: PSCL TASK FREQ: LAST DONE: MOD#
Q-LIST CLASS ENVIR PROC OUTAGE
ITEM? Y 1E? NO QUAL? N REQD? YES TYPE: NONE PRI: 3
REQUIRED NO SPECIAL CONDITIONS COMMENTS:
PLANT
RESTRAINTS

TIMING: COMPLETE IN 72 HOURS . RESP DEPT: CONSTR
ACCOUNT NUMBER: STAFF APPROVAL: (DATE) (TIME)
091101-304 VINCENT J. CWIETNIEWICZ 110784 1435

-----------------------------SECTION 3-----------------------------

PLANNED CORRECTIVE ACTION:
TO PERFORM PNEUMATIC TEST PER NCR 10291.DISPOSITION AND VENDOR PROCEDURE (ATTACHED)

RWP# NONE STANDARD BLOCKING STEP PARTS LIST ATTACHED? N
CSE PERMIT REQD? N NONE : PROCEDURE LIST:
LD PERMIT REQD? N LEAD GROUP: CONSTR-P ATTACHED TO NCR-10291
IGNITION CONTROL SUB GRP 1: CONSTR-P PGS 4 & 5
PERMIT REQD? N SUB GRP 2:
LOCAL PERMIT REQD? Y SUB GRP 3:
SUB GRP 4:
PERMITS TO BE SUB GRP 5:
READY BY: QC (DATE) (TIME)
APPROVAL: MARK F. ALDEN 112084 1400
(DATE) (TIME) PLANNING
APPROVAL: MARK F. ALDEN 110784 1315

-----------------------------SECTION 4-----------------------------

CSE PERMIT# COMMENTS:
LD PERMIT#
IGNI. CONTROL
PERMIT#
LOCAL PERMIT# 1-57-0058 SSVN APPROVAL: (DATE) (TIME)
LOCAL PERMIT# Greg L. Collins 11-21-84 2105
LOCAL PERMIT#
EQ/WORK AREA IDENTIFIED BY: Gamble OF OPERATING
(DATE) (TIME)
TO: Behr OF MAINT/LAB/CONST ON 11-23-84 1000

ORIGINAL

3850016380

LIMERICK GENERATING STATION
MAINTENANCE REQUEST FORM

UNIT 1

MRF# 8403870

------------------------------SECTION 5------------------------------

CAUSE OF FAILURE/DEFECTS FOUND:

TYPE OF FAILURE: |__| |__|

FAILURE CATEGORY: |__| |__|

CORRECTIVE ACTION/WORK PERFORMED/HISTORY DATA:

PERFORMED PNEUMATIC TEST # 1M-73C-32
PER NCR # 10291 AND VENDOR REQUIREMENTS.
RESULT WERE ACCEPTABLE AND VERIFIED
BY Q.C. PER ATTACHED TEST PACKAGE
D.S. Good x 4716

CAUSE OF FAILURE: |__| |__| |__|

CORRECTIVE ACTION: |__| |__| |__|

EQUIP TROUBLE TAG REMOVED? |__|

ADDITIONAL SHEETS? |__|

FOREMANS COMMENTS: J.F.K.

| GROUP | NOS MEN | TTL MAN HRS | TTL MAN REM |
|---|---|---|---|
| LEAD GP | 2 | 32. | . |
| SUB GP 1 | | . | . |
| SUB GP 2 | | . | . |
| SUB GP 3 | | . | . |
| SUB GP 4 | | . | . |
| SUB GP 5 | | . | . |

| TEST EQUIP/ TOOL ID USED: | DATE USED |
|---|---|
| 1. | / / |
| 2. | / / |
| 3. | / / |
| 4. | / / |
| 5. | / / |

WORK COMPLETE SIGN-OFFS:

| | CRAFT | (DATE) | QC |
|---|---|---|---|
| SUB GP 1 | Mark F. Allen | 12/4/84 | Mark F. Allen |
| SUB GP 2 | | / / | |
| SUB GP 3 | | / / | |
| SUB GP 4 | | / / | |
| SUB GP 5 | | / / | |

LEAD GROUP, WORK COMPLETE/AREA CLEAN: John Franklin (DATE) 12/4/84 QC SIGN-OFF FOR LEAD GP: Mark F. Allen

------------------------------SECTION 6------------------------------

| ✓ | OPERATION VERIFICATION FORM ATTACHED

SHIFT SUPERVISION ACCEPTANCE: J. Gregg L. Calle (DATE) 12/7/84 (TIME) 0902

NEW MRF INITIATED? |__|

------------------------------SECTION 7------------------------------

REVIEWED BY: ______________ __/__/__ (DATE)

FOLLOW-UP: |__| |__|

3850016380

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
OPERATION VERIFICATION FORM

UNIT 1

EQUIPMENT NO. 10-S205

ATTACHMENT TO MRF# 8403870

OPERATION VERIFICATION METHOD:
NONE

TEST TO BE PERFORMED BY: OPER ACCOUNT NUMBER: 091101-304

| APPROVED BY: | GROUP: | (DATE) | (TIME) |
|---|---|---|---|
| JOHN P. MCDEVITT | STA | 120684 | 2021 |
| SSVN APPROVAL: Gregory F. Collins | Ops | 120784 | 0542 |

(OVF METHOD COMPARED TO WORK DONE AND APPROVED OR APPROVED WITH CHANGES)

OPERATION VERIFICATION TESTS AND RESULTS SUMMARY:

N/A

| GROUP: | NOS MEN | TTL MAN HRS | TTL MAN REM | TEST EQUIP/ TOOL ID USED: | DATE USED: |
|---|---|---|---|---|---|
| | | . | . | 1. | / / |
| | | . | . | 2. | / / |
| | | . | . | 3. | / / |
| | | . | . | 4. | / / |
| | | . | . | 5. | / / |

TEST PERFORMED BY: ______ GROUP: ______ (DATE) 12/07/84 (TIME) ______

RESULTS: |✓| SATISFACTORY
|_| UNSATISFACTORY (NEW MRF INITIATED)

TEST REVIEWED/FORM VERIFIED BY: ______ GROUP: ______ (DATE) __/__/__

DOUBLE VERIFICATION: |✓| PERFORMED
|_| NOT APPLICABLE

|_| ADDITIONAL SHEETS ATTACHED
(WRITE MRF# ON ADDED SHEETS)

BECHTEL MAINTENANCE AND MODIFICATION PROCEDURES

LIMERICK GENERATING STATION 3850016380

| | | |
|---|---|---|
| Sht. 1 of 1 | PSCL Work Package Cover Sheet | 1. PSCL: 73C-85 |
| 9. System Name<br>CONTAINMENT ATMOS. CONTROL | | 2. MRF: # or N/A<br>8403870 |
| 10. Reason/Reference for Work<br>PSCL #73C-85 | | 3. WP: # or N/A<br>73C-006 |
| | | 4. FCCF: # or N/A<br>599M-8 |
| | | 5. Room No. N/A Area/El. 15/253 |
| 11. Work Description<br>PERFORM PNEUMATIC TEST 73C-1M-~~3~~ & 32 | | 6. Modification Yes __ No X<br>If Yes Mod # |
| 12. Post Work Testing Yes __ No X<br>If Yes, description | | 7. Cat. I Dwg. Yes __ No X<br>If Yes, List in Block 26 |
| 13. Dura. (8 hr. shifts)<br>4 shifts 10/24/84 | 14. Supt. | 8. X Q-Listed __ BOP<br>__ ASME |
| 15. Originator<br>MIKE LOW (5147) / Lou Averill | Date 10-26-84 | Time 1600 hr. |

16. REQUEST FOR ACCESS APPROVAL Yes ___ No X

| | |
|---|---|
| 17. Special instructions for access - - | 18. Tag Number<br>Key Number<br>Equipment Number<br>Start Date |

| | | |
|---|---|---|
| 19. CDE Approval | Date 10/29/84 | Time 1500 |
| 20. Work Completed | Date 12-3-84 | Time 9:17 |
| 21. Construction Post Work Testing Complete N/A | Date | Time |
| 22. QC Complete R. | Date 12/3/84 | Time 9:45 |
| 23. QC Post Work Testing Complete N/A | Date | Time |
| 24. OP Verif.(MRF Only) Acceptable __ Unacceptable __ Initiate New MRF | | |
| 25. CDE Auth. Clo. (Access Req Only) | Date 12/4/84 | Time 0930 |

26. Continuation of items 7, 10, 11, 12, 17:

Unit 12 Elev. 295'-6" Work T/O ~~5991-S~~ Cancelled

Room ~~599A~~ 594 Pkg. # 1-778-5 Originator BHPLATT Ex: 44 TCCT # 5991

Work Reference PERFORM PNEUMATIC TEST ON 10S205, 10S206

114-73C-31

3850016380

Estimated Start date 9/17/84 ECD 9/19/84

Check below, if applicable:

☐ Damage to other commodities resulting from Work Reference above has been resolved, if applicable

☒ Cleanliness Verification (cleanup, remove scaffolds, etc.)

Were any of the following programs affected?

| | yes | no | | Program Acceptability |
|---|---|---|---|---|
| Civil | ☐ | ☑ | Penetration Seals | |
| | ☐ | ☑ | Grating & Handrail removal | |
| | ☐ | ☑ | Painting/Special Coating | |
| | ☐ | ☑ | Door/Gasket Damage | |
| | ☐ | ☑ | Grouting or Concrete Damage | |
| Elect | ☐ | ☑ | Raceway Covers | |

Work Completed D. S. [illegible] x4716
Sign Date

DO NOT DETACH

Special Programs

| | yes | no | | Program Acceptability |
|---|---|---|---|---|
| Civil | ☐ | ☐ | Safety Impact-MAOO | |
| | ☐ | ☐ | ALARA | |
| | ☐ | ☐ | Fire Protection Verification Program | |
| Elect. | ☐ | ☐ | Separation | |
| | ☐ | ☐ | Thermal Interferences | |

QC Shift Supervisor

3850016380

LIMERICK GENERATING STATION

UNITS I & II

JOB 8031

To: J. WALTERS/J. McVeigh Date: 11-26-84

From: A.M. Martinez Start-up System No. 73C

Subject: PRESSURE TEST NO. 1M-73C-32

Piping has been inspected where shown by color code on the attached marked-up print of the latest revision of drawing M-57 SHT 2 available, and all drains, vents instrument connections (including the second valve on double valved connections) and the branch piping out to the indicated boundaries are installed. Items installed per FCR's and DCN's, and not yet shown on the drawing, have also been marked on the above print. Piping and instrument lines that will be filled and/or pressurized during testing which exceed the area to be tested are shown uniquely color coded as required and have been walked down to ensure the piping is adequately supported and isolated.

Hangers and supports are installed to provide support for hydro-testing. Spring hangers have travel stops positioned per the appropriate hanger specification. This includes hangers and supports for piping to be filled but not actually under test.

Please complete your required pre-test inspection of the piping shown on the attached drawing, including verifcation that all welding, post weld heat treatment and non-destructive examination is complete (except pressure test) including that required for all hanger, support and seismic restraint attachments welded to pipe and/or pressure retaining components, except that on piping which is to be filled and/or pressurized but not documented. Also verify that ASME nameplates or stand-off attachments have been inspected for injurious surface defects and, where found, repaired, non-destructively examined and accepted.

Valve packings have been installed, including those in piping to be filled which will not actually be under test.

Flushing as required prior to testing has been accomplished and piping, including that to be filled but not actually under test, meets the required cleanliness criteria.

Welds have not been covered with insulation.

Where piping is embedded in structural concrete, the concrete has reached design strength.

Wall and floor penetration seals have been welded to pipe where required.

The required completion date for the test is 11-26-84.

Signed: A.M. Martinez
(Pressure Test Engineer)

Signed: [signature]
(LMSQE or Designee)

LIMERICK GENERATING STATION

UNITS I and II

JOB 8031

Pre-Test Meeting
Reference: 8031-JR-M-1 Date 11-26-84

Start-Up System 73C

Test No. 1M-73C-32

P&ID(s) M-57 SHT2 Rev #11

The undersigned have met and reviewed Piping Test No. 1M-73C-32 and are in agreement that subject test is in accordance with Specification P-323 and applicable code ANSI B31.1.

The Pneumatic or Hydrostatic Test Procedure and Report and the Valve and Component Check List were reviewed with the marked-up P&ID's for the subject test in conjunction with the manner in which the test will be implemented and monitored. A review was also made to assure the concrete was checked for design strength where piping is embedded in structural concrete.

Deviations to Specification P-323 are as follows:

1. NONE / Pressure Test per NCR #10291

Deviations Approved By: (specify approval document)

2.

Authorized to proceed with test:

LMSCE or His Designee DG[illegible]

PTE A.M. Martin 11/26/84

PFQCE or His Designee R. Armstrong

PECo Representative J.W. Walter — In Attendance ☐ / Attendance Waived ☒

Authorized Inspector N/A

LIMERICK GENERATING STATION 3850016380

UNITS I & II

JOB 8031

Pneumatic or Hydrostatic Test Procedure and Report

27 Reference: 8031-JR-M-1

Date 9/20/84

ASME III, XI, Q, R, S, BOP Q

PART I - TEST PROCEDURE (To be filled out in ink)

1. Specification : ~~P 323~~ C-33 Design Press : SEE VENDOR PROCEDURE

2. Applicable Code: ANSI B 31.1 Nuclear Class: —

3. Start-Up No. : 73C Test No. 1M-73C-32

4. Service : CONT. ATMOS CONTROL

5. Boundaries : SEE EXHIBIT & MARKED UP P&ID

6. Type Test : Hydrostatic [ ]; Pneumatic [X]; Other [ ] ______

7. Test Medium : NITROGEN - (specify whether water, air, etc.)

8. Water analysis and temperature requirements: N/A
______ ° Min ______ ° Max

9. Air Requirements CLEAN ~~DRY~~ AIR

10. Lay-up with inert fluid is [ ] ,is not [ ] , N/A [X] required after test.
Lay-up shall be with ______ (specify lay-up medium) at ____ PSIG.

Piping is [ ], is not [ ] to be drained after test N/A [ ].
For Lay-up information, see marked-up P&ID's ______

11. Install Safety Tags on all check points.
For check point location, fill locations, boundaries and any special test set-up see marked-up P&ID's M-57 SH.2

Instrument tubing from root valve to instrument valve is [ ], is not [ ] included N/A [X]

27 12. Required test pressure (~~1.5, 1.25, 1.2 or 1.1~~ SEE PROCEDURE X Design as applicable)is ____ PSIG.

13. Elevation difference ( EL) between test gauge and high point is N/A feet or ______ PSIG.

14. Required gauge pressure (lines 12 & 13) is 90/60 PSIG for 10 minutes
(Note: No inspection shall take place until specified time has elasped).

3850016380

## Pneumatic or Hydrostatic Test Procedure and Report

Test No. 1M-73C-32A

15. Elevation difference ( $\triangle$El) between high point and low point of permanent piping is NA feet. Total static head NA PSIG.

16. A) Test tolerance minus Line 15 is ∓5.4 PSIG.
B) Minimum test pressure at gauges is 90/68 PSIG (14-, 14).
C) Maximum test pressure at gauges is 95.4 PSIG (Line 14 plus line 16A).

17. Relief valve is [ ], is not [ ] required.
Set relief valve to relieve at 95 PSIG prior to subjecting any part of the system to pressure.

18. Pressure regulator is [X], is not [ ] required N/A [ ].
Pressure regulator is to maintain pressure at 90 PSIG.

19. Test gauges shall have a range from:

0 to 142.5 minimum (1 1/2 times maximum test pressure per applicable code.)
0 to 380 maximum (4 times maximum test pressure per applicable code.)

20. The system is to be pressurized to required pressure in stages as follows:

| | | | |
|---|---|---|---|
| Initial Test Pressure | 10 PSIG | 4th Test Pressure | 40 PSIG |
| 2nd Test Pressure | 20 PSIG | 5th Test Pressure | 50 PSIG |
| 3rd Test Pressure | 30 PSIG | 6th Test Pressure | 60 PSIG |
| | | | 70, 80, 90 |

21. Examination of piping is to be performed at * 90 PSIG (Line 12 x .75 + Line 13) after required test pressure of 90 PSIG is held for a minimum of ten minutes.

* 22. Comments FOLLOW ATTACHED VENDOR PROCEDURE
1. PRESSURIZE TO 90 PSIG WITH INSTRUMENTS DISCONNECTED.
2 SEE NEXT EXHIBIT III PG. 2

Prepared By TOM PRATT

Date 9/20/84

*NOTE: When hydrostatically testing Nuclear Class I Piping or pneumatically testing ASME Piping, examination of piping shall be performed at design pressure plus Line 13.

Pneumatic or Hydrostatic Test Procedure
and Report

3850016380

PART II - TEST REPORT (To Be Filled Out In Ink) Test No. 1111 73C-32A

1. Verify that screwed instrument conn's, as applicable, are disconnected.

   YES [X] NO [ ] N/A [ ]

2. Verify all safety tags are installed and valves are positioned: YES [X] NO [ ]

3. Notify QC Representative DAN ARNOLD YES [X] NO [ ] N/A [ ]
   Name

4. Verify test gauges installed:
   Bechtel gauge No. P41 Mfrg. USG Range 0-160 Cal. valid to 3-16-85
   Bechtel gauge No. P42 Mfrg. USG Range 0-160 Cal. valid to 3-16-85

5. Verify test medium used: NITROGEN (specify)

6. Verify test medium temperature N/A °F (specify) Thermometer No. -
   Cal. Due Date

7. Verify relief valve setting popped at: 95 PSIG

8. Verify pressure regulator setting 90 PSIG (pneumatic test only)

9. Verify water analysis: Clarified water [ ], Demineralized water [ ], Other [ ],
   specify other N/A :
   Batch No.
   Actual PPM TSP

10. Verify temporary piping is flushed YES [X] NO [ ]

11. Notify client representative YES [ ] NO [X] —
    Name

12. Notify Authorized Code Inspector YES [ ] NO [X] —
    Name

13. Verify gauge reading at 0 pressure
    Bechtel gauge No. P-41 , 0 PSIG
    Bechtel gauge No. P-42 , 0 PSIG

14. Verify proper filling, venting and pressurizing:
    Initial test pressure 10 PSIG 4th test pressure 40 PSIG 7th - 70 PSIG
    2nd test pressure 20 PSIG 5th test pressure 50 PSIG 8th - 80 PSIG
    3rd test pressure 30 PSIG 6th test pressure 60 PSIG 9th - 90 PSIG

15. Test was [ ], was not [X] terminated to repair weld joint(s) after reaching
    PSIG. Leaking joint(s) was weld no.(s) on dwg.
    date .

16. Record the gauge reading at the required test pressure prior to reducing
    pressure for examination. (ASME piping systems only) N/A [ ]
    Bechtel gauge No. P-41 PSIG 90
    Bechtel gauge No. P-42 PSIG 90

17. Required test pressure was held for minutes prior to examination
    (All piping systems)

18. Record the gauge reading during examination of system. (All piping systems)
    Bechtel Gauge No. P-41 , 90 PSIG
    Bechtel Gauge No. P-42 , 90 PSIG

3850016380

Pneumatic or Hydrostatic Test Procedure and Report

Test No. 1M-77C-32B

15. Elevation difference ( $\Delta$El) between high point and low point of permanent piping is N/A feet. Total static head N/A PSIG.

16. A) Test tolerance minus Line 15 is ±3.6 PSIG.
B) Minimum test pressure at gauges is 60 PSIG (Line 14).
C) Maximum test pressure at gauges is 63.6 PSIG (Line 14 plus line 16A).

17. Relief valve is [X] is not [ ] required.
Set relief valve to relieve at 64 PSIG prior to subjecting any part of the system to pressure.

18. Pressure regulator is [X], is not [ ] required N/A [ ].
Pressure regulator is to maintain pressure at 60 PSIG.

19. Test gauges shall have a range from:

0 to 94.5 minimum (1 1/2 times maximum test pressure per applicable code.)
0 to 252 maximum (4 times maximum test pressure per applicable code.)

20. The system is to be pressurized to required pressure in stages as follows:

| | |
|---|---|
| Initial Test Pressure 10 PSIG | 4th Test Pressure 40 PSIG |
| 2nd Test Pressure 20 PSIG | 5th Test Pressure 50 PSIG |
| 3rd Test Pressure 30 PSIG | 6th Test Pressure 60 PSIG |

21. Examination of piping is to be performed at * 60 PSIG (Line 12 x .75 + Line 13) after required test pressure of 60 PSIG is held for a minimum of ten minutes.

*22. Comments FOLLOW ATTACHED VENDOR PROCEDURE.
2. PRESSURIZE TO 60 PSIG WITH INSTRUMENTS CONNECTED.

Prepared By TOM PRATT

Date 9/20/84

*NOTE: When hydrostatically testing Nuclear Class I Piping or pneumatically testing ASME Piping, examination of piping shall be performed at design pressure plus Line 13.

PART II - TEST REPORT (To Be Filled Out In Ink) Test No. LM-73C-326

3850016380

1. Verify that screwed instrument conn's,as applicable, are disconnected.

   YES [X] NO [ ] N/A [ ]

2. Verify all safety tags are installed and valves are positioned: YES [X] NO [ ]

3. Notify QC Representative DAN ARNOLD YES [X] NO [ ] N/A [ ]
   Name

4. Verify test gauges installed:
   Bechtel gauge No. P-41 Mfrg. USG Range 0-160 Cal. valid to 3-16-85
   Bechtel gauge No. P-42 Mfrg. USG Range 0-160 Cal. valid to 3-16-85

5. Verify test medium used NITROGEN (specify)

6. Verify test medium temperature N/A °F (specify) Thermometer No. ____
   Cal. Due Date ____

7. Verify relief valve setting popped at: 61 PSIG

8. Verify pressure regulator setting 60 PSIG (pneumatic test only)

9. Verify water analysis: Clarified water [ ], Demineralized water [ ], Other [ ],
   specify other N/A
   Batch No. ____
   Actual ____ PPM TSP

10. Verify temporary piping is flushed YES [X] NO [ ]

11. Notify client representative YES [ ] NO [X] N/A
    Name

12. Notify Authorized Code Inspector YES [ ] NO [X] N/A
    Name

13. Verify gauge reading at 0 pressure
    Bechtel gauge No. P-41, 0 PSIG
    Bechtel gauge No. P-42, 0 PSIG

14. Verify proper filling, venting and pressurizing:

| | | | |
|---|---|---|---|
| Initial test pressure | 10 PSIG | 4th test pressure | 40 PSIG |
| 2nd test pressure | 20 PSIG | 5th test pressure | 50 PSIG |
| 3rd test pressure | 30 PSIG | 6th test pressure | 60 PSIG |

15. Test was [ ], was not [X] terminated to repair weld joint(s) after reaching 60 PSIG. Leaking joint(s) was weld no.(s) ____ on dwg. ____ date ____.

16. Record the gauge reading at the required test pressure prior to reducing pressure for examination. (ASME piping systems only) N/A [X]
    Bechtel gauge No. ~~P-41~~ DM PSIG ____
    Bechtel gauge No. ~~P-42~~ DM PSIG ____

17. Required test pressure was held for 10 minutes prior to examination (All piping systems)

18. Record the gauge reading during examination of system. (All piping systems)
    Bechtel Gauge No. P-41, 60 PSIG
    Bechtel Gauge No. P-42, 60 PSIG

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Pneumatic or Hydrostatic Test Procedure and Report

Test No. HV-TSC-32

19. Remarks: Describe leaks observed on mechanical joints and ANSI B31.1 weld joints, which require repair: ______

N/A

20. Date(s) and time of pressure test (start and finish) 11-30-84
Date
Start 8:00 Finish 9:00

21. Test accepted by visual examination:
Bechtel Field Engineer D. S. Hood Date 11-30-84
Bechtel QC Engineer R. Armstrong Date 11/30/84
Client Const. or Startup Rep. N/A Date —
Authorized Code Inspector N/A Date —

22. Items noted in Item 19 have been repaired.

______ Bechtel Field Engineer ______ Date

______ Bechtel QC Engineer ______ Date

PART III - DRAINING AND RESTORATION (To be filled out in ink)

1A. Verify draining is required (see Part I, Item 13) YES [ ] NO [ ] N/A [X]
1B. Draining waived ______
Asst. Project Startup Eng./Designee

2. Verify water with TSP is drained to holding pond YES [ ] NO [ ] N/A [X]

3. Verify vents opened and system ~~drained~~ DEPRESSURIZED YES [X] NO [ ] N/A [ ]

4. Verify system is completely drained except for small pipe low points where no practical method for draining exists. YES [ ] NO [ ] N/A [X]

5. Verify safety tags removed and restoration items noted on Exhibit IV restored YES [X] NO [ ]

6. Accepted:
Bechtel Field Engineer D. S. Hood Date 11-30-84
Bechtel QC Engineer R. Armstrong Date 11/30/84

N/A [X] PART IV - LAY-UP (To be filled out in ink) Test No. III-150-53

1. Verify drawing available to describe lay-up YES [ ] NO [ ]

2. Verify safety tags installed ______________ YES [ ] NO [ ]

3. Verify system filled with proper fluid ______________ (specify)

4. Lay-up accepted:

   Bechtel Field Engineer ______________ Date ______________

   Bechtel QC Engineer ______________ Date ______________

N/A [X] PART V - INITIAL SERVICE LEAK TEST (To be filled out in ink)

1. Repairs to tested piping.

   a. Verify repairs noted in Part II, Item 19 have had an in-service leak check and were found to be acceptable.

      Bechtel Field Engineer ______________ Date ______________
      See Test Number ______________ (In Service Package)

2. Initial Service Leak Testing. In-Lieu of Hydrotest

   a. Verify drawings are available to describe piping to be so tested.

      YES [ ] NO [ ]

   b. Verify piping is brought up to design pressure or maximum obtainable system operating pressure of (See Exhibit X) PSIG.

   c. Verify all joints are leak-tight YES [ ] NO [ ]
      (If NO, complete 2.d)

   d. Remarks: Describe leaks observed on mechanical joints and welds which require repair for completion of this test ______________

      ______________________________________________

      ______________________________________________

      ______________________________________________

   e. Verify repairs noted in 2d have been repaired and re-leak checked

      YES [ ] NO [ ]

   f. In-Service leak test accepted:

      Bechtel Field Engineer ______________ Date ______________

      Bechtel QC Engineer ______________ Date ______________

      Client Constr. or Startup Rep. ______________ Date ______________

[illegible] GENERATING STATION

UNITS I & II

JOB 8031

8031-JR-M-1
EXHIBIT IV
Rev. 5
22

3850016380

90# TEST

VALVE AND COMPONENT CHECK LIST

Start-up No. 73C
Test No. 1M-73C-32A
Date 9/20/84
Page 1 of

Specification No. P-323 Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE, COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| M-57562 | RACK # 105205 | | | | | |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-165 | | FILL POINT # |
| | | | | SV-165 | | OPEN |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-164 | | [illegible] |
| | | | | SV-164 | | OPEN |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-163 | | FILL POINT # |
| | | | | SV-163 | | OPEN |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-162 | | FILL POINT # |
| | | | | SV-162 | | OPEN |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-161 | | FILL POINT # |
| | | | | SV-161 | | OPEN |
| | | | | | PI-129 | BACKUP FOR 60 PLUG FOR 90 # |
| | | | | SEPARATOR TRAP | | FLOW THRU. |
| | | | | PCV-129A | | OPEN |
| | | | | PCV-129B | | OPEN |
| | | | | | FI-129 | INSTALLED |
| | | | | | FI-130 | INSTALLED |
| | | | | REMOVE CAP LOWER | | FILL POINT # |
| | | | | AE-151 | | INSTALLED |
| | | | | PDSV-151 | | OPEN |
| | | | | FO-151 | | INSTALLED |
| | | | | | FI-151 | INSTALLED |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

LIMERICK GENERATING STATION

UNITS I & II 3850016380

JOB 8031

VALVE AND COMPONENT CHECK LIST

8031-JR-M-1
EXHIBIT IV
Rev. 5 22

Start-up No. 73C
Test No. 1M-73C-32A
Date 9/20/84
Page 2 of

Specification No. P-323 Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE,COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| M-57SH.1 | RACK# 10S205 | | | | | |
| | | | | | PDSL-151 | HOOK UP FOR 60 PLUG FOR 90 # |
| | | | | AE-150 | | INSTALLED |
| | | | | PDCV-150 | | OPEN |
| | | | | FO-150 | | INSTALLED |
| | | | | | FI-150 | INSTALLED |
| | | | | | PDSL-150 | HOOK UP FOR 60 PLUG FOR 90 # |
| | | | | SC-101 | | INSTALLED |
| | | | | SV-129B | | OPEN |
| | | | | 1BP-253 | | INSTALLED |
| | | | | 1117B | | INSTALLED |
| | | | | SV-129A | | OPEN |
| | | | | 1AP-253 | | INSTALLED |
| | | | | 1117A | | INSTALLED |
| | | | | PSV-129 | | INSTALLED |
| | | | | DISCONNECT TUBING DOWNSTREAM OF VLV. 1117B | | FILL POINT # |
| | | | | 1613 | | SHUT |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-127A | | FILL POINT # |
| | | | | SV-127A | | OPEN |
| | | | | | PSL-127A | HOOK UP FOR 60 PLUG FOR 90 # |
| | | | | PDCV-127A | | OPEN |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

UNITS I & II

3850016380

JOB 8031

VALVE AND COMPONENT CHECK LIST

Start-up No. 73C
Test No. 1M-73C-32
Date 9/20/84
Page 7 of

Specification No. P-323    Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE, COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| M-57 SH 2 | RACK # 105205 | | | | | |
| | | | | 1075 | | OPEN |
| | | | | | FI-127A | INSTALLED |
| | | | | 1109 | | INSTALLED |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-127B | | FILL POINT |
| | | | | SV-127B | | OPEN |
| | | | | | PSL-127B | HOOK UP FOR 60 PLUG FOR 90 |
| | | | | PDCV-127B | | OPEN |
| | | | | 1076 | | OPEN |
| | | | | | FI-127B | INSTALLED |
| | | | | 1110 | | INSTALLED |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-128A | | FILL POINT * |
| | | | | SV-128A | | OPEN |
| | | | | | PSL-128A | HOOK UP FOR 60 PLUG FOR 90 * |
| | | | | PDCV-123A | | OPEN |
| | | | | 1077 | | OPEN |
| | | | | | FI-128A | INSTALLED |
| | | | | 1111 | | INSTALLED |
| | | | | DISCONNECT TUBING UPSTREAM OF VLV. SV-128B | | FILL POINT # |
| | | | | SV-128B | | OPEN |
| | | | | | PSL-128B | HOOK UP FOR 60 PLUG FOR 90 # |

*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

EXHIBIT IV
Rev. 5 22

UNITS I & II 3850016380

JOB 8031

VALVE AND COMPONENT CHECK LIST

Start-up No. 73C
Test No. 1M-73C-72
Date 9/26/84
Page 4 of

Specification No. P-323 Responsible Engineer TOM PRATT

| P&ID REV. | DWG. NO. | REV. | SM.PIPE A/B DATE | VALVE, COMPONENT SPOOL NO. ETC. | INSTR NUMBER | POSITION |
|---|---|---|---|---|---|---|
| M-575R2 | RACK #105205 | | | PDCV-128B | | OPEN |
| | | | | 107B | | OPEN |
| | | | | | PI-128B | INSTALLED |
| | | | | 1112 | | INSTALLED |
| | | | | | | |
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*Lines filled/pressurized but NOT documented under this test.

# Restoration Items

Comsip, inc.
instrument and control systems
HEADQUARTERS • 3030 Red Hal Lane, Whittier, CA 90601 (213) 692-9021 Telex: 67-4768

K-III/K-IV

PNEUMATIC LEAK TEST PROCEDURE

1.0 SCOPE

This procedure is designed to completely verify the leak integrity of the tubing/components within the Model K-III/K-IV System. This is accomplished by pressurizing all system entries, exits and internals. This test should be done prior to initial start-up and before system calibration.

2.0 PREPARATION

2.1 Connect a regulatable pressure source capable of a 90 psig pressure to the sample entry, sample exit and reagent and calibration gas bulkhead fitting entries. These fittings are located at the top of the panel. Connect this same 90 psig pressure source to the lower test tee located adjacent to the analyzer [illegible] panel).

2.2 Disconnect the tubing running to the system integral pressure gauge at the gauge and cap the tubing.

2.3 Completely open, the system flow indicating controllers (reagent and calibration, located on the panel front and the analyzer bypass, located at the rear of the panel).

2 2.4 Open the reagent and calibration solenoid valves by disconnecting the existing hot and neutral wires running to the solenoid valves terminal strip. Connect an external source of power to these solenoid valves, which will energize and open the valves.

Sheet 3 of Co[illegible]

## PNEUMATIC LEAK TEST PROCEDURE

3.0 PROCEDURE

3.1 Slowly, in 10 psig increments, apply pressure to the system until the 90 psig pressure is attained.
2 Allow one minute for the pressure to stabilize between these pressure increments.

3.2 Beginning with the test connection bulkhead fittings, apply a bubble forming leak detector solution such as SNOOP manufactured by Nupro. Verify the leak integrity of all fittings that were broken or made to set-up this test.

3.3 Isolate the pressure source from the system for a period of 10 minutes. No decrease in pressure should be observed on a pressure gauge with 1 psig increments during the 10 minute test duration.

3.4 If a noticable pressure decrease is observed, then the systematic application of the leak test solution must be initiated on a fitting by fitting basis.

3.5 Any fitting found to be leaking should be tightened until the system is capable of holding the 90 psig test pressure with no visible pressure decrease within a 10 minute period.

3.6 Slowly, in 10 psig increments, decrease the pressure applied to the system. Allow one minute
2 for pressure stabilization between each incremental decrease in pressure. Decrease the system pressure until a 0 psig pressure is attained.

3.7 Uncap the pressure gauge tubing and reconnect this tubing to the systems integral pressure gauge. Repeat the pressurization process used in paragraph 3.1 above with the exception of a 60 psig input pressure rather than the previous 90 psig.

3.8 Repeat the system isolation and 10 minute drop test described in paragraph 3.3 above at the 60 psig pressure.

## PNEUMATIC LEAK TEST PROCEDURE

3.9 The system leak integrity has now been verified. Slowly, in 10 psig increments, decrease the pressure being applied to the system. Allow one
2 minute for pressure stabilization between incremented pressure drops until the pressure is released from the system.

## 4.0 ACCEPTANCE

After no detectable leakage as defined above is observed, the system is considered acceptable. For pneumatic leak tests done at the Comsip, Inc. facilities, the attached Test Report shall be completed and signed off.

NCR 10271
Sheet 5 of Co.

# K-III/K-IV PNEUMATIC LEAK TEST REPORT

COMSIP, INC. JOB NUMBER ____________________

SYSTEM IDENTIFICATION NUMBER ____________________

TEST DATE ____________________

CALIBRATION:

| TEST GAUGE (PSIG) | CALIBRATION GAUGE (PSIG) |
|---|---|
| 0 | |
| 50 | |
| 100 | |
| 200 | |
| 500 | |

TEST RESULTS:

| LINE NUMBER | DESIGN PRESSURE | TEST PRESSURE 1.5 X D.P. | DETECTABLE LEAKAGE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

This System has been tested and found to be free from leaks at the above conditions.

TEST INSPECTOR ______________________________ DATE ____________

Q.A. MANAGER/REP. ____________________________ DATE ____________

3850016380

PECO PHA

CD INC COID
MESSAGE NUMBER 21719     SEPTEMBER 7, 1984     WHITTIER, CALIFORNIA

TO: PHILADELPHIA ELECTRIC COMPANY
PHILADELPHIA, PENNSYLVANIA

ATTN: [illegible] ANDERS

REF: LIMERICK NUCLEAR GENERATING STATION
POST-LOCA CONTAINMENT HYDROGEN MONITORING SYSTEM
PURCHASE ORDER 8031-M-835-AC
COMSIP, INC. SALES ORDER 80224

SUBJ: MODIFIED CATALYST BED CHANGE OUT.

DEAR MR. ANDERS:

PER OUR AUGUST 31, 1984 TELECON COMSIP, INC. HEREBY CERTIFIES THAT THE ANALYZER CELL CATALYST BEDS WERE CHANGED OUT WITH THE NEW MODIFIED CATALYST BED ASSEMBLIES. THE CATALYST BED CHANGE OUTS OCCURRED DURING THE COMSIP, INC. FIELD SERVICE VISIT TO THE LIMERICK SITE ON OCTOBER 25TH THROUGH THE 28TH, 1983 BY OUR MR. KEN ROHRIG. SUBSEQUENT TO THIS SITE VISIT MR. ROHRIG RETURNED A COUPLE OF ANALYZER CELLS FOR REPAIR. PRIOR TO THE RETURN OF THESE REPAIRED CELLS TO THE LIMERICK SITE THE CATALYST BEDS WERE CHANGED OUT [illegible] THE COMSIP, INC. FACILITY.

IF YOU HAVE ANY QUESTIONS REGARDING THE ABOVE CERTIFICATION, PLEASE DO NOT HESITATE TO CONTACT ME AT ANY TIME.

REGARDS,

SID LOHMEYER, JR.
PRODUCT MANAGER
COMSIP, INC.
TELEX 674768 CD INC COID

PECO PHA

CD INC COID
.....

NCR 10221
Sheet 7 of Last

9/28/84
EFFECTIVE DATE
TPC # 1096

LIMERICK GENERATING STATION
PORC APPROVAL FORM

9.26.84
Revision 1
Page 1 of 1
9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-030-701-1 Rev 0

2. REASON FOR SUBMITTAL:

3850016380

ATTACHMENT 3 (CONT'D)

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY ______

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | WJC | 12/20/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | CPG | 12/20/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ______ ______<br>ADMIN OR PREPARER | ______ / ______ | #: ______<br>DATE: ______ |

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☐ REVIEW
☐ INFO

9/28/84
EFFECTIVE DATE

LIMERICK GENERATING STATION
PORC APPROVAL FORM
TPC # 1090

9-26-84 Revision 1
Page 1 of 1
9/21/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-030-701-1 Rev 0

2. REASON FOR SUBMITTAL:

3850016380

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY 1/2/85

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | LAH per tele con | 12/19/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | EDC | 12/19/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ______ ____ ADMIN OR PREPARER | ______ / ______ | #: ______ DATE: ______ |

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☐ REVIEW
☐ INFO

28/84
CTIVE DATE

# LIMERICK GENERATING STATION
## PORC APPROVAL FORM

TPC # 1071

RHMoore 9-26-84

A-4, Form 1
Revision 1
Page 1 of 1

9/10/84 CRE

OCUMENT (TITLE, OR PROC # & REV.): ST-1-030-701-1

3850016380

REASON FOR SUBMITTAL:

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY ________

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| PT | | | | |
| ST SUPT | | | | |
| G-TECH | | | | |
| G-( S | | | | |
| G-MAINT | | | | |
| HP | | | | |
| CHEM | | | | |
| ERF ENG | CAK | 12/19/84 | | |
| &C ENG | | | | |
| DMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | CPG | 12/19/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
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COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

| OMMENTS/CORRECTIVE ACTION AKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ________ ________ | ________/________ | #: ________ DATE: ________ |

ADM[illegible] OR PREPARER

DIRE[illegible]IONS TO ADMIN. STAFF:
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PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

LAH 12/19/84

030
-1-~~057~~-701-1 P.A.S.S & C.A.C SAMPLE LOOPS CONTAMINATED PIPING INSPECTION

st Frequency: 18 months -OR- Initiating Events: 1. Reason ______
ch Spec.: 6.8.4a 2. MRF No. ______
FSAR 6.2.8.1.g
FSAR 6.2.8.1.h
FSAR 6.2.8.3

10 P.P

st Results:

ction A. All Asterisked (*) Steps Completed SATISFACTORILY

Performed By: (Sign/Date) ____ 12/21/84

Performed By: (Sign/Date) ____ ____

Informed Test Complete:(ACO or CO) (Sign/Date) ____ 12-21-84
(Time) 0101

Reviewed By: (SSVN or STA) (Sign/Date) ____ 12-21-84

ction B. One or More Asterisked (*) Steps Test Results UNSATISFACTORILY

Performed By: (Sign/Date) ____ ____

Informed of Test Results: (CO or ACO)(Sign/Date) ____ ____
(Time) ____

Shift Supervision (Sign/Date) ____ ____

Corrective Action: MRF No.: ____ ____

Initiated By: Sign/Date) ____ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ____

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ____

DI[illegible]ONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) M.C. Gallagher 12/20/84

APPENDIX 5

TEST RESULTS EVAULATION FORM

ST # ST-1-030-701-1

DATE ST PERFORMED 12/20/84

EVALUATION OF TEST RESULTS:

Boundary 1 leakage was determined to be limited to the Post Accident Sampling Station Gas Sampler 105941 by the following:

① all CAC lines in Boundary 1 were walked down and "SNOOPED" verifying no leakage

② check valve 57-10688 was verified not to be leaking by closing 57-1086 and verifying all other valves in the possible leakage flowpath were closed; then checking that no change in leakrate was observed

(continued)

ATTACH ADDITIONAL SHEETS IF NECESSARY

Evaluation By: M. P. Gallagher

Date: 12/20/84

Approved By: L A Hopkins

Date: 12/21/84

3850016380

③ verifying 0 psig at PI-57-129 which indicates that there was no leakage into the CAC sampler

Boundary 1 leakage will be investigated ~~further~~ further prior to exceeding 5% power, when the Post Accident Sampling Station is required to be operable.

Boundary 3 leakage was determined to be through a leaking check valve 57-1068A by:

① verifying no leakage using "snoop" during a walkdown and

② observing a "chattering" sound of check valve 57-1068~~B~~

Check valve 57-1068A will be inspected and repaired. However, the leakage for contaminated piping inspection of this boundary should be considered < 100 cc/min since no external leakage was observed.

1.0 PURPOSE

The purpose of this test is to determine the leakage rate of the Post Accident Sample System and Containment Atmospheric Control sample loops and to inspect associated components if the leakage is above the specified limit.

2.0 REFERENCES

2.1 Generic LLRT Procedure ST-1-LLR-001-1

2.2 8031-M-30; Post Accident Sampling

2.3 8031-M-57, Containment Atmospheric Control, Sheets 1 and 2

2.4 NUREG-0737

2.5 8031-M-235-8-12

2.6 8031-M-235-26-11 and 10

3.0 TEST EQUIPMENT

3.1 Per Generic Procedure ST-1-LLR-001-1

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Per Generic Procedure ST-1-LLR-001-1 and Item I of Specific Procedure Section 9.0

## 5.0 PREREQUISITES

5.1 Plant conditions are such that testing will not interfere with planned operations. Backup system availability has been established per Section 9.1. Request permission of Shift Supervision and ACO/CO to begin this test.

CFK / 12/19/84
Initials / Date

SG / 12-19-84
ACO/CO / Date

5.2 RWP obtained if required. CFK

5.3 Obtain chemistry personnel assistance to operate the P.A.S.S. panel. e

LAB 12/19/84
CPG 12/19/84

~~5.4~~ 5.3 Safety permit issued if required per Section 9.5 or as determined by Results Engineer or alternate. Yes ____ No X

If Yes: Permit No. ____________

## 6.0 GENERAL LEAK TEST PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

INITIALS

6.1 Read Specific Procedure. Follow procedure for system draining and venting (Section 9.2) and valve lineup (Section 9.3). CFK

6.2 With the box set up for a "FLOW IN TEST" and connected to the penetration test tap, perform leak test per ST-1-LLR-002-1. Record leakage on the Test Data Sheet attached to this procedure. CFK

6.3 Perform leak test per Section 9.4 CFK / 12/20/84

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## 7.0 PROCEDURE

7.1 Flow in Test (Test Volume Filled with Air)

7.1.1 Verify that the test volume is drained of water.

THE FOLLOWING STEPS ARE THE INITIAL SET UP OF VOLUMETRICS LEAK RATE MONITOR (LRM). SEE FIGURE 1.

7.1.2 Prior to performing leakage test or integrity check, set the LRM controls as follows:

| CONTROL | PRESSURE REGULATOR (V-1) | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|---|
| POSITION | FULL DECREASE (CCW) | CHARGE | DECAY | TEST |

7.1.3 Connect the LRM to a 110 volt, 60 Hz electrical power source. Press the power switch; allow a ten (10) minute warm-up period before proceeding with Section 7.1.5.

DUE TO THE NATURE OF THE THERMAL MASS FLOW TRANSDUCERS USED IN THE LRM, THE FLOW RATE INDICATOR MAY DISPLAY A READOUT OF -006 TO +006 AT A NO LEAK CONDITION. THIS IS A NORMAL INDICATION, AND DOES NOT AFFECT CALIBRATION OF THE LRM.

7.1.4 Apply clean, dry facility test gas supply pressure to INLET port and pressurize from 85 to 150 PSIG. (Use nitrogen on electrical penetrations)

7.1.5 Upon completion of warm-up period, adjust ZERO control as necessary to obtain a readout of $\pm$ 0.00 on the PRESSURE indicator. Be sure the TEST port is open to atmosphere.

7.1.6 Connect TEST port to the test volume.

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7.1.7 Zeroing of the desired flow range(s) on the display must be completed before any flow measurements from that range are taken. The LRM MUST be isolated from the test volume by setting the ball valves as in Section 7.1.2. Adjust zero on all flow ranges, selecting each individually with the RANGE switch.

THERE MUST BE A CONSTANT SUPPLY PRESSURE OF 85-150 PSI CONNECTED TO THE INLET OF THE LRM FOR ZEROING OF THE FLOW DISPLAY.

THE FOLLOWING STEPS ARE THE LEAK TEST OPERATING SEQUENCE OF LRM.

7.1.8 Set the TEST LEVEL ball (V-4) valve to the CLOSED position. Set the TEST ball valve (V-3) to the FLOW position. Adjust the PRESSURE REGULATOR (V-1) to the test pressure of 44 psig as displayed on the PRESSURE indicator. Set the RANGE SELECTOR switch and RANGE SELECTOR valve (V-2) to LOW RANGE and observe FL for any possible internal LRM leakage. Return the TEST LEVEL valve (V-4) to the TEST position. Return RANGE SELECTOR valve (V-2) to CHARGE position. The test volume should now be charging.

THE PRESSURE INDICATOR WILL SHOW A DROP IN PRESSURE UNTIL THE TEST VOLUME IS COMPLETELY CHARGED.

7.1.9 If the pressure within the test volume will not reach the desired test level (due to an excessive leakage rate), increase the REGULATOR control setting as necessary to obtain the desired test level pressure.

7.1.10 After the test volume is fully charged, set ball valves as follows:

| BALL VALVE | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|
| POSITION | HIGH | FLOW | TEST |

ALLOW A TEN (10) MINUTE (MINIMUM) TEMPERATURE STABILIZATION PERIOD.

7.1.11 Upon completion of temperature stabilization period, place the RANGE switch in the HIGH position and observe the FLOW RATE indicator for the leakage flow rate.

7.1.12 If the indicated leakage rate value is sufficiently low, set the RANGE switch to MID and the RANGE valve to MID for greater accuracy. If low range is desired, set RANGE switch to LOW and the RANGE valve (V-2) to LOW.

7.1.13 Verify the position of the following valves on LLRT Data Sheet.

Range Selector Switch
Range Selector Valve (V-2)
Test Valve (V-3)
Test Level Valve (V-4)

7.1.14 If leakage is evident but is below the calibrated range of the LRM, either assign a test leakage rate at the minimum calibrated range (20 sccm) or impose a known flow to raise total indicated flow rate to within the calibrated range of the LRM. This is done by closing the test connection valves and opening a vent valve between the test connection valves and valve V-4 on the LRM. Throttle the vent valve to attain a flow rate (Lo) within the calibrated range of the LRM. After flow has stabilized, open the test connection valves and observe the total flow rate.

WHEN IMPOSED FLOW IS USED, THE MEASURED LEAKAGE (Lm) IS THE DIFFERENCE BETWEEN THE TOTAL FLOW AND THE IMPOSED KNOWN FLOW (Lo).

7.1.15 Read and record on Test Data Sheet the indicated flow and pressure at a minimum of 5-minute intervals for 15 minutes after stabilization. A minimum of 4 readings should be taken.

## 8.0 RETURN TO NORMAL

8.1 When test is completed, consult Health Physicist or alternate concerning venting the test volume.

## 9.0 SPECIFIC PROCEDURE

### 9.1 Backup System Availability and Requirements:

9.1.1 The Post Accident Sampling System will be out of service for the duration of this test.

9.1.2 Both H2/O2 analyzers 10S205 and 10S206 will be out of service for the duration of this test.

### 9.2 System Draining and/or Venting:

SYSTEM IS A NON-PRESSURIZED AIR-FILLED SYSTEM AND NEED NOT BE DRAINED.

### 9.3 Valve Lineup:

INITIALS

9.3.1 Complete the applicable section of the Leak Rate Tag Accountability Log, position valves and switches, and hang LLRT tags. CFK

SECTIONS 9.4.1 through 9.4.6 may be done in any order.

CAPS

### 9.4 Procedure:

PERFORM LEAK RATE USING THE FOLLOWING PREFERRED METHOD(S). ALTERNATE METHODS AS DESCRIBED IN GENERIC PROCEDURE ST-1-LLR-001-1 MAY BE USED WHEN NEEDED AND SHALL BE ATTACHED TO AND FORM A PART OF THIS PROCEDURE ONLY WHEN USED.

9.4.1 Perform a flow in test on the ~~P.A.S.S and C.A.C atmosphere~~ boundary 1 sample ~~loops~~ loop.

LAH 12/19/84

CPC 12/19/84

INITIALS

STET

9.4.1.1 ~~9.4.1.1 Remove thermal overload from contactor for pump~~ 1BP937 ~~at Panel~~ ~~10C945~~ 08/217 08/217 CFK

~~9.4.1.2 Install temporary jumpers between terminals 27, 28, 29, 30, 31 and 32 on terminal board 3 in the Hydrogen and Oxygen~~ Analyzer Panel ~~10S205~~ 15/283

Approve changes for pg
LAH 12/19/84

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CPG 12/19/84

~~9.4.1.3 Install temporary jumpers between terminals 27, 29, 30, 31 and 32 on terminal board 3 in the Hydrogen and Oxygen Analyzer Panel 10S206~~ 15/253

LAH 12/19/84 per tele con
EDC 12/19/84

9.4.1.2.1 Close or verify closed 57-1083, 57-1088 and 57-1085. CFK

~~9.4.1.4 Lift lead 38 from terminal 36 on TBR-3 in Panel 10S205~~

~~9.4.1.5 Lift lead 38 from terminal 36 on TBR-3 in Panel 10S206~~

9.4.1.3 Open or verify open SE-57-102. CFK

9.4.1.4 open or verify open 57-1084 CFK

9.4.1.5 At panel 10C946 open valve SV-57-146B using HSS-57-146. CFK

9.4.1.6 At panel 10C946 open valve SV-57-147B using HSS-57-147 CFK

9.4.1.~~6~~ 2 Install test box to test connection downstream of valve 57-106~~2~~1 (501-15R-295) ~~and to connection SX-57-159 on panel 10S205.~~ CFK

9.4.1.~~7~~ 7 At Panel 10C600, place or verify ~~power on to 10S205 by placing~~ HSS-57-12~~0~~5 ~~to~~ in the "~~ANALYZE~~" position "DRYWELL EXHAUST SAMPLE" CFK

~~9.4.1.8 Verify SV-57-151, SV-57-152, SV-57-153, SV-57-154, and SV-57-155 are open.~~

9.4.1.~~9~~ 8 At Panel 10C600, place or verify ~~power on to 10S206 by placing~~ HSS-57-19~~0~~5 ~~to~~ in the "~~ANALYZE~~" position "DRYWELL ATM SAMPLE-2" CFK

~~9.4.1.10 Verify SV-57-187, SV-57-188, SV-57-189 and SV-57-194 are open.~~

9.4.1.~~11~~ 9 At Panel 10C945, place power on by placing HSS-30-120 to position "A" or "B" CFK

9.4.1.~~12~~ 10 Place HSS-30-121 to the Gas position at Panel 10C945 CFK

Approve changes for pg LAA 12/19/84

CPG 12/19/84



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9.4.1.~~13~~ 11 Place HSS-30-111 to the Drywell position on 10C945 CFA

9.4.1.~~14~~ 12 Place HS-30-109 to the CIRC. gas position on Panel 10C945 CFA

9.4.1.~~15~~ 13 Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate mpB

9.4.1.~~16~~ 14 Verify system leak rate is less than (later) N.A NOTE 1

9.4.1.~~17~~ 15 The leak rate is above (later). Proceed to the next step. If not, proceed to Step ~~9.4.1.19~~ 9.4.1.17 and mark Step 9.4.1.~~18~~ 16 N/A mpB

9.4.1.~~18~~ 16 Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A-1. mpB

9.4.1.~~19~~ 17 Isolate the test box and vent the volume. Close and cap valve 57-1061 and ~~57-1047~~ ~~SV-57~~ ~~57-1013~~ mpB

9.4.1.18 PLACE HSS-30-111 TO THE ~~DRYWELL~~ 'SPARE' POSITION ON PANEL 10C945 mpB

9.4.1.~~20~~ 19 Place HSS-30-120 on Panel 10C945 to the "OFF" position mpB

LAH 12/19/84 per telecon EDC 12/19/84

9.4.1.~~21~~ 20 Reattach the thermal overload for pump 1BP937 at Panel 10C945 WRL

9.4.1.21 At panel 10C946 close valve SV-57-146B using HSS-57-146 mpB

9.4.1.25 Open ~~57-1083~~ 57-1085 and 57-1088 mpB

9.4.1.22 At panel 10C946 close valve SV-57-147B using HSS-57-147 mpB

9.4.1.23 Close 57-1084 if sections 9.4.2 or 9.4.3 are to be performed next. mpB mpB

9.4.1.24 Close SE-57-102 if section 9.4.6 is to be performed next. N/A

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Approve changes for pg
CPG 12/19/84 LAB 12/19/84



| | | |
|---|---|---|
| 9.4.1.~~22~~ 25 | Place HSS-30-170 on Panel 10C945 to the ON position and verify pump 1BP937 starts | WRL |
| 9.4.1.~~23~~ 26 | Place HSS-30-120 on Panel 10C945 to the "OFF" position. | WRL |

END OF 1

| | | |
|---|---|---|
| ~~9.4.1.24~~ | ~~Place HSS-57-126 on Panel 10C600 to the "OFF" position~~ | |
| ~~9.4.1.25~~ | ~~Place HSS-57-196 on Panel 10C600 to the "OFF" position~~ | |
| ~~9.4.1.26~~ | ~~Reconnect lead lifted in step 9.4.1.4~~ | |
| ~~9.4.1.27~~ | ~~Reconnect lead lifted in step 9.4.1.5~~ | |
| ~~9.4.1.28~~ | ~~Remove temporary jumpers between terminals 27, 29, 30, 31 and 32 on TRB-3 in Panel 10S206~~ | |
| ~~9.4.1.29~~ | ~~Remove temporary jumpers between terminals 27, 28, 29, 30, 31 and 32 on TRB-3 in Panel 10S205~~ | |
| ~~9.4.1.30~~ | ~~Place HSS-57-126 to the "ANALYZE" position and then using pump selector HSS-57-129 verify that pumps 1AP253 and 1BP253 operate correctly. This verifies lead lifted in step 9.4.1.4 restored~~ | |
| ~~9.4.1.31~~ | ~~Verify only one sample inlet valve to panel 10S205 is open~~ | |
| ~~9.4.1.32~~ | ~~Return HSS-57-126 to the "OFF" position~~ | |

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Approve addition of 9.4.2 thru 9.4.2.5

LAH 12/19/84 CPG 12/19/84

9.4.2 Perform a flow in test on the boundary 2 sample loop.

Initials

9.4.2.1 Install test box to test connection downstream of valve 57-1062 (501-RIS-295). mPS

9.4.2.2 At panel 10C600 place or verify HSS-57-125 in the "DRYWELL EXHAUST SAMPLE" position mPS

9.4.2.3 At panel 10C600 place or verify HSS-57-195 in the "SUPP POOL ATM SAMPLE 2" position mPS

9.4.2.4 Open or verify open 57-1089 mPS

9.4.2.5 Open or verify open SE-57-102 mPS

9.4.2.5.1 Close 57-1084 mPS

LAH 12/19/84
per telecon
EOC 12/19/84

Approve changes for pg
LDW 12/19/84
CJG 12/19/84

~~9.4.1.13~~ 6 ~~Place HSS-30-111 to the Drywell position on 10C945~~

~~9.4.1.14~~ 7 ~~Place HS-30-109 to the CIRC. gas position on Panel 10C945~~

~~9.4.1.15~~ 9.4.2.6 Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate — mpB

~~9.4.1.16~~ 9.4.2.7 Verify system leak rate is less than (later) — NA

~~9.4.1.17~~ 9.4.2.8 The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.2.10 ~~9.4.1.19~~ and mark Step ~~9.4.1.19~~ 9.4.2.9 N/A — N/A

~~9.4.1.18~~ 9.4.2.9 Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A-2. — N/A

~~9.4.1.19~~ 9.4.2.10 Isolate the test box and vent the volume. Close and cap valve 57-1062 ~~57-1062 and 57-1047 57-1013~~ — mpB

~~9.4.1.20 Place HSS-30-120 on Panel 10C945 to the "OFF" position~~

~~9.4.1.21 Reattach the thermal overload for pump 1BP937 at Panel 10C945~~

LAH 12/19/84 Per telecon EOC 12/19/84

9.4.2.11 Close 57-1089 if section 9.4.3 is not going to be performed next — N/A

9.4.2.12 Close SE57-102 if section 9.4.6 is going to be performed next — N/A

9.4.2.13 Open 57-1084 mpB

3850016380 ST-1-030-701-1

Approve addition of 9.4.3 thru 9.4.3.5

LDH 12/19/84 CPG 12/19/84



9.4.3 Perform a flow in test on the boundary 3 sample loop.

Initials

9.4.3.1 Install test box to test connection downstream of valve 57-1047 RDM

9.4.3.2 At panel 10C600 place or verify HSS-~~3~~57-125 in the "Drywell EXHAUST SAMPLE" position. RDM

9.4.3.3 At panel 10C600 place or verify HSS-57-195 in the "SUPP POOL ATM SAMPLE 2" position. RDM

9.4.3.4 Open or verify open 57-1089 WRZ

9.4.3.5 Open or verify open SE-57-102 WRZ

9.4.3.5.1 Close 57-1086 WRZ

LDH 12/19/84 Per telecon EDC 12/19/84

Approve changes for pg
LAH 12/19/84

~~9.4.1.13~~ 6 ~~Place HSS 30-111 to the Drywell position on 10C945~~ CPO 12/19/84

~~9.4.1.14~~ 7 ~~Place HS 30-109 to the CIRC. gas position on Panel 10C945~~

~~9.4.1.15~~ 9.4.3.6 Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate — WRL

~~9.4.1.16~~ 9.4.3.7 Verify system leak rate is less than (later) — NA

~~9.4.1.17~~ 9.4.3.8 The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.3.10 ~~9.4.1.19~~ and mark Step ~~9.4.1.19~~ 9.4.3.9 N/A — WRL

~~9.4.1.18~~ 9.4.3.9 Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A-3. — WRL

~~9.4.1.19~~ 9.4.3.10 Isolate the test box and vent the volume. Close and cap valve 57-1047. ~~57-1061 and 57-1047~~ ~~SV-57~~ ~~57-1013~~ — WRL

~~9.4.1.20 Place HSS-30-120 on Panel 10C945 to the "OFF" position~~

~~9.4.1.21 Reattach the thermal overload for pump 1BP937 at Panel 10C945~~

LAH 12/19/84 per telecon EDC 12/19/84

9.4.3.11 Close 57-1089, if section 9.4.2 is not going to be performed next — NA

9.4.3.13 open 57-1086 WRL

9.4.3.12 Close SE-57-102 if section 9.4.6 is going to be performed next. — NA

Approve addition of 9.4.4 thru 9.4.4.7

LAH 12/19/84 CPG 12/19/84

3850016380



9.4.4 Perform a flow in test on the boundary 4 sample loop.

Initials

9.4.4.1 Install a test box to test connection downstream of valve 57-1070. RDM

9.4.4.2 At panel 10C946 open valve SV-57-146A using HSS-57-146 RDM

9.4.4.3 At panel 10C946 open valve SV-57-147A using HSS-57-147 RDM

9.4.4.4 At panel 10C600 place or verify HSS-57-125 in the "DRYWELL EXHAUST SAMPLE" position. RDM

9.4.4.5 At panel 10C600 place or verify HSS-57-195 in the "DRYWELL ATM SAMPLE-2" position RDM

9.4.4.6 Open or verify open 57-1084. CFK

9.4.4.7 Open or verify open SE-57-102. RDM

LAH 12/19/84 per telecon

9.4.4.7.1 Close 57-1089 and 57-1087 RDM

EDC 12/19/84

Approve changes for pg
LAB 12/19/84 CPG 12/19/84

3850016380

| | | |
|---|---|---|
| ~~9.4.1.13~~ 6 | ~~Place HSS-30-111 to the Drywell position on 10C945~~ | / |
| ~~9.4.1.14~~ 7 | ~~Place HS-30-109 to the CIRC. gas position on Panel 10C945~~ | / |
| ~~9.4.1.15~~ 9.4.4.8 | Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate | CFK |
| ~~9.4.1.16~~ 9.4.4.9 | Verify system leak rate is less than (later) | NA |
| ~~9.4.1.17~~ 9.4.4.10 | The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.4.12 ~~9.4.1.19~~ and mark Step ~~9.4.1.19~~ 9.4.4.11 N/A | CFK |
| ~~9.4.1.18~~ 9.4.4.11 | Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A-4. | CFK |
| ~~9.4.1.19~~ 9.4.4.12 | Isolate the test box and vent the volume. Close and cap valve 57-1070 ~~57-1068 and 57-1047~~ ~~57-1013~~ | CFK |
| ~~9.4.1.20~~ | ~~Place HSS-30-120 on Panel 10C945 to the "OFF" position~~ | / |
| ~~9.4.1.21~~ | ~~Reattach the thermal overload for pump 1BP937 at Panel 10C945~~ | |
| 9.4.4.13 | At panel 10C945, close valve SV-57-146A using HSS-57-146 | CFK |
| 9.4.4.14 | At panel 10C945, close valve SV-57-147A using HSS-57-147. | CFK |
| 9.4.4.15 | Close 57-1084 if sections 9.4.2 or 9.4.3 are to be performed next | NA |

LAH 12/19/84 per telecon EDC 12/19/84

9.4.4.17. Open 57-1089 and 57-1087 CFK

9.4.4.16 Close SE-57-102 if section 9.4.6 is to be performed next NA

Approve addition of 9.4.5 thru 9.4.5.5
LAH 12/19/84 CPG 12/19/84



9.4.5 Perform a flow in test on the boundary 5 sample loop.

Initials

9.4.5.1 Install a test box to test connection downstream of valve 57-1043. CFK

9.4.5.2 At panel 10C600 place or verify HSS-57-125 in the "DRYWELL EXHAUST SAMPLE" position. CFK

9.4.5.3 At panel 10C600 place or verify HSS-57-195 in the "DRYWELL ATM SAMPLE 2" position CFK

~~9.4.5.4~~

9.4.5.4 Open or verify open 57-1084 CFK

9.4.5.5 Open or verify open SE-57-102 CFK

9.4.5.5.1 Close SE-57-101 CFK

LAH 12/19/84
Per telecon
EDC
12/19/84

Approve changes for pg
LAH 12/19/84 CPG 12/19/84

3850016380

~~9.4.1.13~~ 6 ~~Place HSS-30-111 to the Drywell position on 10C945~~

~~9.4.1.14~~ 7 ~~Place HS-30-109 to the CIRC. gas position on Panel 10C945~~

~~9.4.1.15~~ 9.4.5.6 Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate — CFK

~~9.4.1.16~~ 9.4.5.7 Verify system leak rate is less than (later) — NA

~~9.4.1.17~~ 9.4.5.8 The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.5.10 ~~9.4.1.19~~ and mark Step ~~9.4.1.19~~ 9.4.5.9 N/A — CFK

~~9.4.1.18~~ 9.4.5.9 Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A-5. — CFK

~~9.4.1.19~~ 9.4.5.10 Isolate the test box and vent the volume. Close and cap valve 57-1043. ~~57-1062 and 57-1047~~ ~~57-1013~~ — CFK

~~9.4.1.20 Place HSS-30-120 on Panel 10C945 to the "OFF" position~~

LAH 12/19/84 per telecon EDC 12/19/84

~~9.4.1.21 Reattach the thermal overload for pump 1BP937 at Panel 10C945~~

9.4.5.11 Close 57-1084 if sections 9.4.2 or 9.4.3 are to be performed next. — NA

5.13 open SE-101 CFK

9.4.5.12 Close SE-57-102 if section 9.4.6 is to be performed next. — CFK

Approve addition of steps 9.4.6 thru 9.4.6.5
LAH 12/19/84 GPG 12/19/84



9.4.6 Perform a flow in test on the boundary 6 sample loop.

Initials

9.4.6.1 Install a test box to test connection downstream of valve 57-1044. CFK

9.4.6.2 At panel 10C600 place or verify HSS-57-125 in the "SUPP POOL ATM SAMPLE-1" position CFK

9.4.6.3 At panel 10C600 place or verify HSS-57-195 in the "DRYWELL ATM SAMPLE-2" position CFK

~~9.4.6.4~~

9.4.6.4 Open or verify open 57-1084 CFK

9.4.6.5 Open or verify open 57-1087 CFK

9.4.6.5.1 Close SE-57-102 CFK

LAH 12/19/84
per telecon
GOC
12/19/84

3850016380

~~9.4.1.13~~ 6 ~~Place HSS-30-111 to the Drywell position on 10C945~~ ~~/~~

~~9.4.1.14~~ 7 ~~Place HS-30-109 to the CIRC. gas position on Panel 10C945~~ ~~/~~

~~9.4.1.15~~ 9.4.6.6 Begin flow in test per section 7.1 at test pressure of 44 psig and determine system leak rate CFK

~~9.4.1.16~~ 9.4.6.7 Verify system leak rate is less than (later) NA

~~9.4.1.17~~ 9.4.6.8 The leak rate is above (later). Proceed to the next step. If not, proceed to Step 9.4.6.10 ~~9.4.1.19~~ and mark Step ~~9.4.1.19~~ 9.4.6.9 N/A NA

~~9.4.1.18~~ 9.4.6.9 Using a bottle of snoop or equivalent, walk the system down and inspect components for air leakage inside the solid boundary of Attachment B. Document all components exhibiting leakage on Attachment A-6. CFK

~~9.4.1.19~~ 9.4.6.10 Isolate the test box and vent the volume. Close and cap valve 57-1044 ~~57-1062 and 57-1047~~ ~~57-1013~~ CFK

~~9.4.1.20 Place HSS-30-120 on Panel 10C945 to the "OFF" position~~ ~~/~~

~~9.4.1.21 Reattach the thermal overload for pump 1BP937 at Panel 10C945~~ ~~/~~

LAH 12/19/84

9.4.6.11 Open SE-57-102 CFK

per telecon EOC 12/19/84

LAB 12/19/84
CPG 12/19/84

9.4.1.33 Place HSS-57-196 to the "ANALYZE" position and then using pump selector HSS-57-199 verify that pumps 1AP254 and 1BP254 operate correctly. This verifies lead lifted in step 9.4.1.5 restored ________

9.4.1.34 Verify only one sample inlet valve to panel 10S206 is open ________

9.4.1.35 Return HSS-57-196 to the "OFF" position ________

9.5 Block Required

None

9.6 Restoration:

9.6.1 At the conclusion of the test, isolate and vent the test box and the test volume separately. Disconnect test box from the test volume, close test connection valves and remove hoses. CFK

CAUTION

CONTACT HEALTH PHYSICS PRIOR TO DRAINING OR VENTING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.6.2 Restore valve line up at test completion per Tag Accountability Log to "AS FOUND" position, recording final position in the "AS LEFT" column, or as directed by Shift Supervision. Have second verification performed by a qualified individual designated by the results Engineer or his alternate. If any valve is restored to a position other than the "AS FOUND" position, note it accordingly in the Additional Action/Test Comments section. CFK

9.6.3 Complete IVOR. CFK

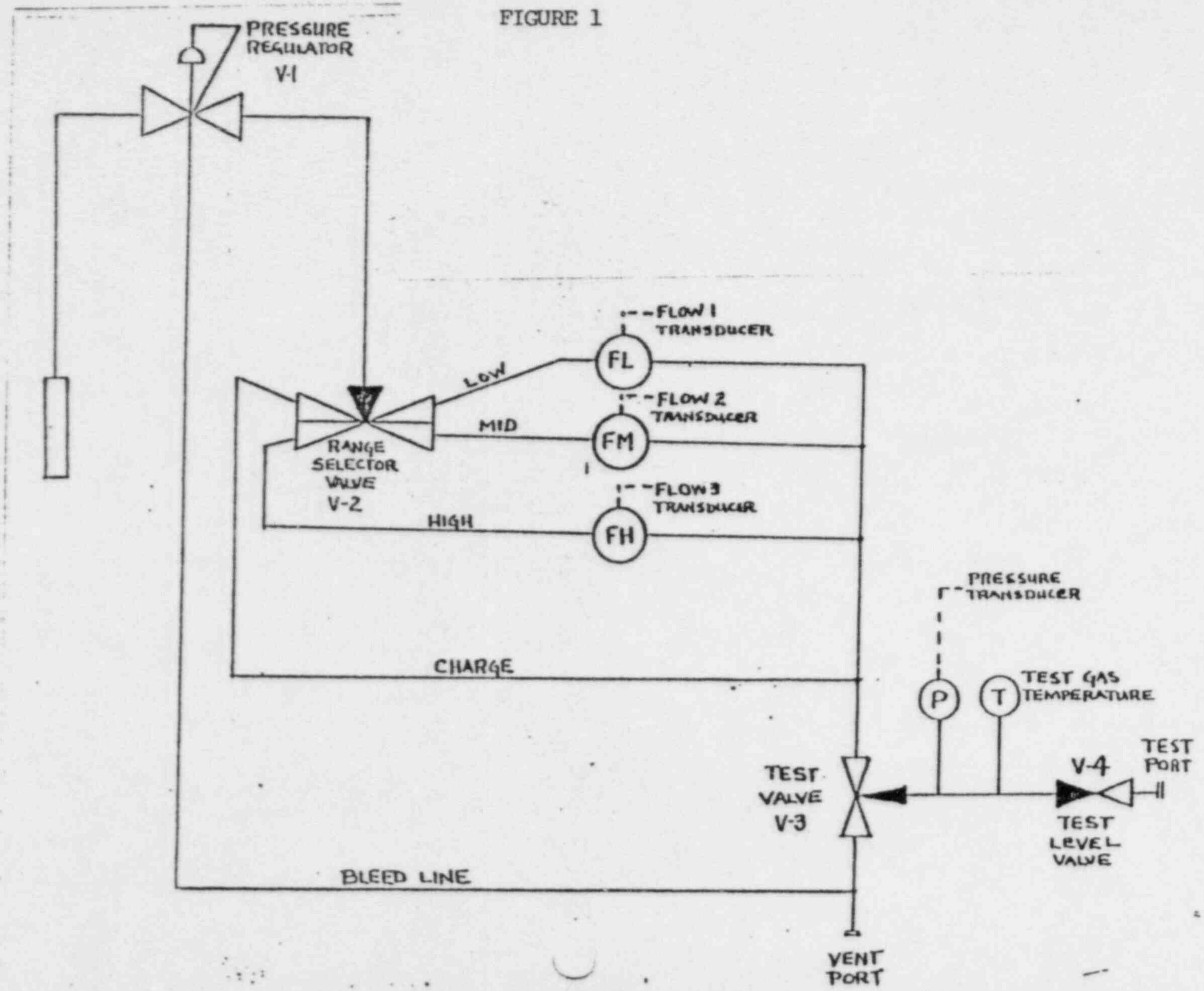
9.6.4 Return system to normal per Section 8.0 or as directed by Shift Supervision. CFK

9.7 Inform Shift Supervision of results of test (Note above asterisked step) and fill out the data sheets. Have operator review accountability log. CFK

AT TEST COMPLETION, ENSURE THAT COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

VOLUMETRICS LEAK RATE MONITOR (LRM)

FIGURE 1



TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C

P&ID M-57, SH. 1

CPK 12/19/84
COH 12/19/84

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| 57-1084 | ~~Clos~~ Open | ~~CLOSED~~ AS REQUIRED | 27001 | CFK | open | CFK | KSK |
| 57-1086 | OPEN | AS ~~CLOSED~~ REQUIRED | 27002 | CFK | Open | CFK | KSK |
| 57-1050 | Closed/Capped | CLOSED | 27003 | CFK | Closed/capped | CFK | KSK |
| 57-1089 | Open | AS ~~CLOSED~~ REQUIRED | 27004 | CFK | Open | CFK | KSK |
| 57-1062 (Test) | Closed/Capped | ~~UNCAPPED~~ AS ~~OPEN~~ REQUIRED | 27005 | CFK | CLOSED/ CAPPED | CFK | KSK |
| SV-57-133 | Open | OPEN | 27006 | CFK | Open | CFK | KSK |
| SV-57-150 | Open | OPEN | 27007 | CFK | Closed | CFK | GDL |
| SV-57-143 | Open | OPEN | 27008 | CFK | Open | CFK | GDL |
| SV-57-159 | Open | OPEN | 27009 | CFK | Open | CFK | GDL |

note 2

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 1

CPK 12/19/84

LAH 12/19/84

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-195 | Open | OPEN | 27010 | CFK | Open | CFK | GDE |
| SV-57-145 | Open | OPEN | 27011 | CFK | Open | CFK | GDE |
| 57-1047 | CAPPED CLOSED | ~~CLOSED/ CAPPED~~ AS REQUIRED | 27012 | CFK | CLOSED/ CAPPED | CFK | KSK |
| 57-1043 | Closed/ Capped | ~~CLOSED/ CAPPED~~ AS REQIRED | 27013 | CFK | CLOSED/ CAPPED | CFK | KSK |
| 57-1044 | Closed/ Capped | ~~CLOSED/ CAPPED~~ AS REQUIRED | 27014 | CFK | CLOSED/ CAPPED | CFK | KSK |
| SV-57-185 | Open | OPEN | 27015 | CFK | Open | CFK | GDE |
| 57-1083 | Open | AS ~~CLOSED~~ REQUIRED | 27016 | CFK | open | CFK | KSK |
| 57-1088 | Open | AS ~~CLOSED~~ REQUIRED | 27017 | CFK | Open | CFK | KSK |
| 57-1061 | Capped/ Closed | AS REQUIRED ~~CLOSED/ Capped~~ | 27018 | CFK | Closed/ capped | CFK | KSK |

LAH 12/19/84

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 1

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-134 | Open | OPEN | 27019 | CFK | Closed | CFK | [illegible] note 2 |
| SV-57-132 | Open | OPEN | 27020 | CFK | Closed | CFK | [illegible] |
| SV-57-142 | Open | OPEN | 27021 | CFK | Open | CFK | [illegible] |
| SV-57-144 | Open | OPEN | 27022 | CFK | Open | CFK | [illegible] |
| SV-57-146B | Closed | OPEN | 27023 | CFK | Closed | CFK | KSK |
| 57-1071 | Closed/ capped | CLOSED/ CAPPED | 27024 | CFK | Closed/ Capped | CFK | KSK |
| SV-57-183 | Open | OPEN | 27025 | CFK | Open | CFK | [illegible] |
| SV-57-191 | Open | OPEN | 27026 | CFK | Open | CFK | [illegible] |
| SV-57-184 | Open | OPEN | 27027 | CFK | Open | CFK | [illegible] |

CFK 12/19/84
LAK 12/19/84

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 1

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-186 | Open | OPEN | 27028 | CFK | Open | CFK | GDS |
| SV-57-147A | Closed | OPEN | 27029 | CFK | Closed | CFK | KSK |
| SV-57-181 | Open | OPEN | 27030 | CFK | Closed | CFK | GDS |
| 57-1087 | Open | ~~CLOSED~~ AS REQUIRED | 27031 | CFK | Open | CFK | KSK |
| SV-57-141 | Open | OPEN | 27032 | CFK | Open | CFK | GDS |
| SV-57-190 | Open | OPEN | 27033 | CFK | Open | CFK | GDS |
| 57-1091 | Open | OPEN | 27034 | CFK | Open | CFK | KSK |
| SE-57-101 | ~~Closed~~ Open | ~~CLOSED~~ AS REQUIRED | 27035 | CFK | Open | CFK | KSK |
| SE-57-102 | ~~Closed~~ open | ~~CLOSED~~ AS REQUIRED | 27036 | CFK | Open | CFK | KSK |

note 2

CPG 12/19/84

LAB 12/19/84

LAB 12/19/84

TAG ACCOUNTABILITY LOG

P&ID M-57

PENETRATION NO.: P.A.S.S & C.A.C

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| 57-1051 | Closed/ Capped | CLOSED/ CAPPED | 27037 | CFK | CLOSED/ CAPPED | CFK | KSK |
| 57-1045 | Closed/ Capped | CLOSED/ CAPPED | 27038 | CFK | CLOSED/ CAPPED | CFK | KSK |
| 57-1046 | Closed/ Capped | CLOSED/ CAPPED | 27039 | CFK | CLOSED/ CAPPED | CFK | KSK |
| 57-1070 | Closed/ Capped | ~~CLOSED/~~ AS ~~CAPPED~~ REQUIRED | 27040 | CFK | CLOSED/ CLOSED | Closed/ CFK capped | KSK |
| 57-1027 | Closed/ Capped | CLOSED/ CAPPED | 27041 | CFK | CLOSED/ CAPPED | CFK | KSK |
| 57-1085 | Open | AS REQUIRED | 27423 | CFK | ~~CLOSED/~~ OPEN ~~CAPPED~~ | CFK | KSK |
| | | | | | | | |
| | | | | | | | |

CPG 12/19/84

LAH 12/19/84

LAH 12/19/84

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 2

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| SV-57-187 | Closed | AS REQUIRED | 27042 | CFK | Closed | CFK | KSK |
| SV-57-188 | Closed | AS REQUIRED | 27043 | CFK | Closed | CFK | KSK |
| SV-57-189 | Closed | AS REQUIRED | 27044 | CFK | Closed | CFK | KSK |
| SV-57-194 | Open | AS REQUIRED | 27045 | CFK | Open | CFK | KSK |
| 57-1063 | Closed | CLOSED | 27046 | CFK | Closed | CFK | KSK |
| 57-1013 | Closed | OPEN | 27047 | CFK | Closed | CFK | KSK |
| SV-57-151 | Closed | AS REQUIRED | 27048 | CFK | Closed | CFK | KSK |
| SV-57-152 | Closed | AS REQUIRED | 27049 | CFK | Closed | CFK | KSK |
| SV-57-154 | Closed | AS REQUIRED | 27050 | CFK | Closed | CFK | KSK |

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C P&ID M-57, SH. 2

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY | |
|---|---|---|---|---|---|---|---|---|
| SV-57-153 3 | Open | AS REQUIRED | 27051 | CFK | Closed | CFK | KSK | note 2 |
| SV-57-155 | Closed | AS REQUIRED | 27052 | CFK | Closed | CFK | KSK | |
| SV-57-199A | ~~Off~~ Closed | AS Req. ~~CLOSED~~ | 27053 | CFK | ~~Pump A~~ Open | CFK | [illegible] | note 2 |
| SV-57-199B | ~~Off~~ Closed | AS Req. ~~CLOSED~~ | 27054 | CFK | ~~Pump A~~ Closed | CFK | [illegible] | |
| SV-57-129A | Closed | AS Req. ~~CLOSED~~ | 27055 | CFK | ~~Open~~ Closed | CFK | [illegible] | |
| SV-57-129B | Closed | AS Req. ~~CLOSED~~ | 27056 | CFK | Closed | CFK | [illegible] | |
| | | | | | | | | |

WJC 12/20/84
CJG 12/20/84

TAG ACCOUNTABILITY LOG

PENETRATION NO.: P.A.S.S & C.A.C    P&ID M-30, M-57

| VALVE NO./DESCRIPTION | "AS FOUND" POSITION | COMPONENT TAGGED CONDITION | TAG NO. | POSITIONED AND HUNG BY | "AS LEFT" POSITION | COMPONENT RESTORED/ TAG RMVD BY | VERIFIED BY |
|---|---|---|---|---|---|---|---|
| HSS-30-120 | Off | AS REQUIRED | 27057 | CFK | OFF | CFK | KSK |
| HSS-30-111 | 4 (Spare) | AS REQUIRED | 27058 | CFK | 4 (Spare) | CFK | KSK |
| HSS-30-109 | Yes | AS REQUIRED | 27059 | CFK | Yes | CFK | KSK |
| HSS-30-121 | Off | AS REQUIRED | 27422 | CFK | Off | CFK | KSK |
| HSS-57-129 | Pump A | AS REQUIRED | 27060 | CFK | Pump A | CFK | JMA |
| HSS-57-126 | Standby | AS REQUIRED | 27061 | CFK | Stby | CFK | JMA |
| HSS-57-199 | Pump A | AS REQUIRED | 27062 | CFK | Pump A | CFK | JMA |
| HSS-57-196 | Standby | AS REQUIRED | 27063 | CFK | Analyze | CFK | JMA note 2 |
| | | | | | | | |

LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops BOUNDARY 1

LDW 12/19/84
CPG 12/19/84

TEST BOUNDARIES See Attachment B (P&ID's)

TESTED BY RTW DATE 12-20-84

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. 21-1107 | | Cal. Due Date 1-10-85 | |
|---|---|---|---|---|---|---|
| 0 | 46.0 | 2.06 SLM | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| 5 | 46.0 | 2.09 SLM | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| 10 | 46.0 | 2.04 SLM | High | Flow | Test | High |
| 15 | 46.0 | 2.05 SLM | | | | |
| | | | ACCEPTANCE CRITERIA: Later | | | |
| AVERAGE FLOW= 2.06 ~~scc/min~~ SLM | | | TEST TAP VALVES: 57-1061 | | | |
| | | | TESTED PER PROCEDURE ST-1-057-701-1 | | LEAKAGE RATE = 7.5 scc/min | |

Approve pg

CPC 12/19/84

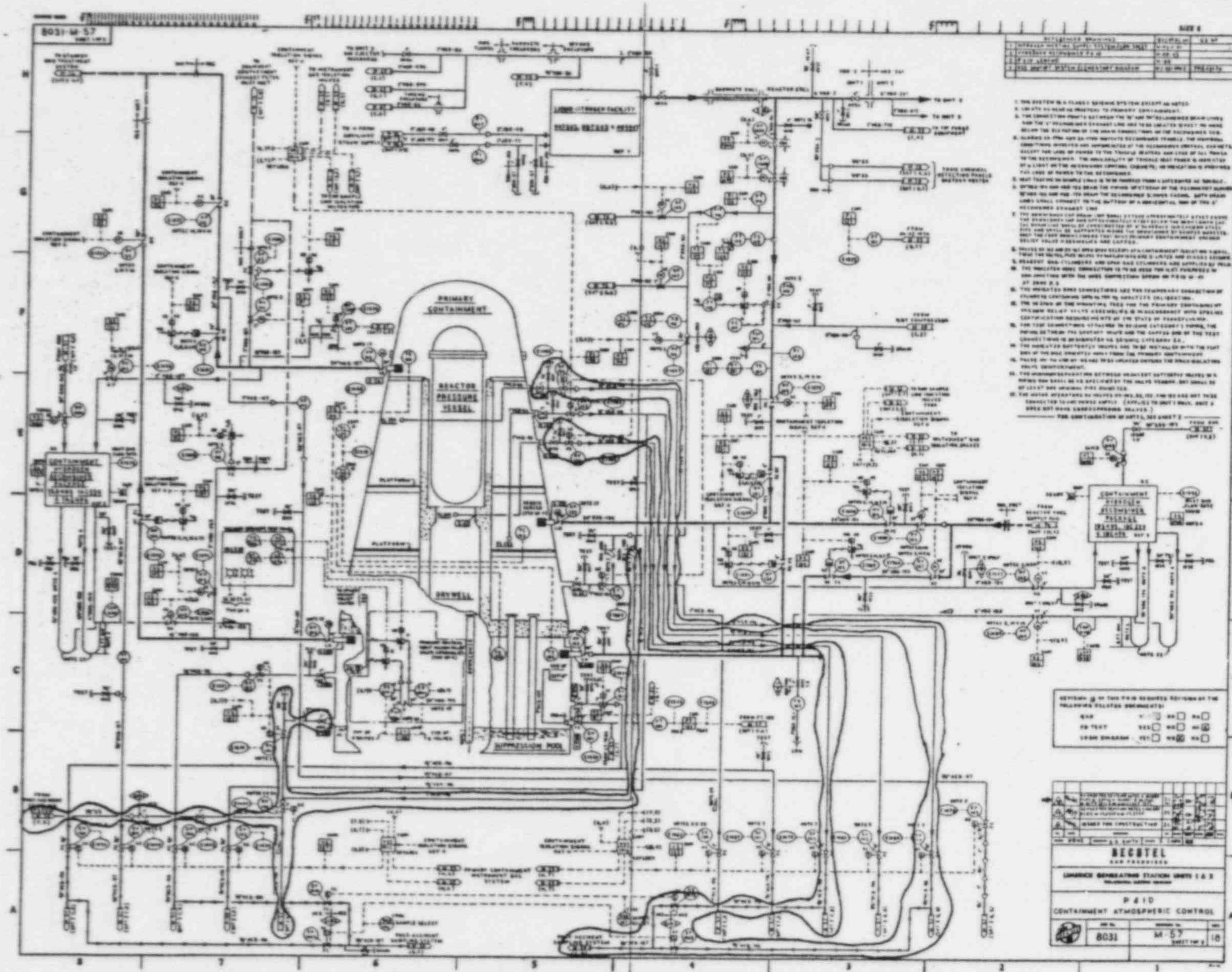
LAH 12/19/84

3850016380

BOUNDARY 1

ST-1-~~057~~ 030-701-1, ~~II~~ Rev. 0
Page ~~26~~ 35 of ~~28~~ 59
WRL/RSE:hf.z

ATTACHMENT B



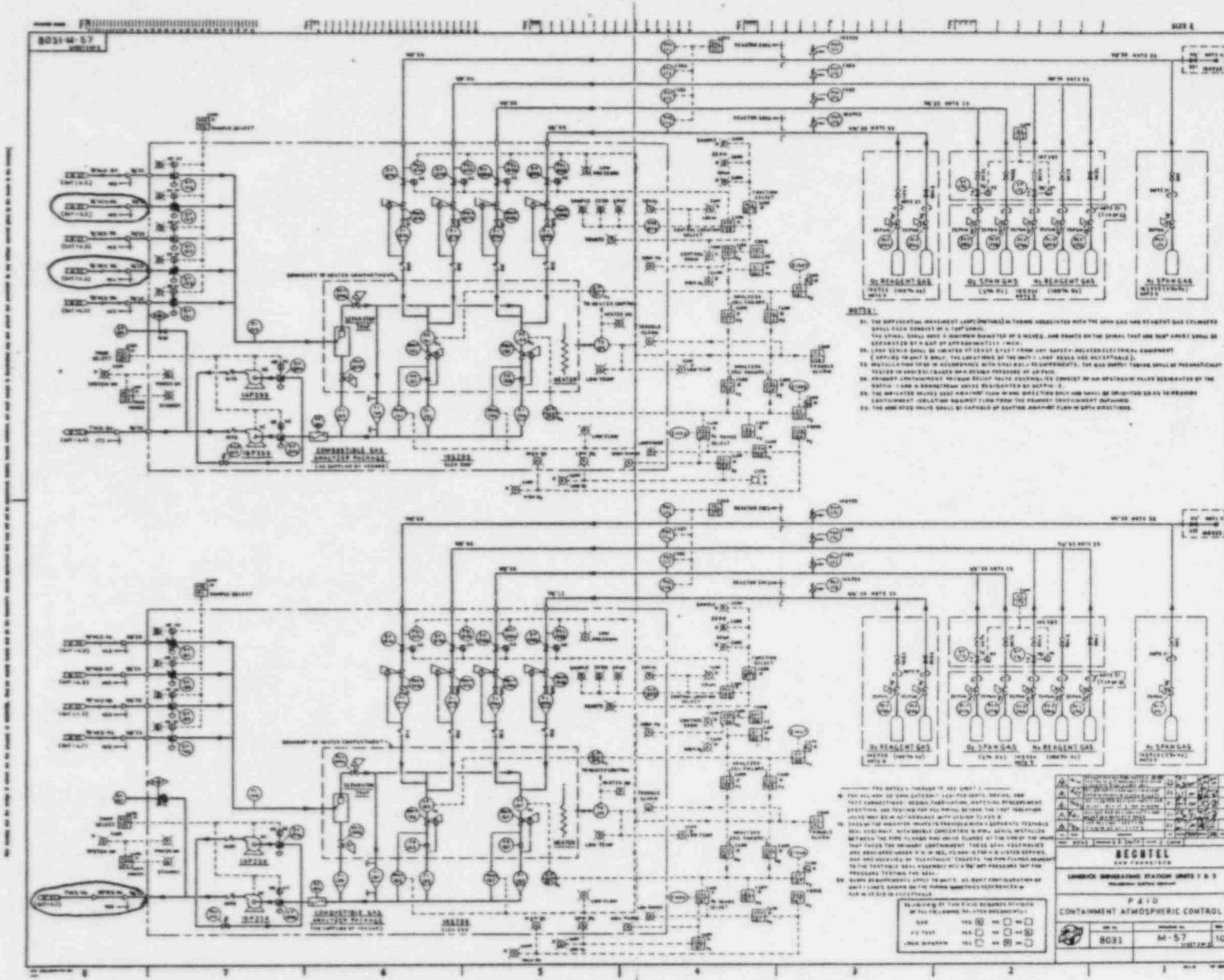
Approve pg LA/d 12/19/84 CPG 12/19/84

3850016380



Boundary 1

ATTACHMENT B



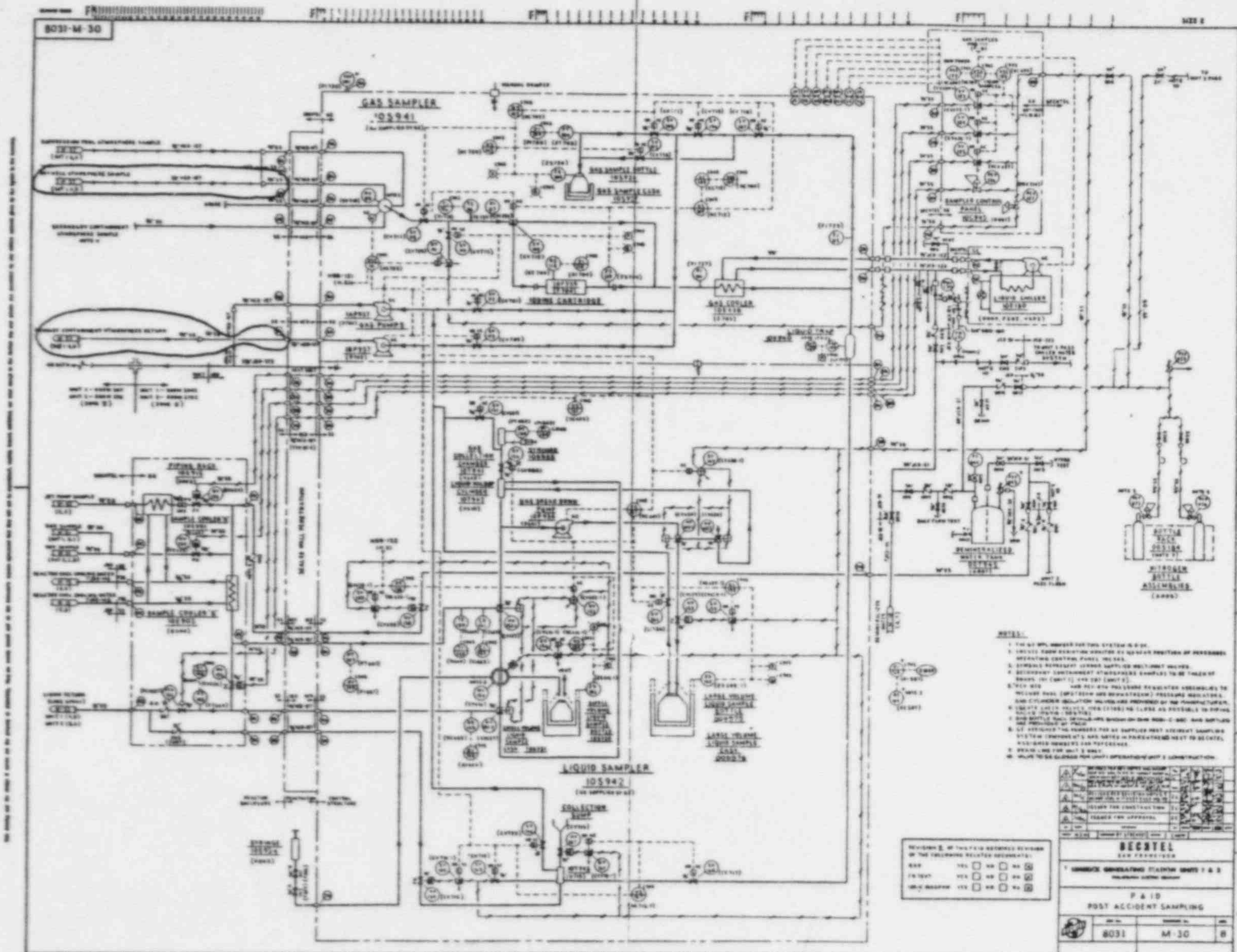
Approve pg LAH 12/19/84 3850016380

C T G 12/19/84



Boundary 1

ATTACHMENT B



P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

BOUNDARY 1
ATTACHMENT A - 1

LAH 12/19/84
CPG 12/19/84

Inspector: M. P. Gallagher

System Mode: N/A  Date: 12/20/84

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| 105941 | PASS Sampler | OPEN | see note 1 | | |

# LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops Boundary 2

LAH 12/19/84

TEST BOUNDARIES See Attachment B (P&ID's)

CPG 12/19/84

TESTED BY MPB DATE 12/20/84

| TIME | PRESSURE (psig) | FLOW (scc/min) |
|---|---|---|
| 0 | 46.0 | 82.9 |
| 5 | 46.0 | ~~0~~ 81.3 |
| 10 | 46.0 | ~~0~~ 81.6 |
| 15 | 46.0 | ~~0~~ 80.2 |
| ~~20~~ | ~~0~~ | |
| | | |

AVERAGE FLOW= 81.5 scc/min

LLRT Test Box No. 21-1107 | Cal. Due Date 1-10-85

VOLUMETRICS LRM VALVE/SWITCH POSITIONS

| RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
|---|---|---|---|
| Low | Flow | Test | Low |

ACCEPTANCE CRITERIA: Later CPG 12/19/84

TEST TAP VALVES: 57-~~1061~~ 1062 LAH 12/19/84

TESTED PER PROCEDURE ST-1-057-701-1 | LEAKAGE RATE = 6 scc/min

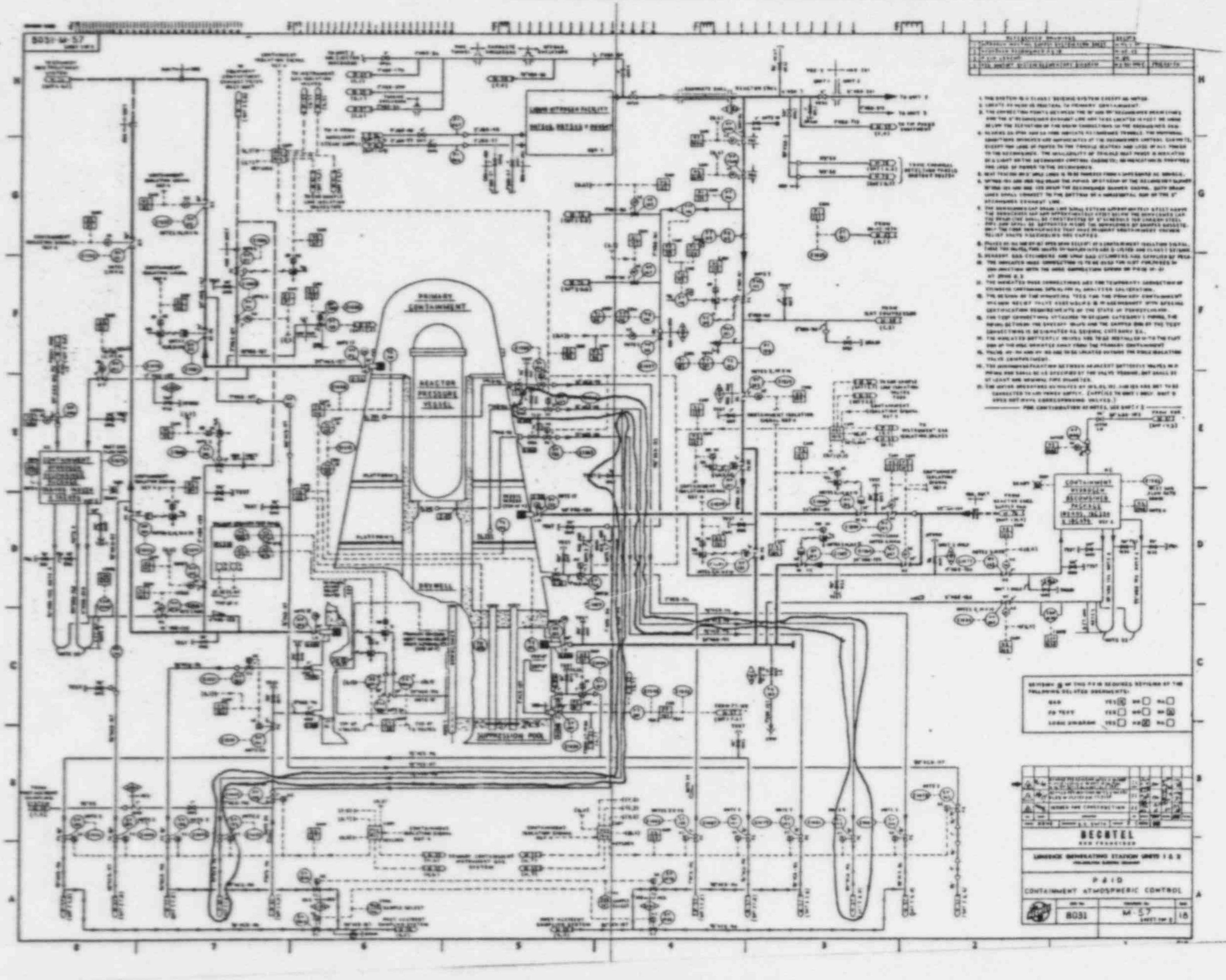
3850016380



C G 12/19/84 Approve by LAB 12/19/84

Boundary Z

ATTACHMENT B

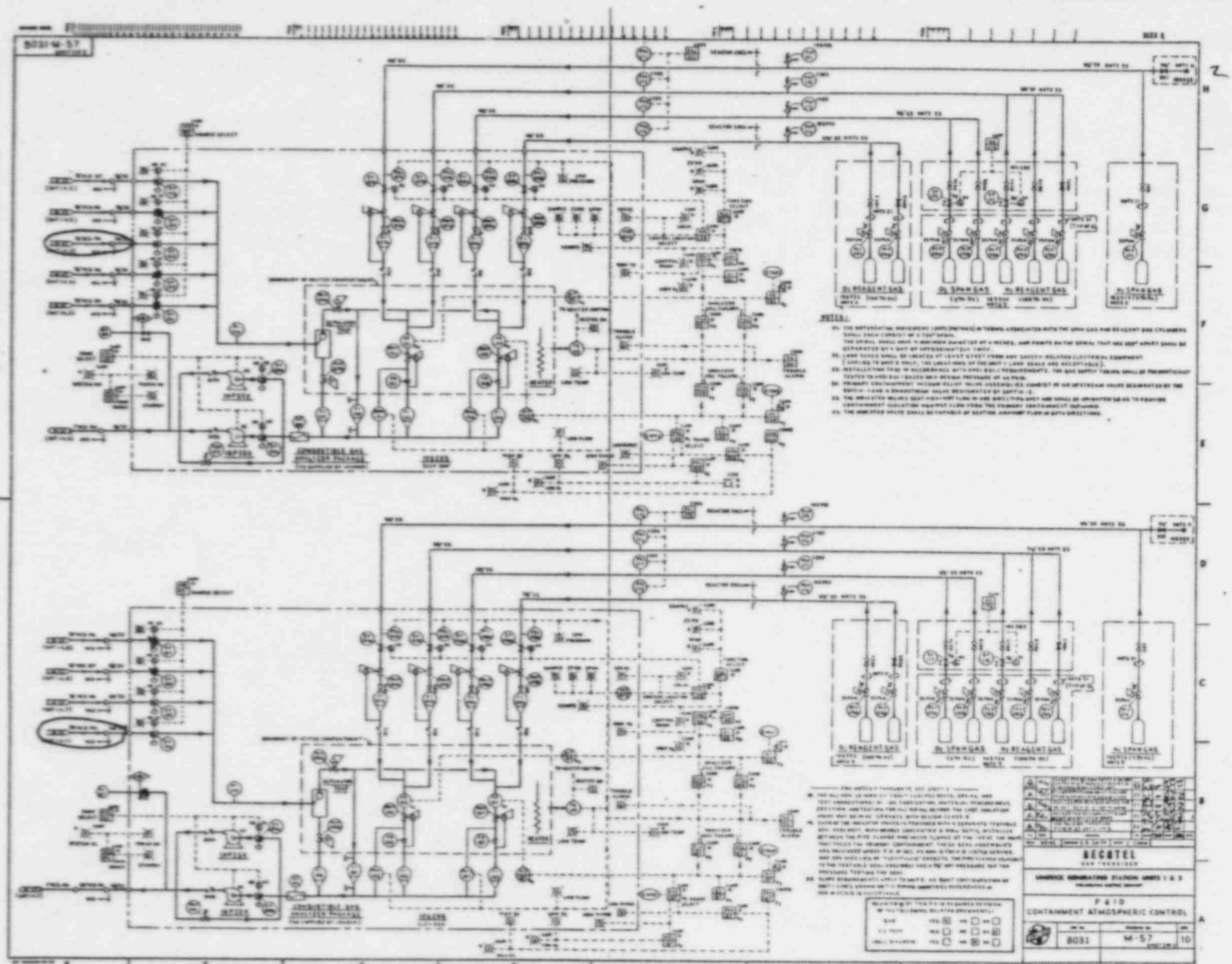


3850016380 030



Approve pg 12/19/84
CPG 12/19/84
Boundary Z

ATTACHMENT B



P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

BOUNDARY Z

ATTACHMENT A-2

AAH 12/11/84

CPC 12/19/84

Inspector: ______________________

System Mode: ______________________ Date: __________

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | | | | | |

3850016380

# LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops Boundary 3

LAY 12/19/84 CPG 12/19/84

TEST BOUNDARIES See Attachment B (P&ID's)

TESTED BY Wayne Lewis DATE 12/20/84

| TIME | PRESSURE (psig) | FLOW SLM (~~scc/min~~) |
|---|---|---|
| | 46.0 | 11.76 |
| | 46.0 | 11.82 |
| | 46.0 | 11.81 |
| | 46.0 | 11.81 |
| | | |
| | | |

AVERAGE FLOW= 11.80 SLM ~~scc/min~~

LLRT Test Box No. 21-1107 | Cal. Due Date 1/10/85

VOLUMETRICS LRM VALVE/SWITCH POSITIONS

| RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
|---|---|---|---|
| HIGH | FLOW | TEST | HIGH |

ACCEPTANCE CRITERIA: Later

TEST TAP VALVES: 57-~~1061~~ 1047

TESTED PER PROCEDURE ST-1-057-701-1 | LEAKAGE RATE = 5 scc/min

LAY 12/19/84
CPG 12/19/84

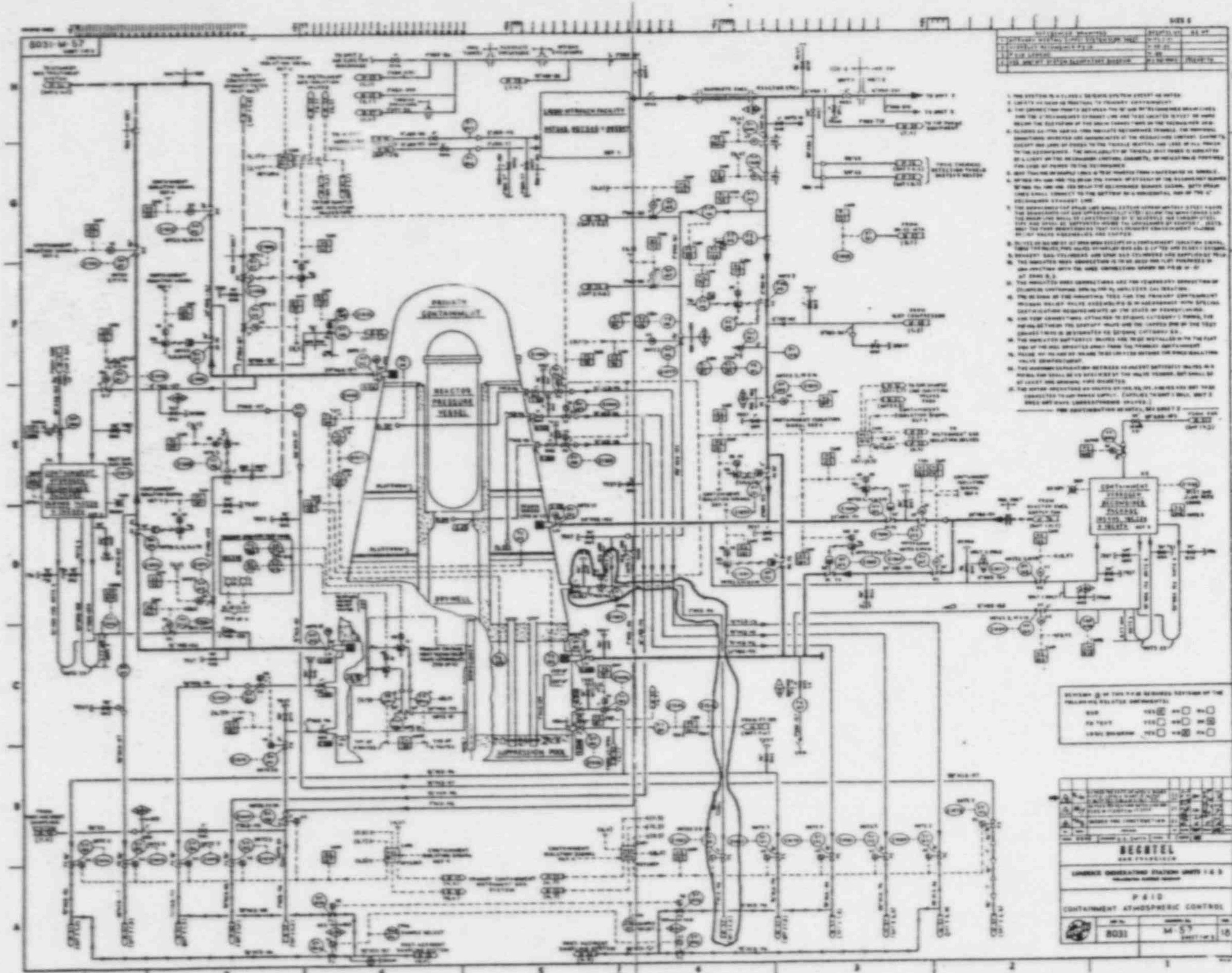
3850016380 030

ST-1-~~057~~-701-1, Rev. 0
Page ~~26~~ 43 of ~~28~~ 57
WRL/RSE:hfz

12/19/84 C~ Approve by LAH 12/19/84

BOUNDARY 3

ATTACHMENT B



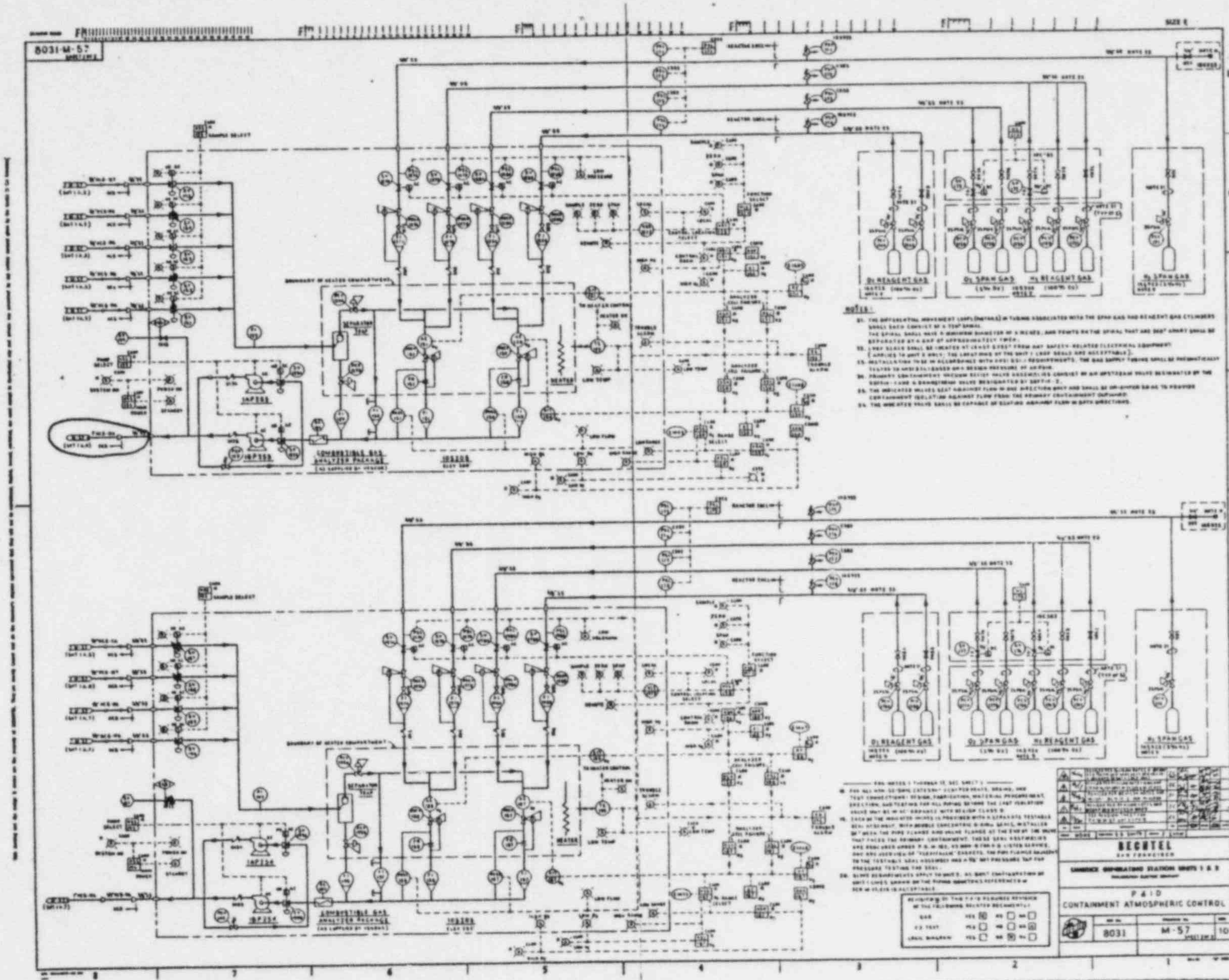
3850016380

ST-1-~~051~~ 030-701-1, Rev. 0
Page ~~26~~ 25 of ~~28~~ 59
WRL/RSE:hfz

CPC 12/19/84 Approve pg LAW 12/19/84

Boundary 3

ATTACHMENT B



P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

BOUNDARY 3
ATTACHMENT A - 3

LAH 12/19/84

CJR 12/19/84

Inspector: WAYNE LEWIS

System Mode: ______ Date: ______

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | NONE VISIBLE | | | | |

NOTE: HEARD CHECK VALVE 57-1068B LIFTING

# LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops Boundary 4

LAH 12/19/84
CJG 12/19/84

TEST BOUNDARIES See Attachment B (P&ID's)

TESTED BY R. Mandik DATE 12/20/84

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. 21-1107 | | Cal. Due Date 1/10/85 | |
|---|---|---|---|---|---|---|
| | 46.0 | ~~0~~ 176.0 | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| | 46.0 | 176.9 | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| | 46.0 | 178.0 | Low | Flow | Test | Low |
| | 46.0 | ~~0~~ 182.3 | | | | |
| | | | | | | |
| | | | ACCEPTANCE CRITERIA: Later | | | |
| | | | TEST TAP VALVES: 57-~~1061~~ 1070 | | | |
| AVERAGE FLOW= 178.3 scc/min | | | TESTED PER PROCEDURE ST-1-057-701-1 | | LEAKAGE RATE = 0.2 scc/min | |

LAH 12/19/84
CJC 12/19/84

3850016380

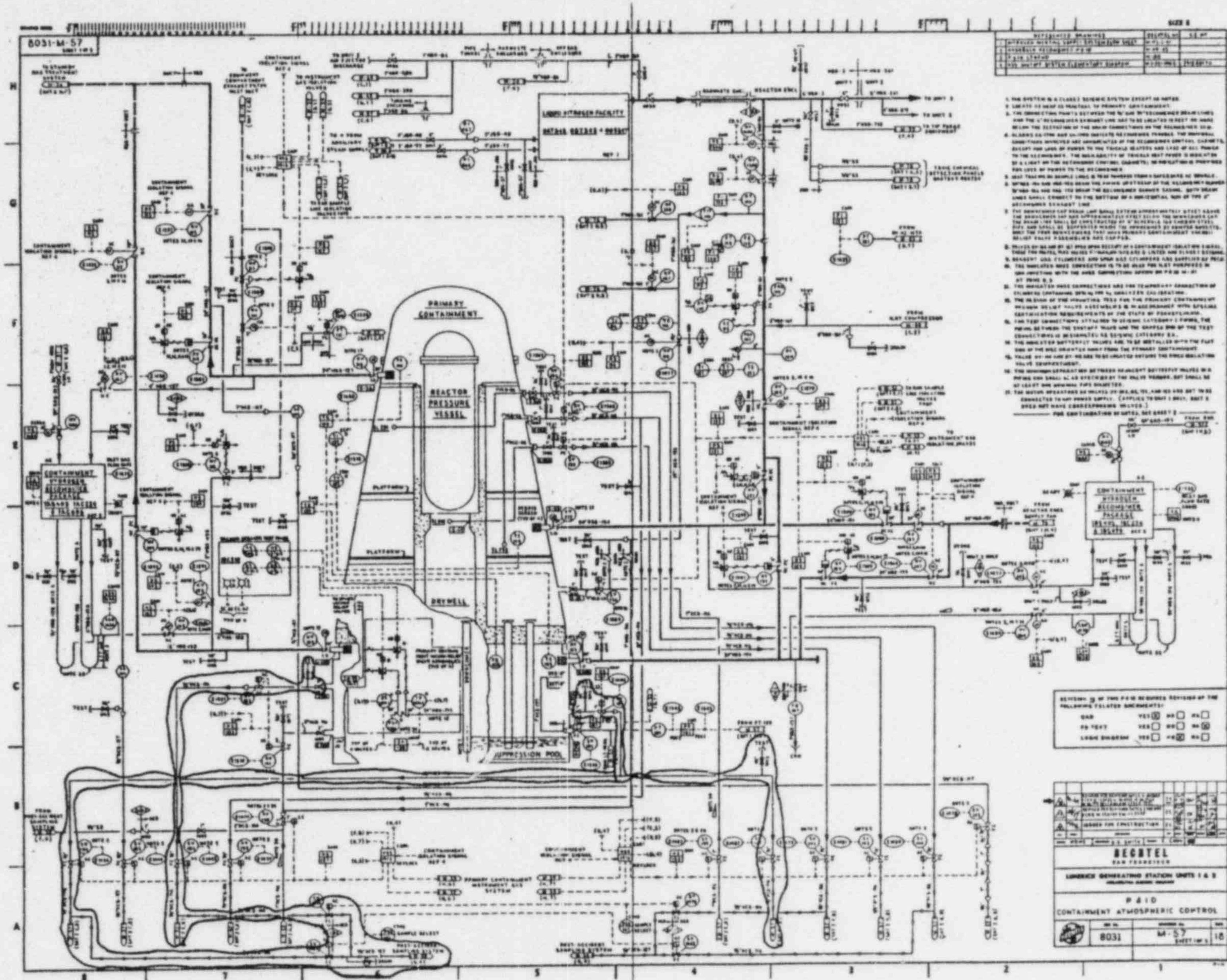
~~057~~ 030

ST-1-~~057~~030-701-1, Rev. 0
Page ~~26~~ 46 of ~~28~~ 59
WRL/RSE:hfz

12/19/84 CJG Approve by LGH 12/19/84

BOUNDARY 4

ATTACHMENT B

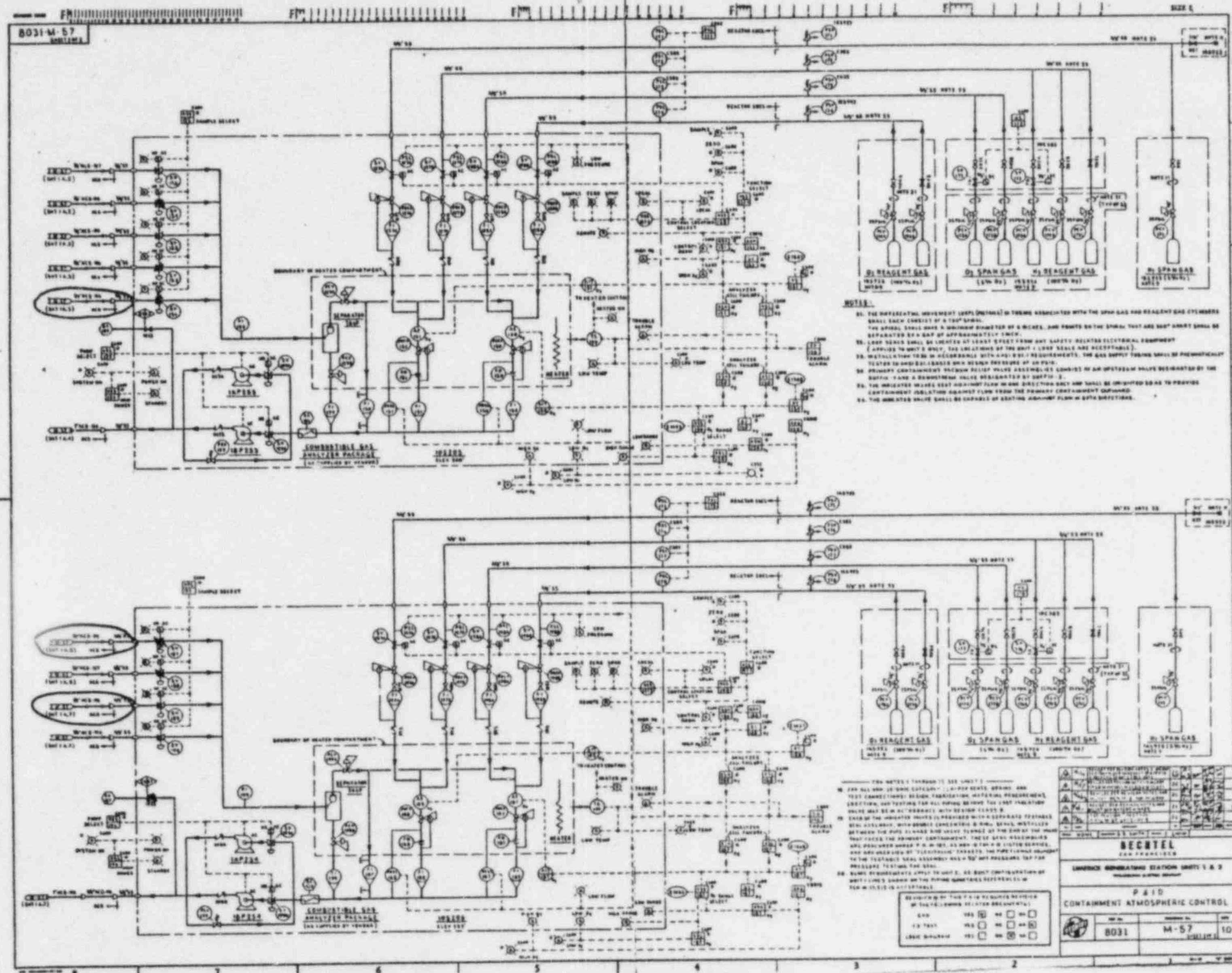



4

2/19/84 Approve by LDW 12/19/84

Burnout 4

ATTACHMENT B



Approve by LAH 12/19/84

CJG 12/19/84

ST-1-~~057~~ 030-701 1, Rev. 0
Page ~~26~~ 48 of ~~28~~ 59
WRL/RSE:hfz

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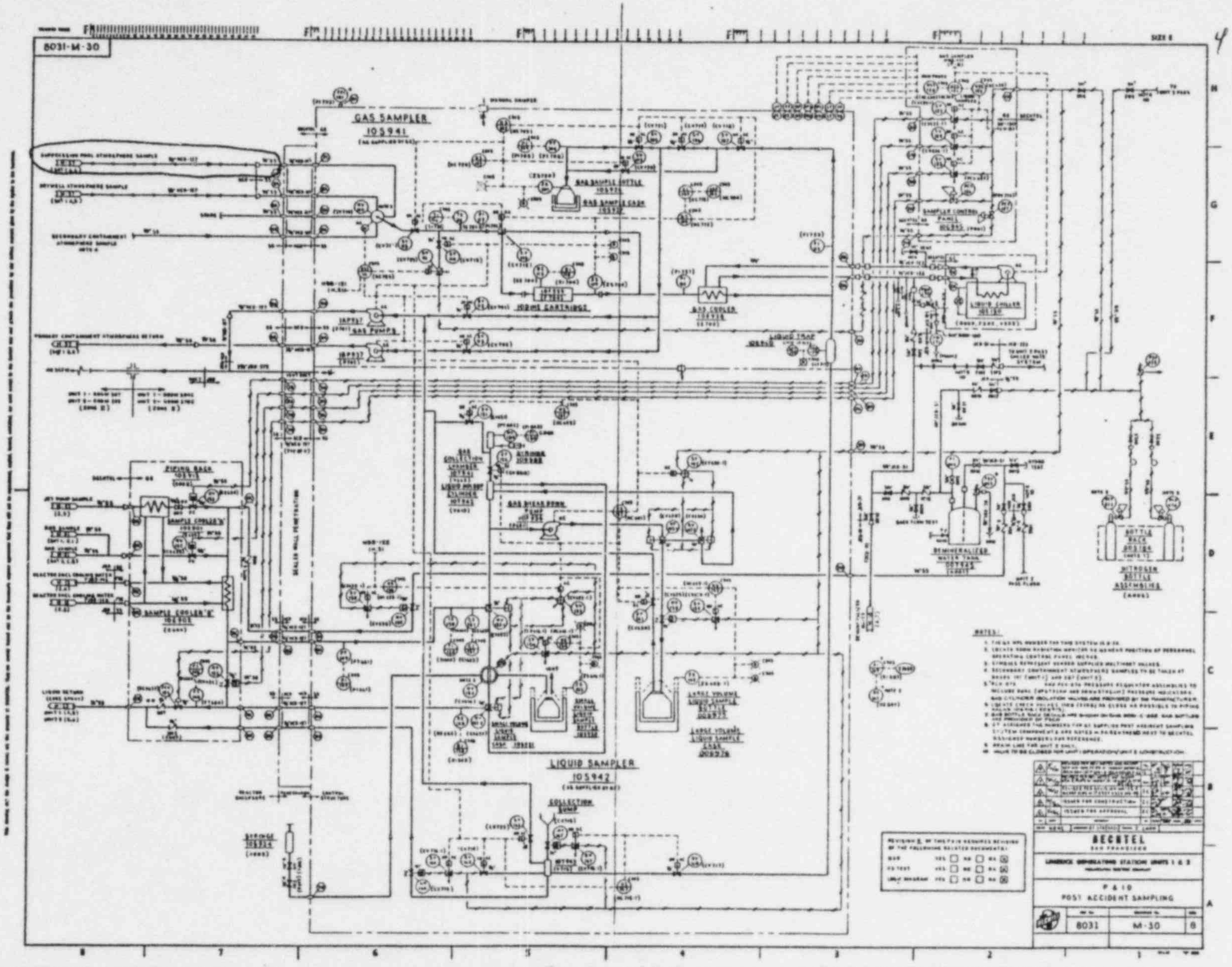
Boundary 4

ATTACHMENT B



P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

Boundary 4
ATTACHMENT A -4

LHA 12/19/84

CJK 12/19/84

Inspector: Gary Hutchison

System Mode: ______________________ Date: __________

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | None Visible Leakage | | | | |

# LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops Boundary 5

LAH 12/19/84

TEST BOUNDARIES See Attachment B (P&ID's)

CPG 12/19/84

TESTED BY C. Klebe DATE 12/20/84

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. 21-1107 | | Cal. Due Date 1/10/85 | |
|---|---|---|---|---|---|---|
| 0 | 46.0 | 45.8 | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| 5 | 46.0 | 46.3 | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| 10 | 46.0 | 46.6 | Low | Flow | Test | Low |
| 15 | 46.0 | 45.9 | | | | |
| 20 | 46.0 | 45.8 | | | | |
| 25 | 46.0 | 46.7 | ACCEPTANCE CRITERIA: Later | | | |
| | | | TEST TAP VALVES: 57-~~1061~~ 1043 | | | |
| AVERAGE FLOW= 46.2 scc/min | | | TESTED PER PROCEDURE ST-1-057-701-1 | | LEAKAGE RATE = 2.3 scc/min | |

CPG 12/19/84

LAH 12/19/84

3850016380 030

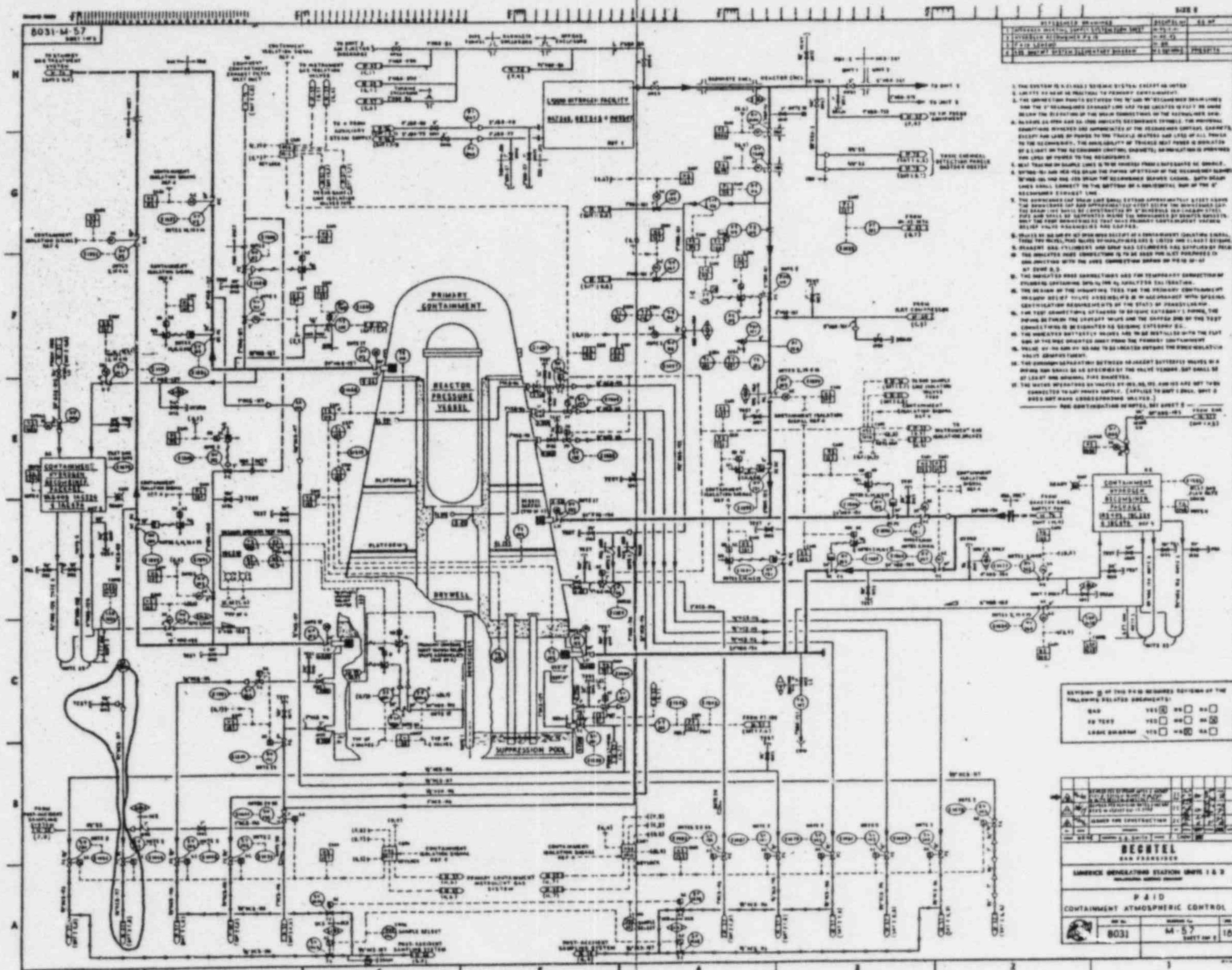
ST-1-~~057~~-701-1, Rev. 0
Page ~~26~~ 56 of ~~28~~ 59
WRL/RSE:hfz

CPG 12/19/84 Approved by LAH 12/19/84

BOUNDARY 5

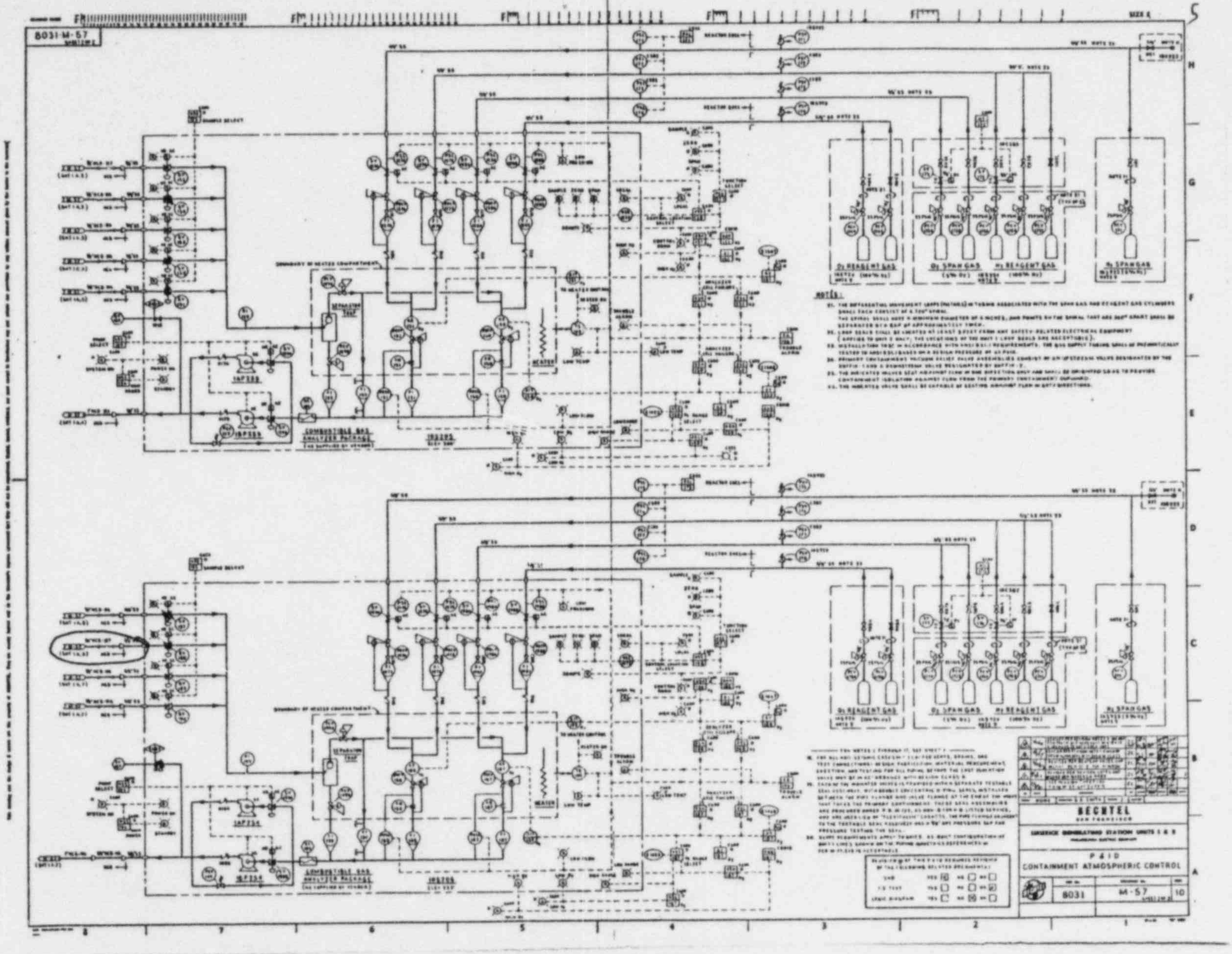
ATTACHMENT B

5



12/19/84 Approve by LAY 12/19/84
Boundary 5

ATTACHMENT B



P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

Boundary 5
ATTACHMENT A-5 LDK 12/19/84

CPG 12/19/84

Inspector: ____________

System Mode: ____________ Date: ________

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | No Visible Leakage | | | | |

# LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. P.A.S.S & C.A.C

COMPONENTS UNDER TEST Atmospheric Sample Loops Boundary C

LAH 12/19/84
CPG 12/19/84

TEST BOUNDARIES See Attachment B (P&ID's)

TESTED BY C. Klebe DATE 12/20/84

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. 21-1107. | | Cal. Due Date 1/10/85 | |
|---|---|---|---|---|---|---|
| 0 | 45.9 | 95.8 | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| 5 | 45.9 | 96.3 | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| 10 | 45.9 | 96.2 | | | | |
| 15 | 45.9 | 95.4 | | | | |
| 20 | 45.9 | 95.7 | | | | |
| 25 | 45.9 | 96.0 | ACCEPTANCE CRITERIA: Later | | | |
| | | | TEST TAP VALVES: 57-~~1061~~ 1044 | | | |
| AVERAGE FLOW= 95.9 scc/min | | | TESTED PER PROCEDURE ST-1-057-701-1 | | LEAKAGE RATE = 0.5 scc/min | |

CPG 12/19/84
LAH 12/19/84

3850016380 030

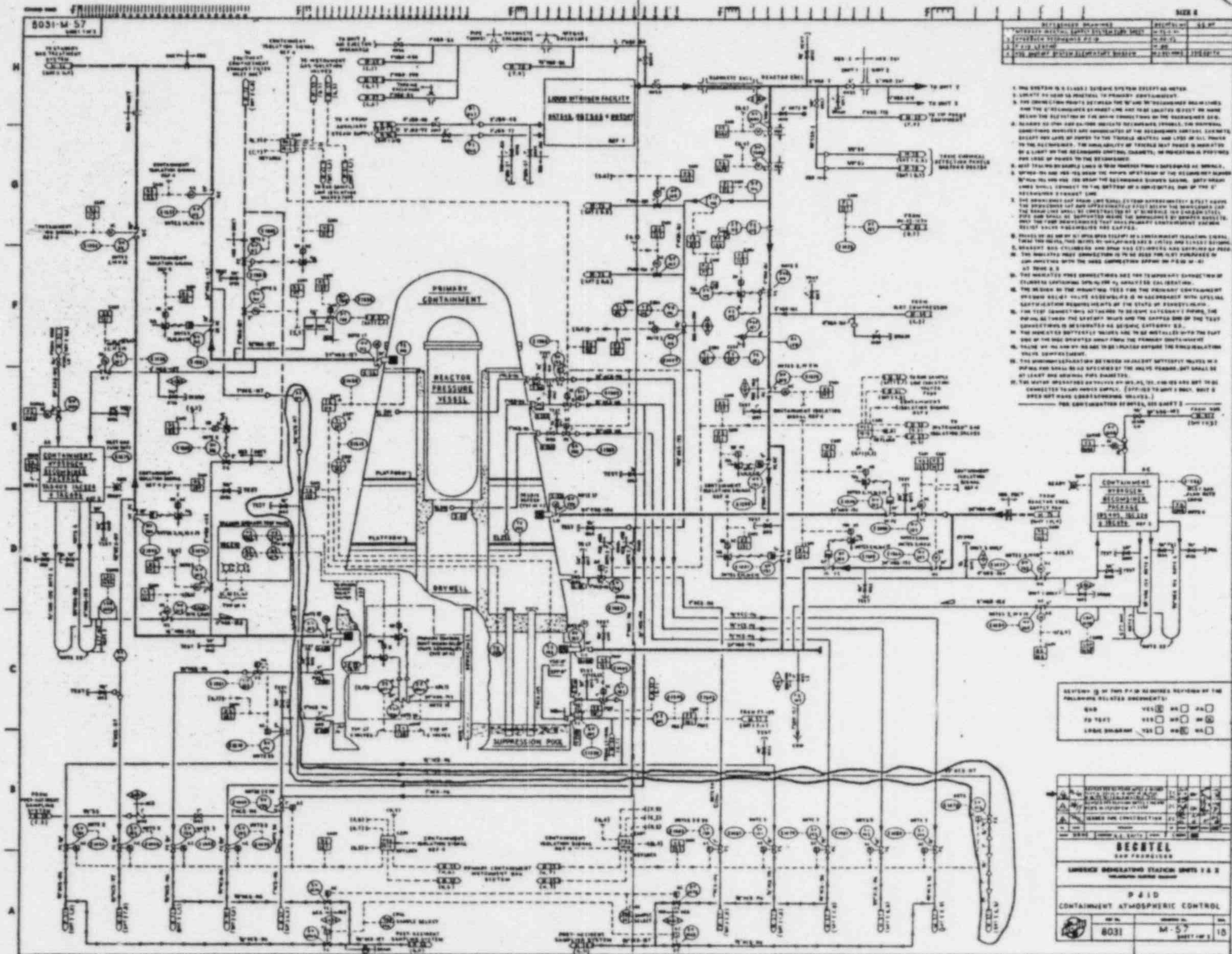
ST-1-~~057~~-701-1, Rev: 0
Page 26 55 of ~~285~~ 57
WRL/RSE:hfz

CPG 2/19/84

Approve pg LAY 12/19/84

Boundary 6

ATTACHMENT B



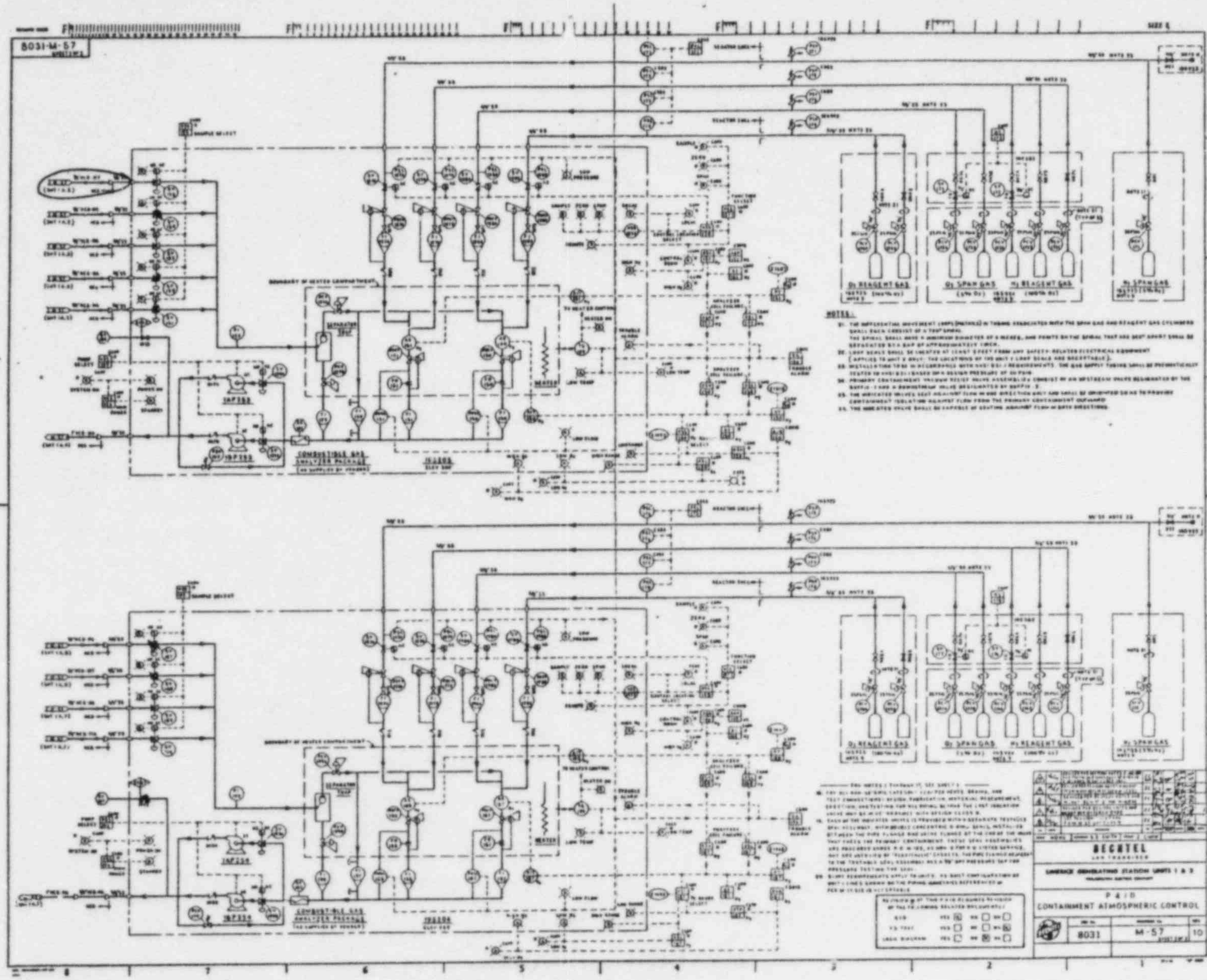
3850016380 030

ST-1-~~057~~-701-1, Rev. 0
Page ~~26~~ of ~~28~~ 59
WRL/RSE:hfz

C P 12/19/84 Approve by LAH, 12/19/84

BOUNDARY 6

ATTACHMENT B



P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

Boundary C

ATTACHMENT A-C

LAH 12/19/84

CPC 12/19/84

Inspector: G. Hutchison

System Mode: ______________ Date: ________

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | None Visible Leakage | | | | |

Delete by LHB 12/19/84

CPR 12/19/84

P.A.S.S & C.A.C SAMPLE LOOPS
CONTAMINATED PIPING INSPECTION

DATA SHEET

ATTACHMENT A

Inspector: ____________________

System Mode: ____________________ Date: __________

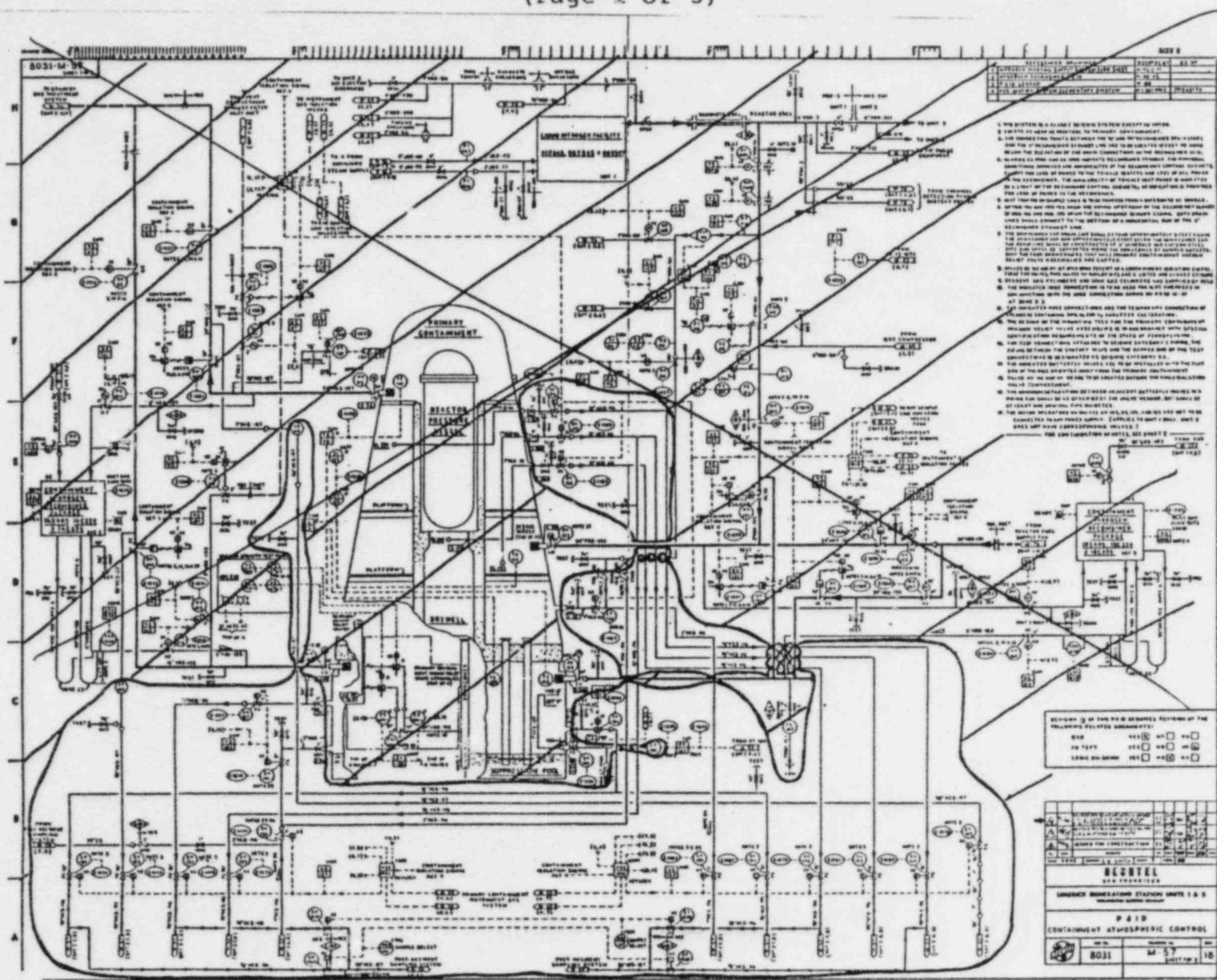
| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | | | | | |

Delete pg LDN 12/19/84

CJG
12/19/84

ATTACHMENT B

(Page 1 of 3)



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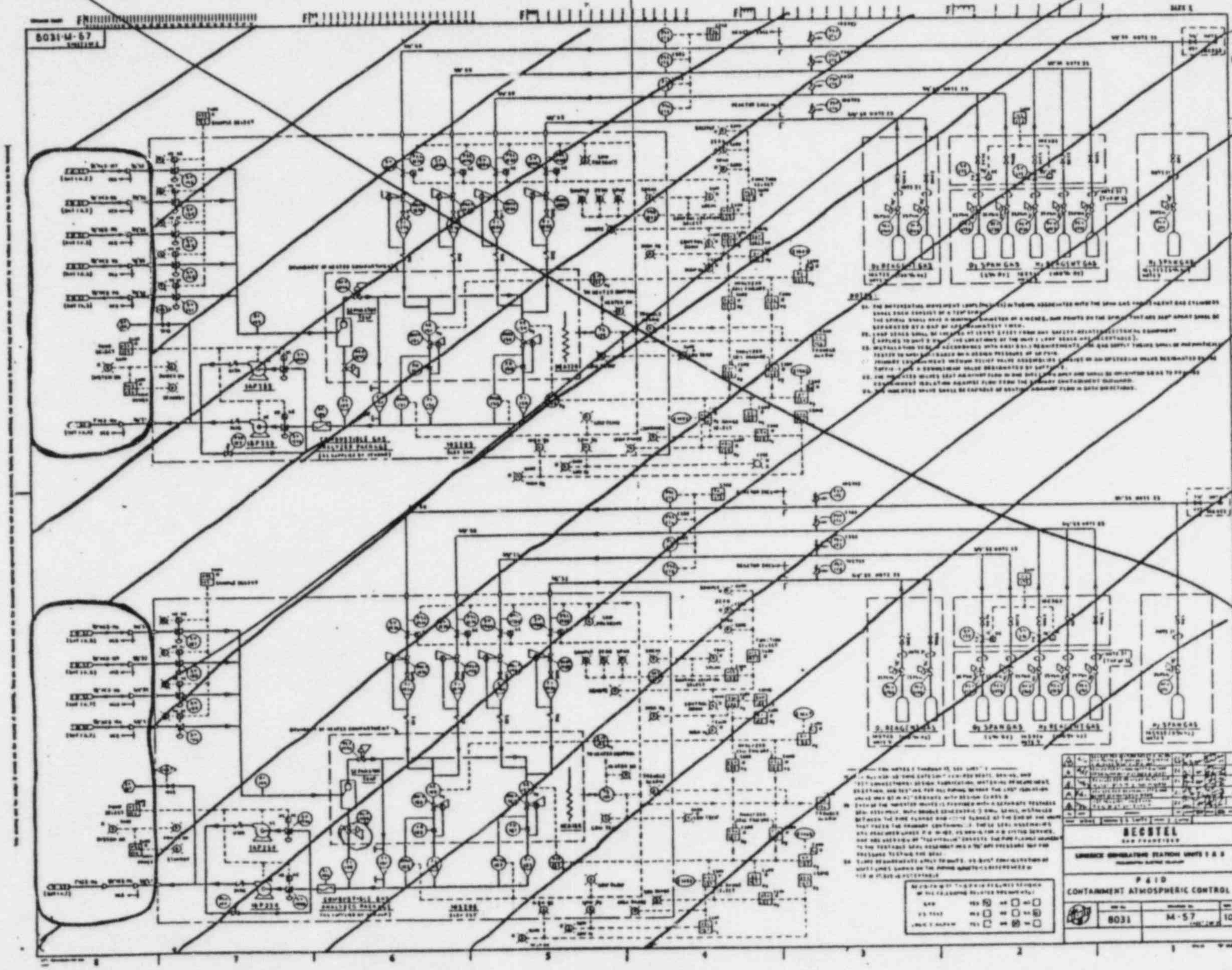
CPF 12/19/84

ATTACHMENT B

(Page 2 of 3)

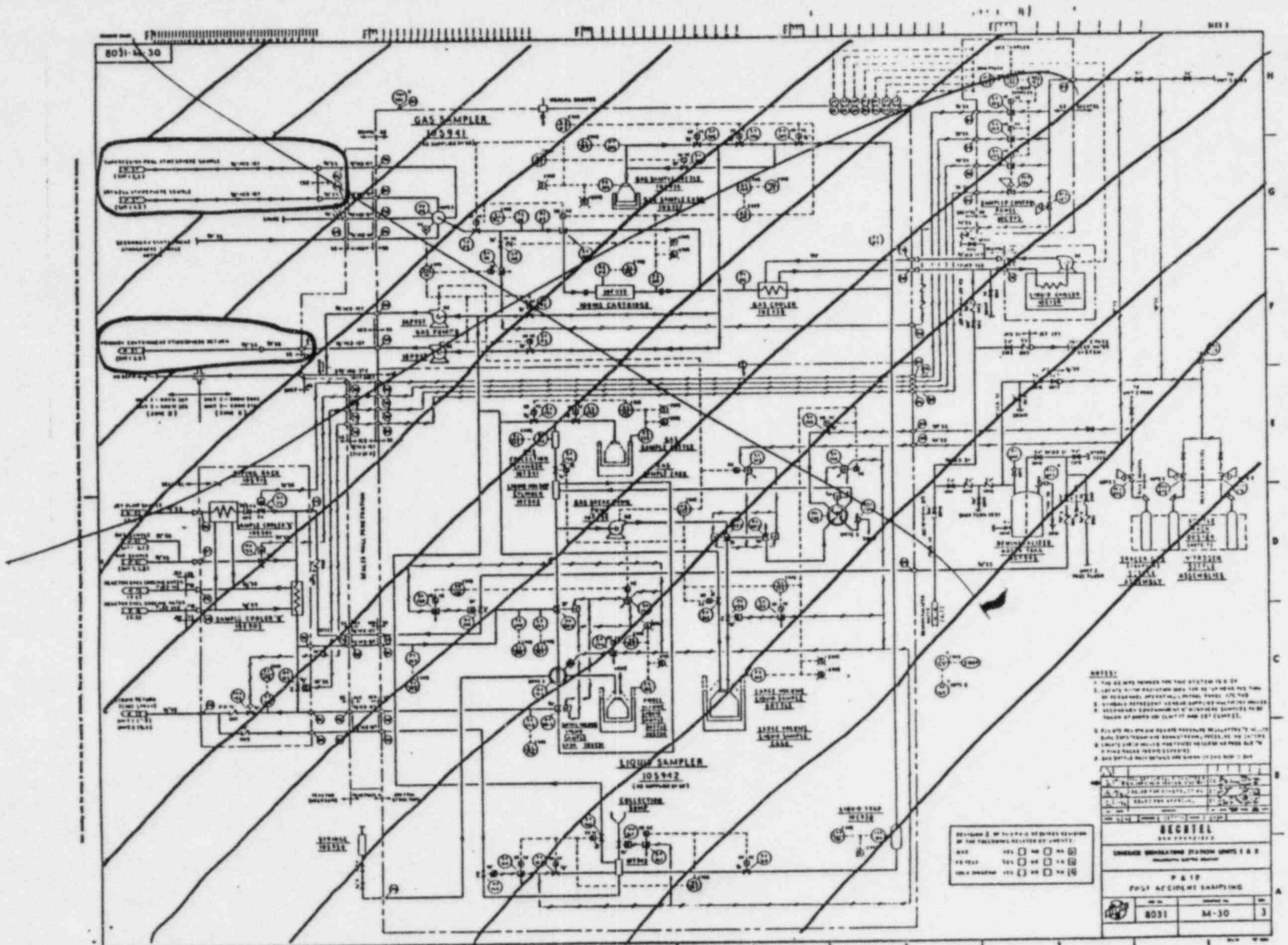


Delete per [illegible] 12/19/84

CJG 12/11/84

ATTACHMENT B

(Page 3 of 3)



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P.A.S.S & C.A.C SAMPLE LOOPS CONTAMINATED

PIPING INSPECTION

DATA SHEET (1 of 1)

"IVOR"

(INDEPENDENT VERIFICATION OF RESTORATION)

The following identified steps in the procedure require an independent verification of completion.

| Step No. | Action | INITIALS |
|---|---|---|
| 9.4.1.21 | Thermal Overload REATTACHED | |
| ~~9.4.1.26~~ | ~~Lead RECONNECTED~~ | |
| ~~9.4.1.27~~ | ~~Lead RECONNECTED~~ | |
| ~~9.4.1.28~~ | ~~Temporary Jumpers REMOVED~~ | |
| ~~9.4.1.29~~ | ~~Temporary Jumpers REMOVED~~ | |

LAJ 12/19/84
CPG 12/19/84

3850016380

## ADDITIONAL ACTION/TEST COMMENTS

Additional Action:

Additional Action required if other portions of test did not function properly or other discrepancies were noted during test.

1. MRF Submitted___ (MRF - Number)________________ _____
2. Other Action___(Signature - Time/Date)________________ _____

TEST COMMENTS

NOTE 1 - Verified 0 psig at PI-57-129; therefore leak is not in CAC Sampling Panel. Total leakage was ~~1850~~ 2050 cc/min ~~PI-30-104 indicated 13psig; therefore showing a leak in the PASS panel~~. when SV-57-147B & SV-57-146B were closed system leakage indicated 31 cc/min. —Boundary 1

Note 2 - Valves SV-57-150, SV-57-132, SV-57-134, SV-57-181, SV-57-133 were left closed and valve SV-57-199A was left open as requested for I+C testing. HSS-57-18 was left in analyze as requested for I+C testing.

If ANY entry is made on this page, sign bottom of cover sheet.

ATTACHMENT 4A

3850016380


JAM/RSE:jmm
[signature] 10/15/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-049-701-1 RCIC PUMP CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason 920 # on 5/4
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1 2. MRF No.________
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Kevin J. Walsh 1/11/85

Performed By: (Sign/Date) ________ ____

Informed Test Complete: (ACO or CO) (Sign/Date) Langley 1-11-85
(Time) 12:10

Reviewed By: (SSVN or STA) (Sign/Date) [signature] 1/11/85

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ____

Informed of Test Results: (CO or ACO) (Sign/Date) ________ ____
(Time) ____

Shift Supervision: (Sign/Date) ________ ____

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ________

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) Kevin J. Walsh 1/11/85

1.0 PURPOSE

To Inspect and measure any leakage of the RCIC Pump and RCIC System components that are directly associated with system piping that could carry contaminated fluids during a serious accident or transient. This inspection shall be implemented while the system is operating in the test mode.

2.0 REFERENCES

2.1 8031-M-49, Reactor Core Isolation Cooling

2.2 8031-M-50, RCIC Pump Turbine

2.3 NUREG-0737

3.0 TEST EQUIPMENT

3.1 Graduated Cylinders(s)

3.2 One-Liter Bottle(s)

3.3 Assorted funnels

3.4 Stopwatch

3.5 Inspection mirror w/handle

4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section.

4.2 Leakage rates of greater than 5 drops per min. (.25 cc/Min) shall be quantified. Use "≤ 5 drops/min" on Attachment A for Components with leakage rates of 5 drops per min or less.

4.3 Steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 If any component exhibits excessive leakage notify SSVN immediately.

5.0 PREREQUISITES

5.1 Request RWP and HP Assistance when required.

5.2 Inspector is familiar with the RCIC system location and layout.

5.3 The RCIC pump must be running, for Surveillance Test ST-6-049-230-1 or per S49.1.D, to inspect it's associated piping and components.

5.4 Obtain copy of previous inspection's Attachment A.

5.5 Coordinate with Operator running the system to allow pump run durations to be extended for the inspection.

6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation — Initials

6.1.2 Verify all prerequisites are satisfied. [illegible]

6.1.3 Record appropriate information for each piece of measurement and test equipment used with a PECo number.

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| STOPWATCH | VICTOR | 53-0194 | 9-13-85 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Initials

6.2 Shift Permission to Test

6.2.1 Obtain Shift Supervision's permission to start test. ____EOC____

6.2.2 Obtain Control Room Operator's permission to start test. ________

____RW____
ACO

1-11-85 / 10:17
Date Time

6.3 RCIC Pump Contaminated Piping Inspection

ACTUAL LEAKAGE RATE MEASUREMENT METHODS WILL BE LEFT TO THE DISCRETION OF THE INSPECTOR. THE ONLY GUIDLINES BEING THAT ALL DATA WILL BE A MEASURED QUANTITY OF FLUID OVER TIME USING A STOPWATCH. DROPS PER MINUTE CAN BE USED AS A MEASUREMENT METHOD WHERE 20 DROPS = 1cc. ALL RECORDED DATA SHALL BE IN CUBIC CENTIMETERS PER MIN. (cc/min).

6.3.1 For all in line components within the boundaries of Attachment B, which exhibit leakage, record on the Data sheet Attachment A the Leakage Rate and a description of the location of the leak. Pay particular attention to system components identified as having exhibited measurable leakage in the previous inspection.

6.3.2 From the leakage rate data on Attachment A, calculate the total system leakage rate and document the results below.

System Leakage Rate

____1____cc/min

.000264 gal/min
(1 cc/min = 0.000264 gal/min)

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6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit. RJR * SEE NOTE

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for its repair.

7.0 RETURN TO NORMAL

7.1 Inform SSVN and ACO test is complete. RJR

8.0 ACCEPTANCE CRITERIA

8.1 The RCIC Pump and its associated components shall not exhibit a leakage rate of greater than (later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN

DATA SHEET

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS

TOTAL SYSTEM LEAKAGE OF 1 cc/min. THIS IS JUDGED TO BE ACCEPTABLE -

3850016380



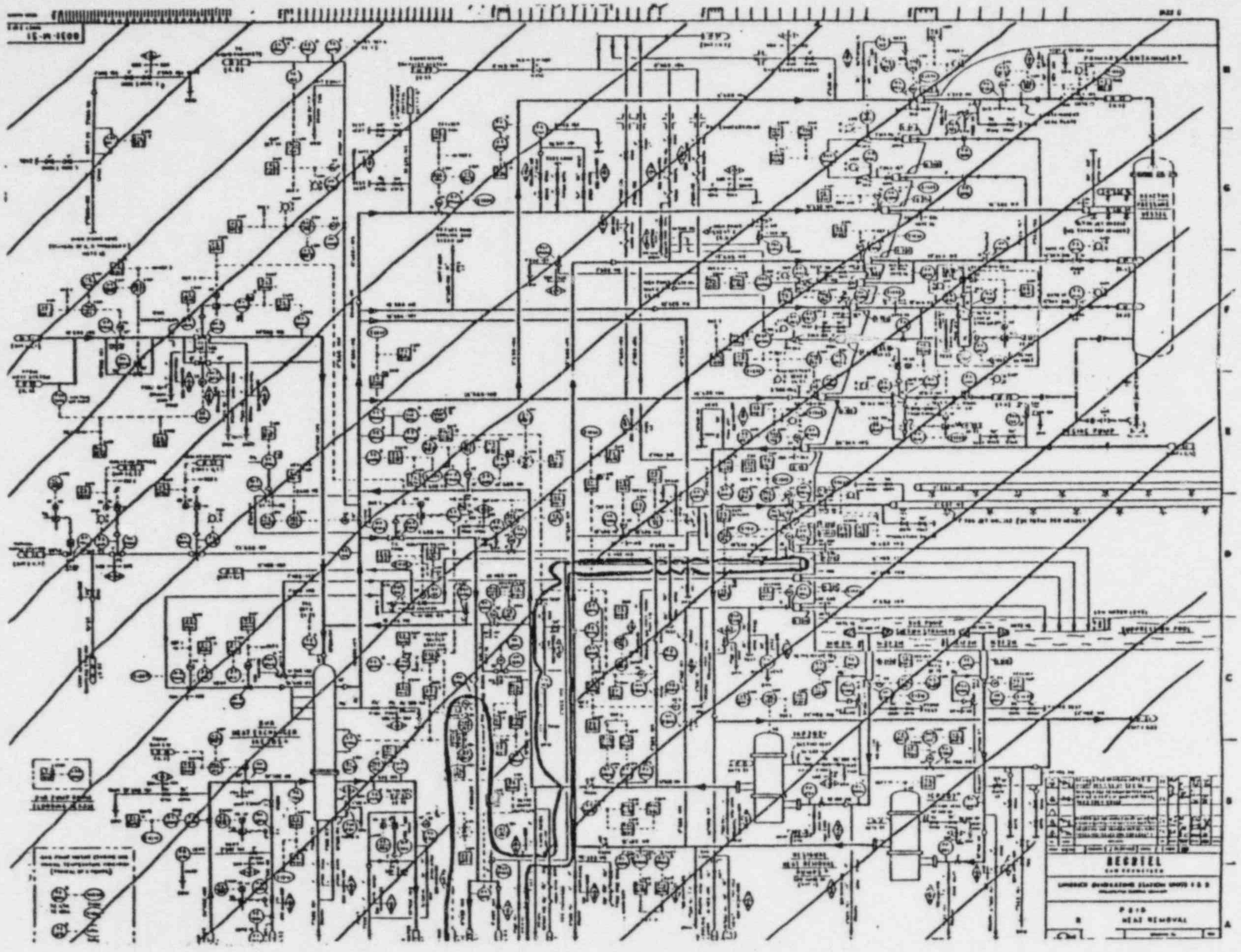
Attachment A

Inspector: KEVIN WALSH

System Mode HIGH PRESSURE TEST CST TO CST Date: 1/11/85

| Component No. | Component Description | Comp. Mode (on/Off (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| HV49-~~1F022~~ 1032 | SAFEGUARD PIPING FILL SUPPLY VALVE | OPEN | 3 DROPS PER MIN | | |
| HV49-1F022 | TEST RETURN TO CST VALVE | THROTTLED | 12 DROPS PER MIN | | |
| HV49-1F012 | RCIC PUMP DISCHARGE VALVE | OPEN | 5 DROPS PER MIN | | |
| TOTAL | | | 20 DROPS/MIN | | |

ATTACHMENT B



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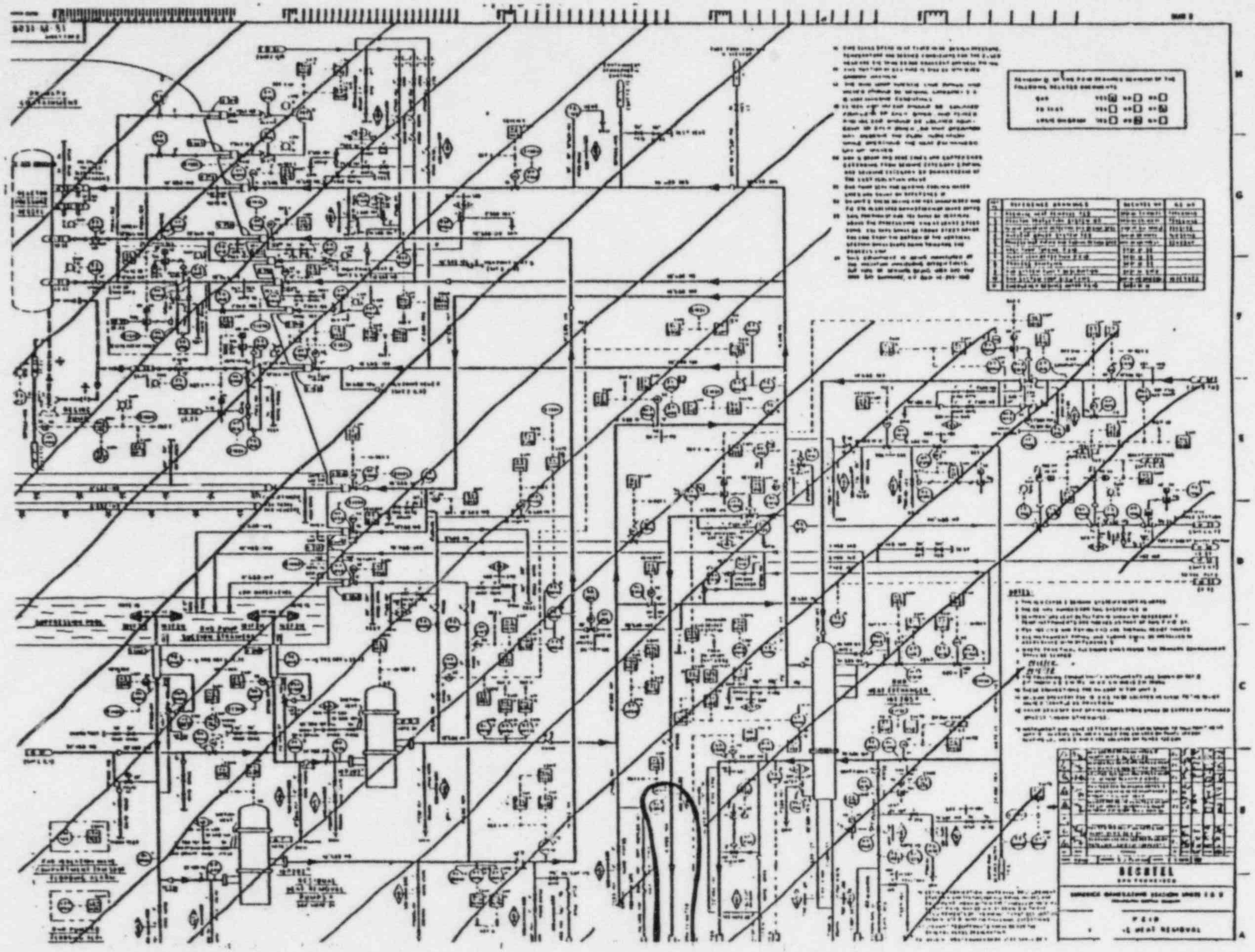
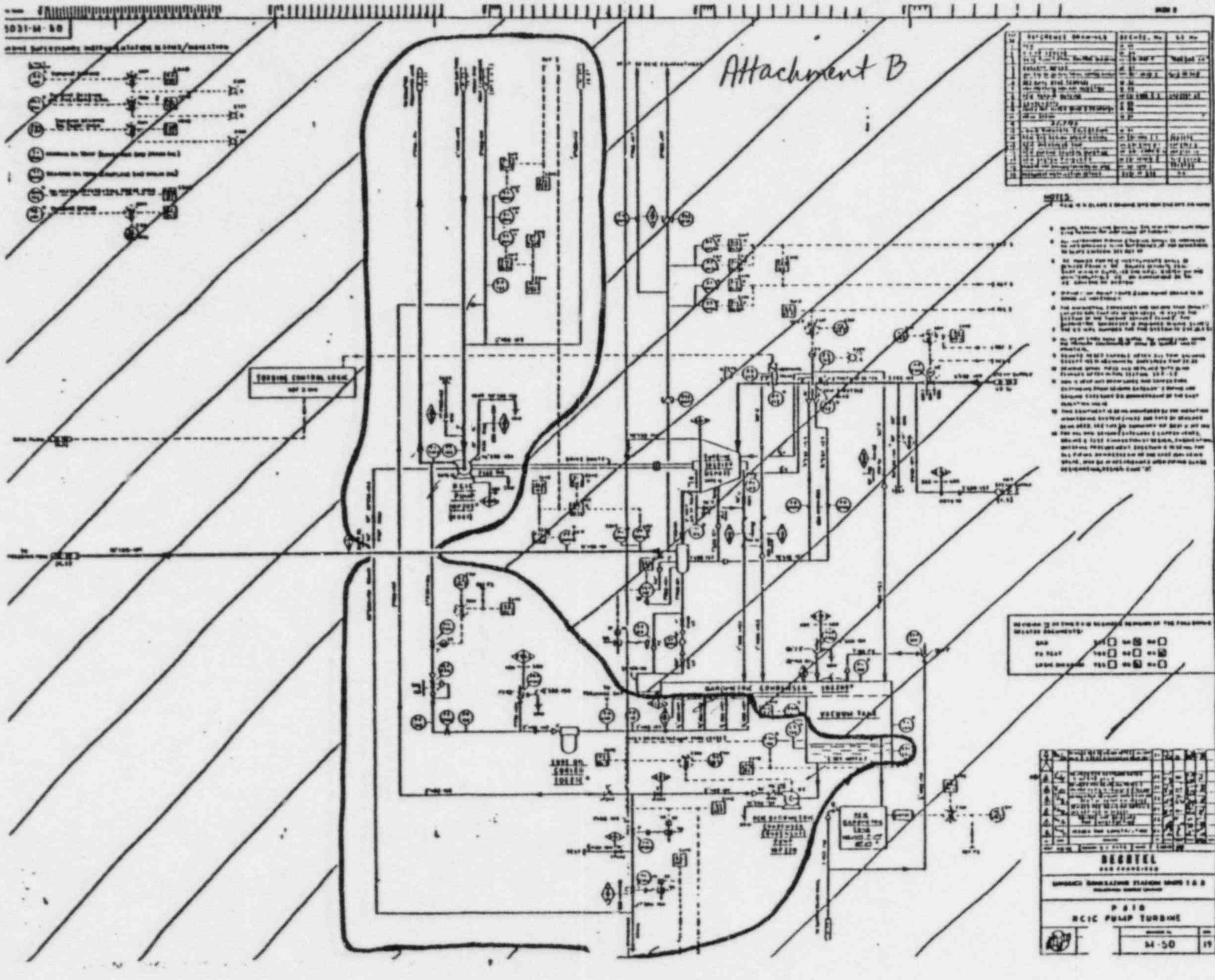
ATTACHMENT B



ATTACHMENT B



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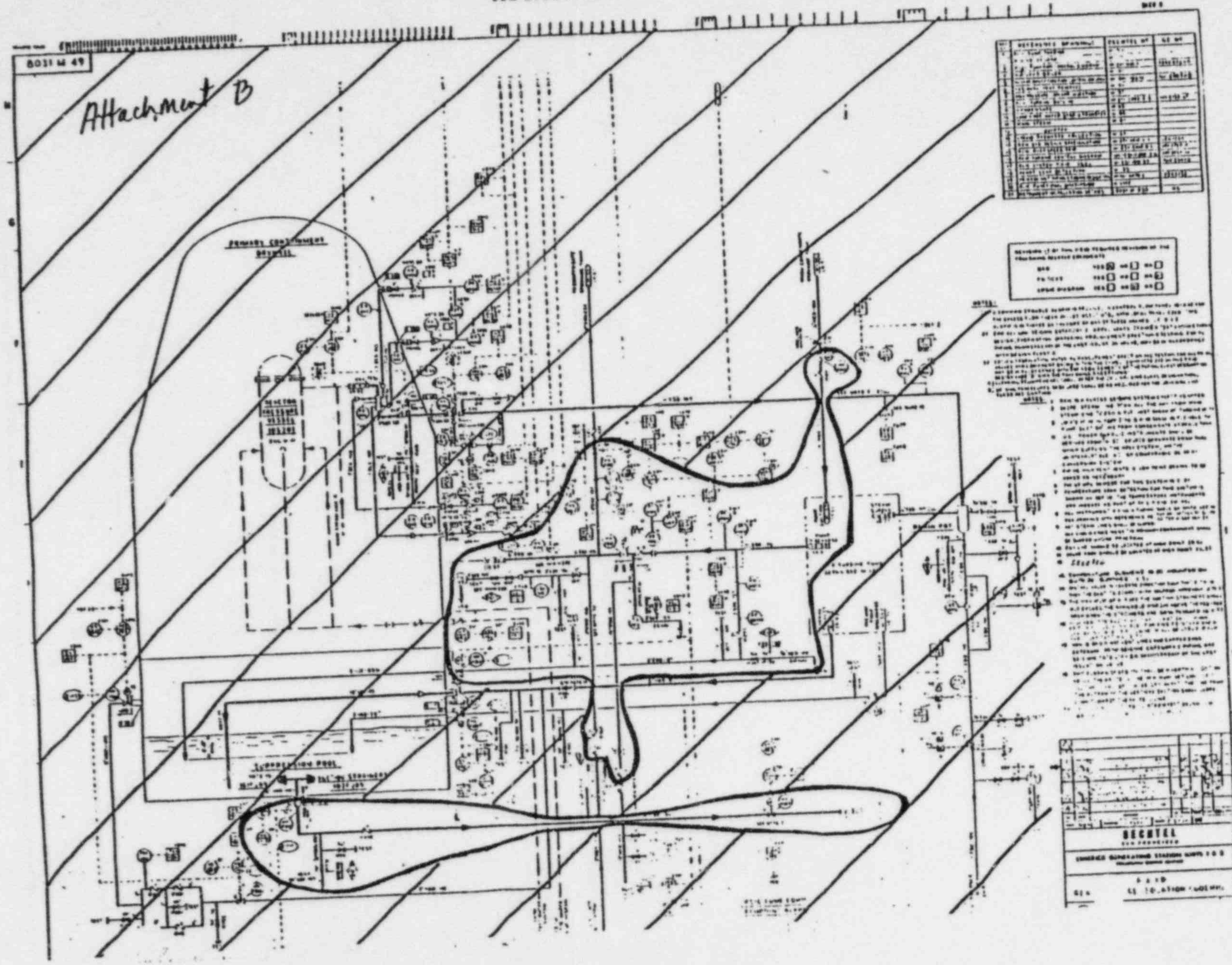
ATTACHMENT B



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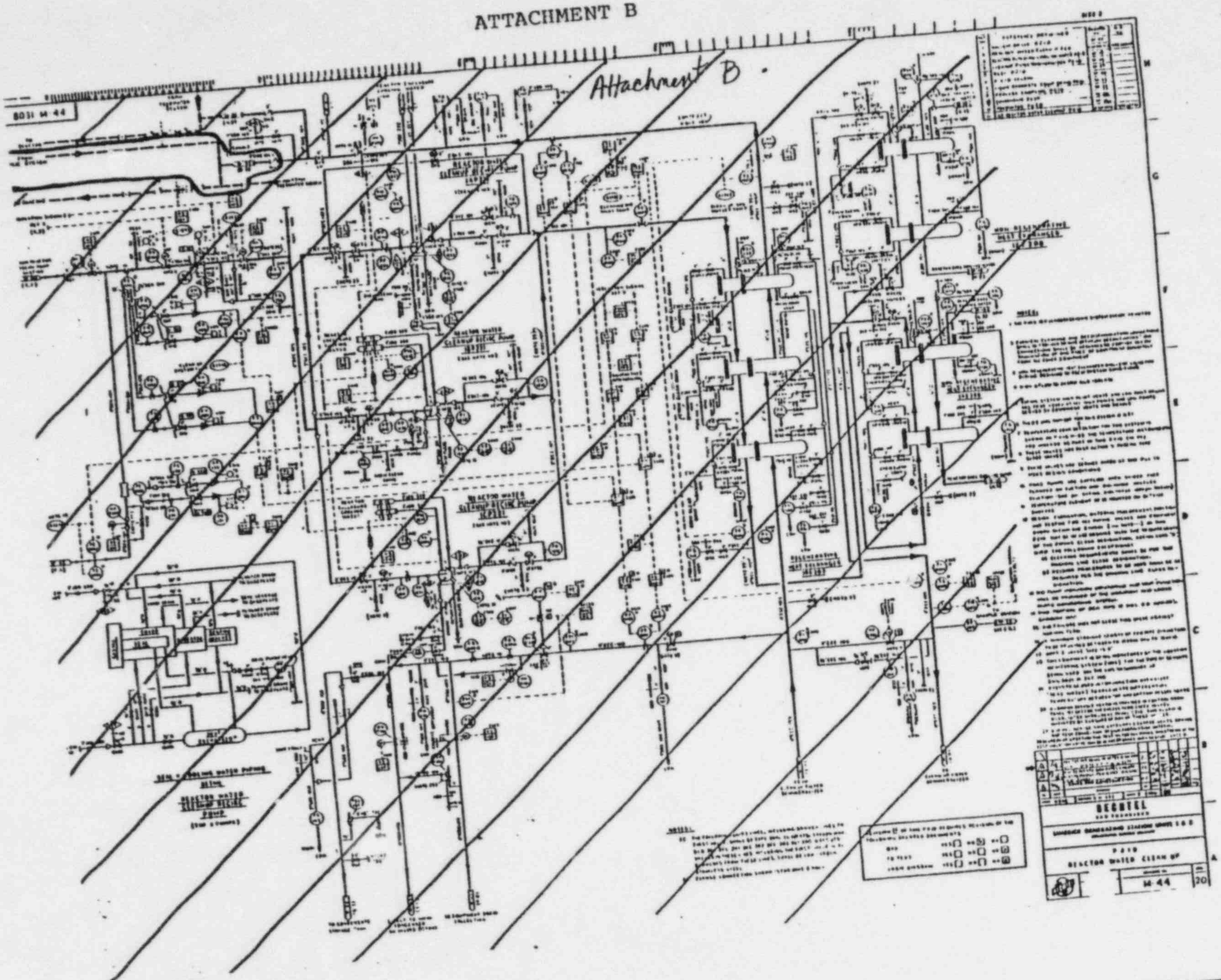
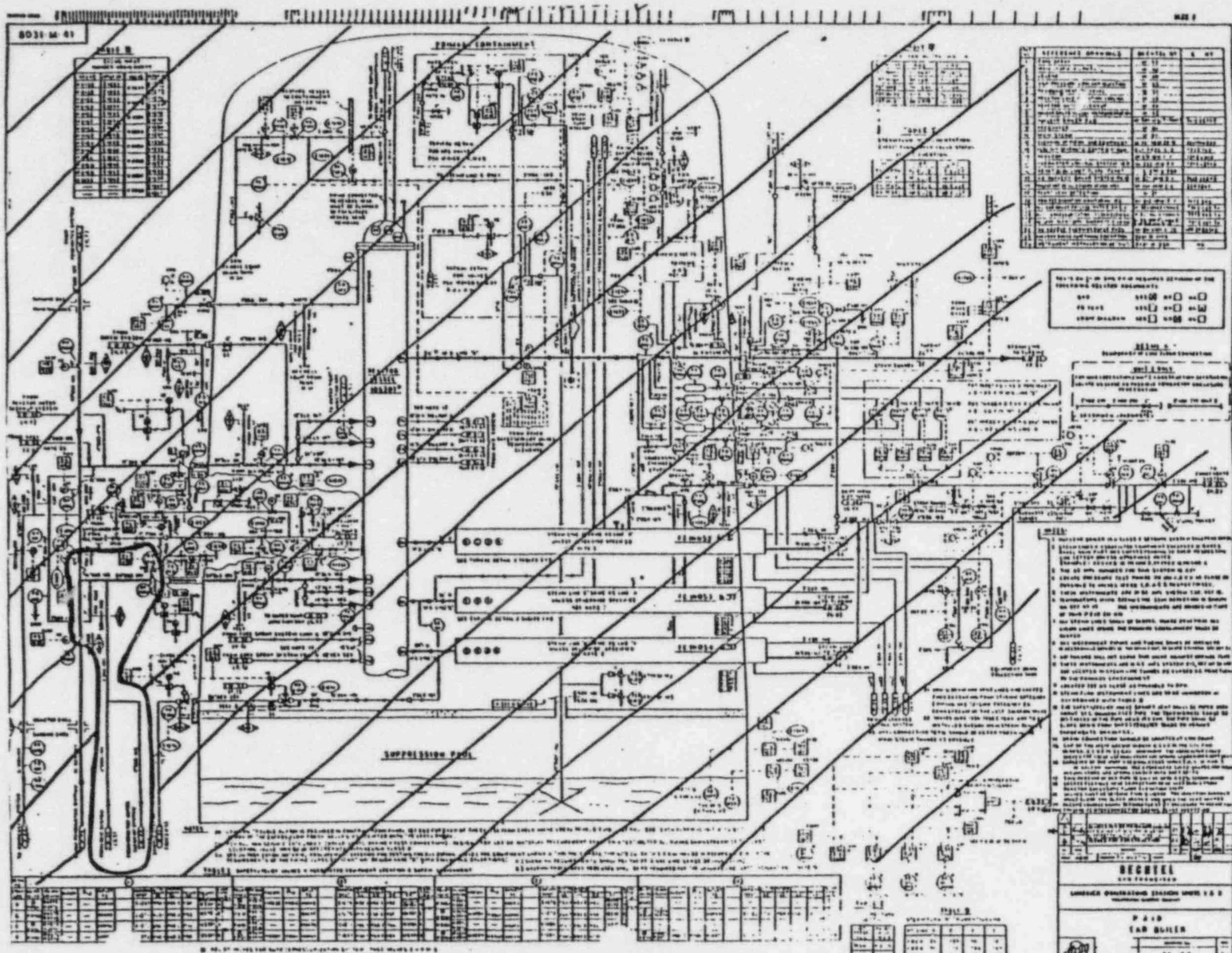
ATTACHMENT B



3850016380

ATTACHMENT B



ATTACHMENT 4B

3850016380



P 101

10/15/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-049-701-1 RCIC PUMP CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason Initial Performance
Tech. Spec.:6.8.4.a
FSAR 6.2.8.1 2. MRF No.________
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) [signature] 1/3/85

Performed By: (Sign/Date) ________ ____

Informed Test Complete:(ACO or CO) (Sign/Date) [signature] 1/3/85
(Time) 245

Reviewed By:(SSVN or STA) (Sign/Date) [signature] 1-3-85

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ____

Informed of Test Results: (CO or ACO)(Sign/Date) ________ ____
(Time) ____

Shift Supervision: (Sign/Date) ________ ____

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ________

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) [signature] 1/3/85

## 1.0 PURPOSE

To Inspect and measure any leakage of the RCIC Pump and RCIC System components that are directly associated with system piping that could carry contaminated fluids during a serious accident or transient. This inspection shall be implemented while the system is operating in the test mode.

## 2.0 REFERENCES

2.1 8031-M-49, Reactor Core Isolation Cooling

2.2 8031-M-50, RCIC Pump Turbine

2.3 NUREG-0737

## 3.0 TEST EQUIPMENT

3.1 Graduated Cylinders(s)

3.2 One-Liter Bottle(s)

3.3 Assorted funnels

3.4 Stopwatch

3.5 Inspection mirror w/handle

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section.

4.2 Leakage rates of greater than 5 drops per min. (.25 cc/Min) shall be quantified. Use "≤ 5 drops/min" on Attachment A for Components with leakage rates of 5 drops per min or less.

4.3 Steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 If any component exhibits excessive leakage notify SSVN immediately.

5.0 PREREQUISITES

5.1 Request RWP and HP Assistance when required.

5.2 Inspector is familiar with the RCIC system location and layout.

5.3 The RCIC pump must be running, for Surveillance Test ST-6-049-230-1 or per S49.1.D, to inspect it's associated piping and components.

5.4 Obtain copy of previous inspection's Attachment A.

5.5 Coordinate with Operator running the system to allow pump run durations to be extended for the inspection.

6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation — Initials

6.1.2 Verify all prerequisites are satisfied. [illegible] SEE NOTE

6.1.3 Record appropriate information for each piece of measurement and test equipment used with a PECo number.

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| STOPWATCH | WILEY | 53-0326 | 8-16-85 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Initials

6.2 Shift Permission to Test

6.2.1 Obtain Shift Supervision's permission to start test.

6.2.2 Obtain Control Room Operator's permission to start test.

ACO

1-3-85 / 18:55
Date Time

6.3 RCIC Pump Contaminated Piping Inspection

ACTUAL LEAKAGE RATE MEASUREMENT METHODS WILL BE LEFT TO THE DISCRETION OF THE INSPECTOR. THE ONLY GUIDLINES BEING THAT ALL DATA WILL BE A MEASURED QUANTITY OF FLUID OVER TIME USING A STOPWATCH. DROPS PER MINUTE CAN BE USED AS A MEASUREMENT METHOD WHERE 20 DROPS = 1cc. ALL RECORDED DATA SHALL BE IN CUBIC CENTIMETERS PER MIN. (cc/min).

6.3.1 For all in line components within the boundaries of Attachment B, which exhibit leakage, record on the Data sheet Attachment A the Leakage Rate and a description of the location of the leak. Pay particular attention to system components identified as having exhibited measurable leakage in the previous inspection.

6.3.2 From the leakage rate data on Attachment A, calculate the total system leakage rate and document the results below.

System Leakage Rate

.75 cc/min

N/A gal/min
(1 cc/min = 0.000264 gal/min)

6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit. * SEE NOTE

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for its repair.

## 7.0 RETURN TO NORMAL

7.1 Inform SSVN and ACO test is complete.

## 8.0 ACCEPTANCE CRITERIA

8.1 The RCIC Pump and its associated components shall not exhibit a leakage rate of greater than (later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN

DATA SHEET

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS THIS TEST IS TO BE RUN IN CONCURRENCE WITH STP-14.1, CONTRARY TO STEP 5.3.

6.4.1 LESS THAN 1 cc/MIN CONSIDERED NEGLIBLE

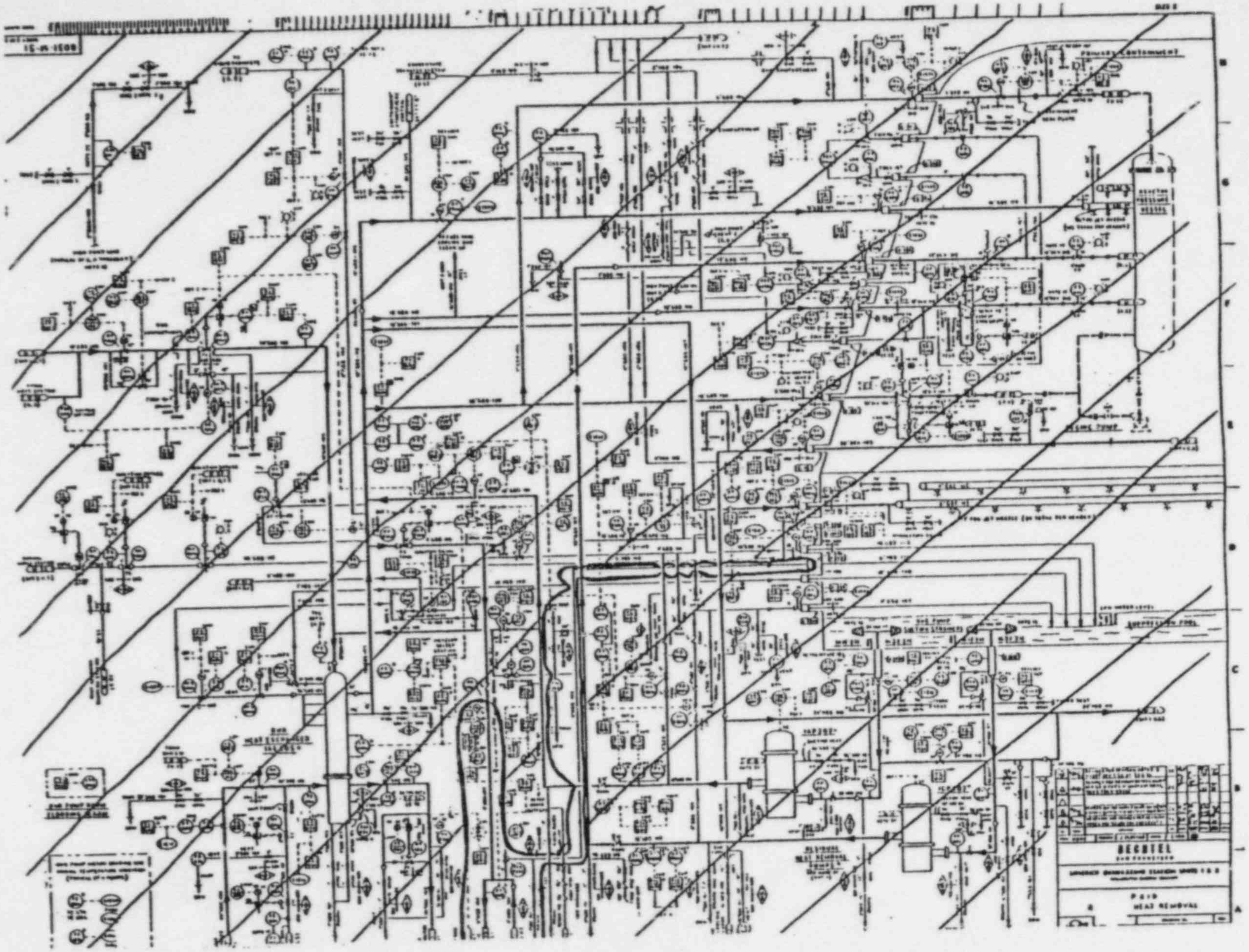
Attachment A

Inspector: KEVIN WALSH

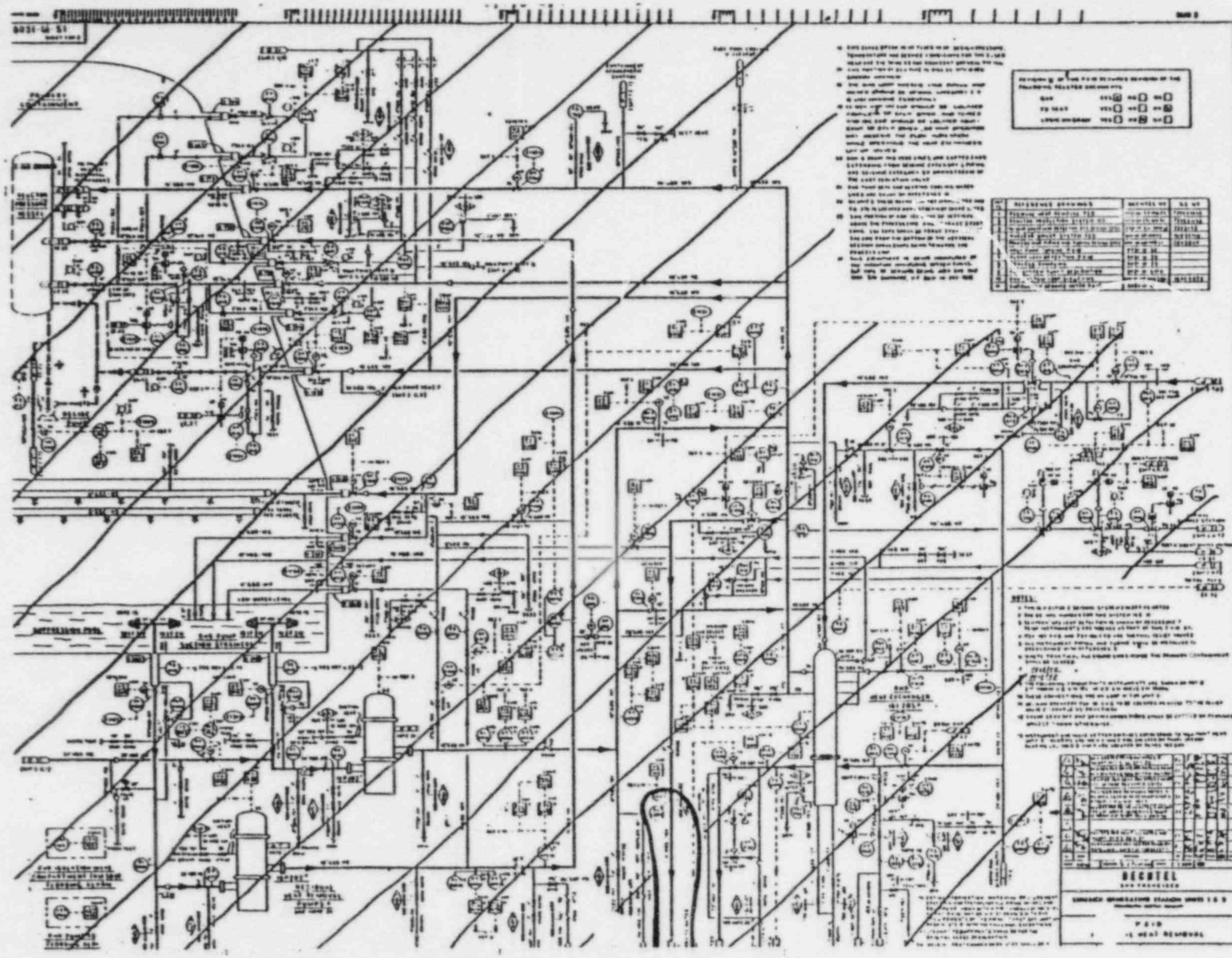
System Mode CST TO CST LOW PRESSURE Date: 1/3/85

| Component No. | Component Description | Comp. Mode (on/Off (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| 49-1031 | SAFEGUARD PIPING FILL SUPPLY VALVE | OPEN | 3 DROPS PER MIN | | |
| 49-1F022 | TEST RETURN TO CST VALVE | THROTTLED | 10 DROPS PER MIN | | |

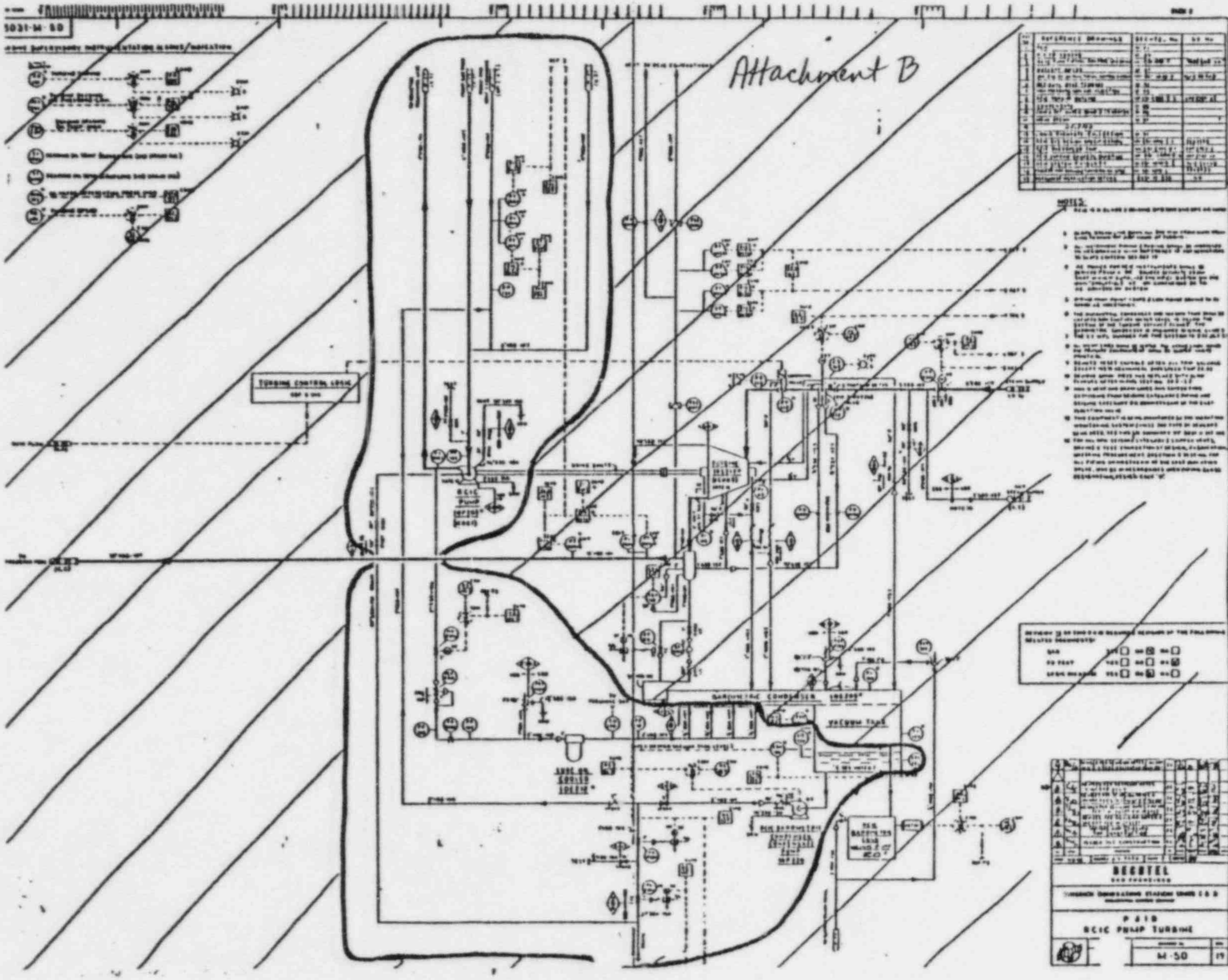
ATTACHMENT B



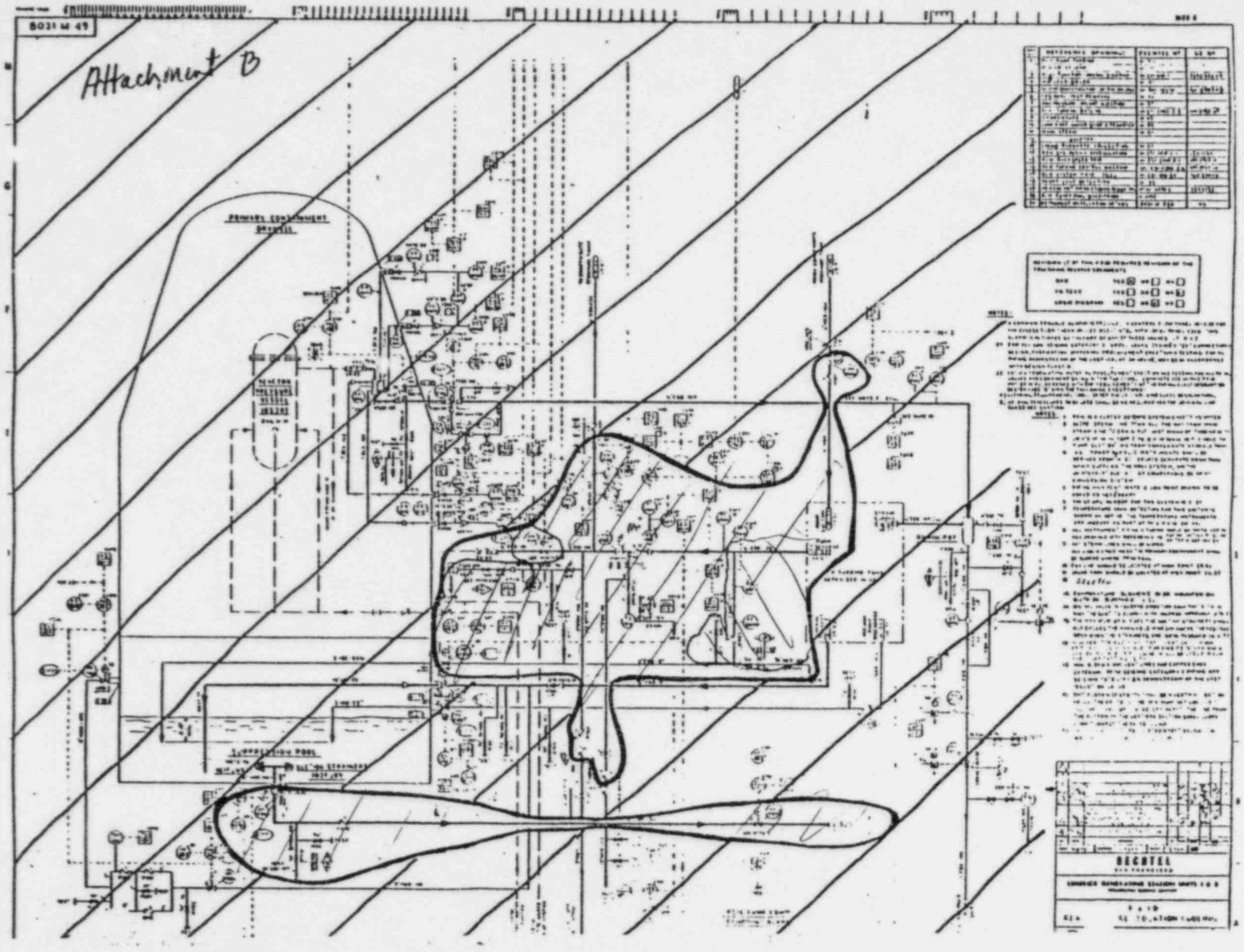
ATTACHMENT B



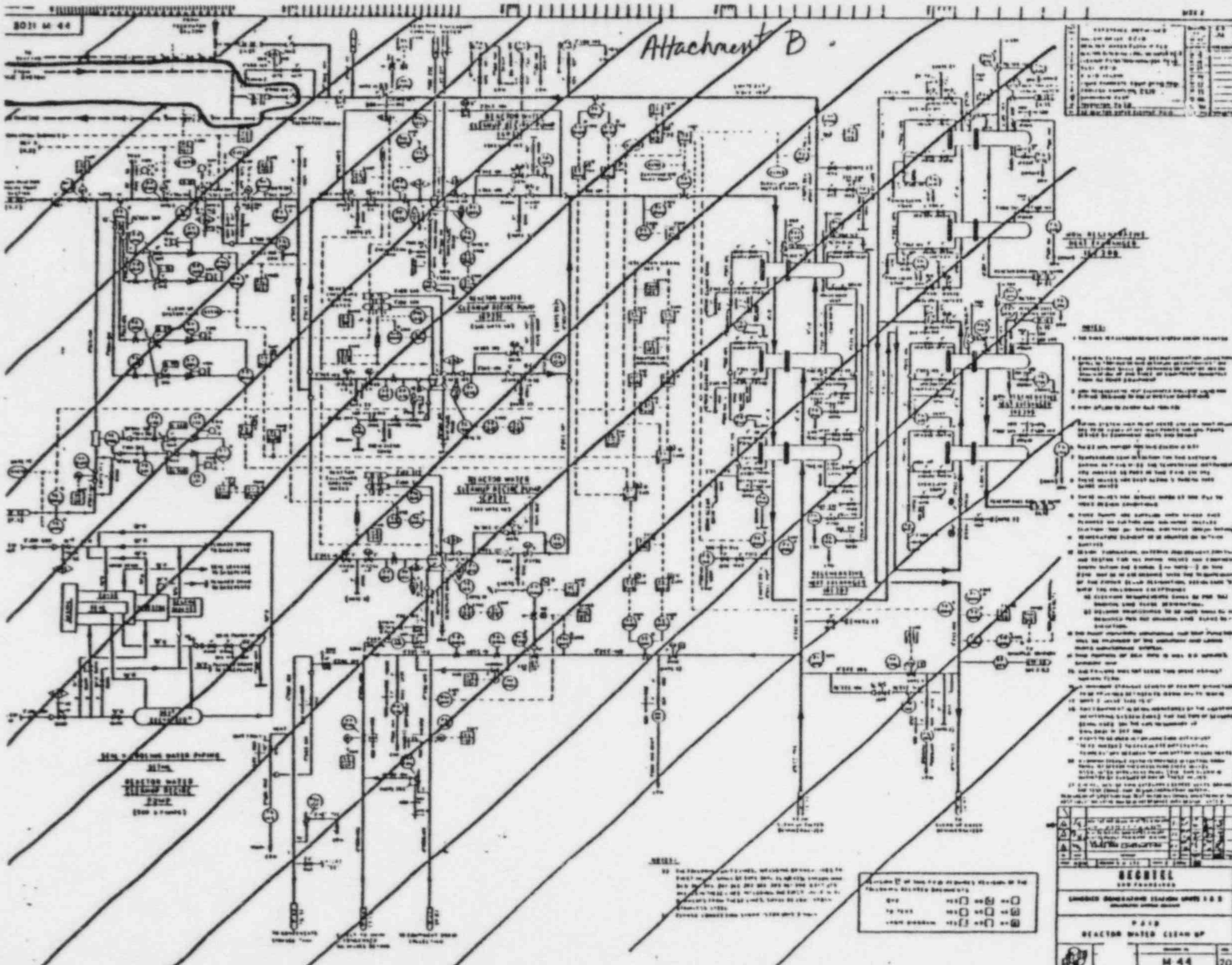
ATTACHMENT B



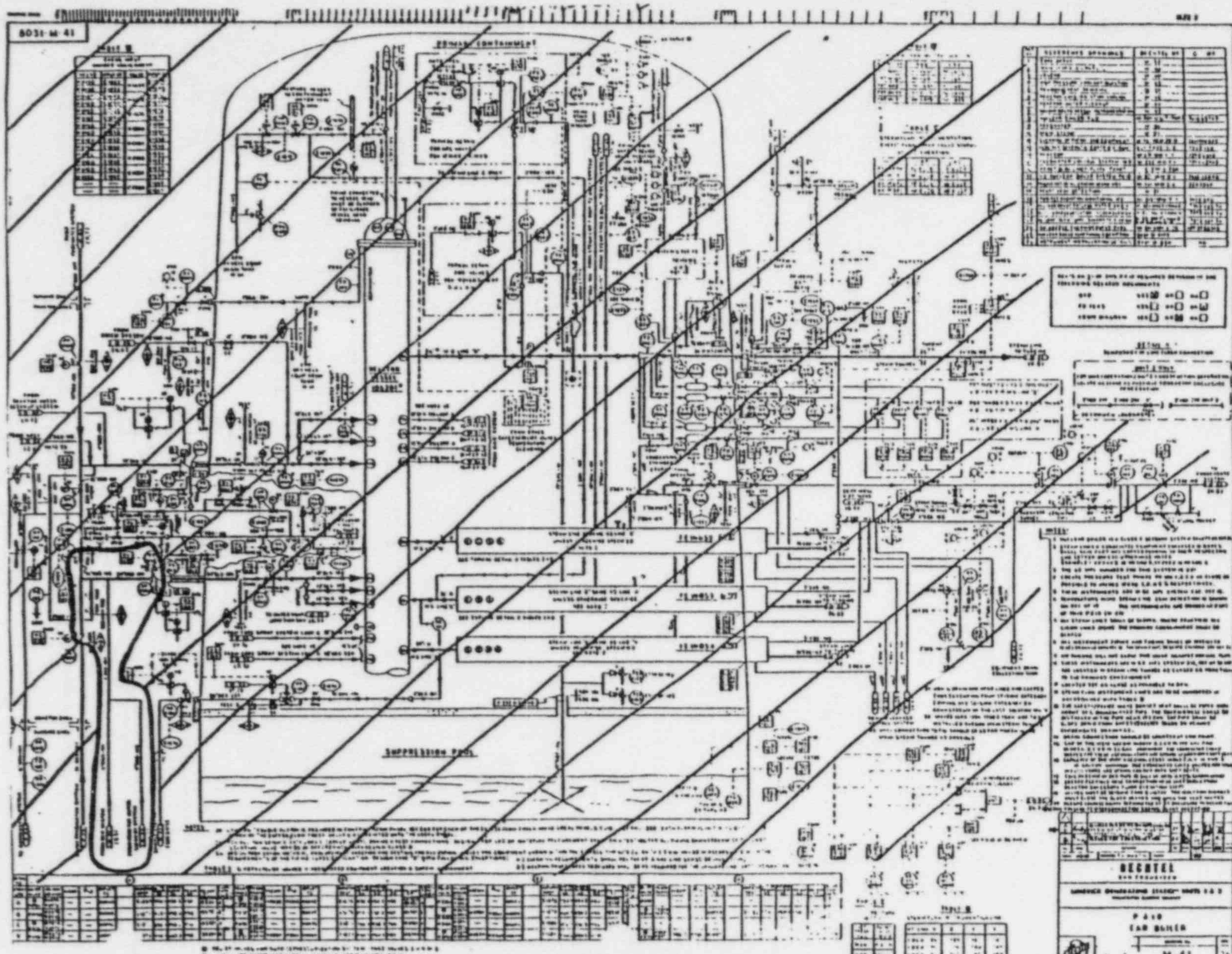
ATTACHMENT B



ATTACHMENT B



# ATTACHMENT B



ATTACHMENT 5A



GM Latal 10/4/84

P 101

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-049-702-1 RCIC TURBINE CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason Initial 1st Performance
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.d
FSAR 6.2.8.3
2. MRF No.________

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) [signature] 1-3-85

Performed By: (Sign/Date) ________ ____

Informed Test Complete:(ACO or CO) (Sign/Date) J Petrocco 1-3-85
(Time) 2236

Reviewed By:(SSVN or STA) (Sign/Date) Guy E. Cells 1-3-85

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ____

Informed of Test Results: (CO or ACO)(Sign/Date) ________ ____
(Time) ____

Shift Supervision: (Sign/Date) ________ ____

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ________

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) [signature] 1/3/85

## 1.0 PURPOSE

To inspect the R.C.I.C Turbine, associated piping and components for steam leakage while the system is being run in the test mode.

## 2.0 REFERENCES

2.1 8031-M-49, Reactor Core Isolation Cooling

2.2 8031-M-50, RCIC Pump Turbine

## 3.0 TEST EQUIPMENT

None

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section.

4.2 Steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.3 Components to be inspected shall include all valves, capped vents, drains and test connections, seals and case joints, flanged connections and instrument taps on all system piping which carries primary steam or it's condensate.

4.4 If largc steam leaks are encountered leave the area immediately and inform SSVN.

## 5.0 PREREQUISITES

5.1 Request RWP and HP assistance when required.

5.2 Inspector is familiar with the RCIC Turbine System location and layout.

5.3 Obtain a copy of the previous inspection's Attachment A.

5.4 The RCIC turbine must be running for ST-6-049-230-1 or per S49.1 to inspect it's associated piping and components. (This should be done in conjunction with ST-1-049-701-1).

## 6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS ARE CORRECTLY AND COMPLETELY FILLED IN.

| | INITIALS |
|---|---|
| 6.1 Preparation | |
| 6.1.1 Verify all prerequisites are satisfied. | [signature] SEE NOTE |
| 6.2 Shift Permission to Test | |
| 6.2.1 Obtain Shift Supervision's permission to start test. | [signature] |
| 6.2.2 Obtain Control Room Operator's permission to start test. | ELL<br>ACO<br>1-3-81 / 18:56<br>Date Time |

6.3 RCIC Turbine Contaminated Piping Inspection

6.3.1 Inspect the RCIC Turbine and it's associated In Line components for steam leakage while the system is at pressure and running.

INITIALS

6.3.2 For all system components, within the boundaries of Attachment C, which exhibit steam leakage, record on Attachment A, an estimate of the length of the steam plume, and adescription of the location of the leak. Pay particular attention to system components whichexhibited leakage in the previous inspection. Large steam leaks should not be quantified. A MRF should be issued for the component's repair, and this test will be considered a failed test.

6.3.3 Using Attachment B convert the steam plume lengths to valves of water volume and record them on Attachment A.

6.3.4 From the volumetric leak rate data on Attachment A, calculate the total steam system leakage rate and document the results below.

RCIC Turbin Leakage Rate
100 cc/min.

.0264 gal/min.

(1cc/min. = 0.000264 gal./min.)

HAVE SHIFT SUPERVISION PERFORM THE TEST RESULTS EVALUATION, SECTION 6.4

6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit. GFC (*)

INITIALS

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for it's repair.

## 7.0 RETURN TO NORMAL

7.1 Inform SSVN & ACO test is complete GfC

## 8.0 ACCEPTANCE CRITERIA

8.1 The RCIC Turbine System shall not exhibit a leakage rate greater than (Later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS THIS TEST IS TO BE RUN IN CONCURRENCE WITH STP-14.1, CONTRARY TO STEP 5.4

Attachment A

INSPECTOR: D.P. GOWER

SYSTEM MODE CST → CST LOW PRESSURE DATE: 1-3-85

| Component No. | Component Description | Comp. Mode (on/off) (open/closed) | Steam Plume Length | Equivalent Water Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|---|
| 10P219 | RCIC BAROMETRIC CONDENSER VACUUM PUMP | ON | NA | (PACKING LEAK) 100 DROPS/MIN ① | | SEE NOTE ① BELOW |

① VACUUM PUMP PACKING LEAKAGE TO DRIP TRAY = 88 DROPS/MIN
" " " " TO FLOOR = 12 DROPS/MIN.

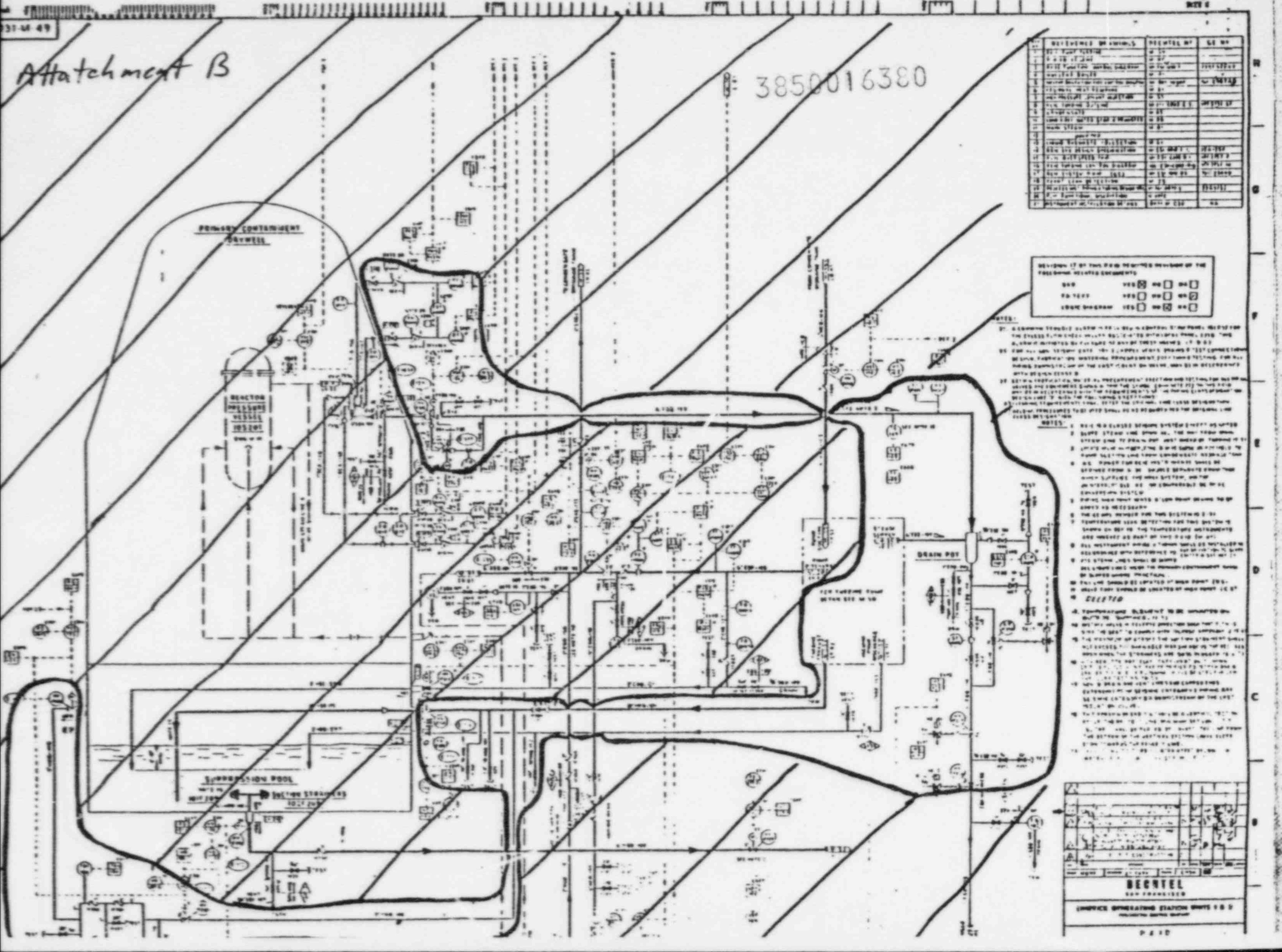
ATTACHMENT B

STEAM PLUME LENGTH CONVERSION TABLE

| Steam Plume Length (ft) | Water Volume (cc/min) |
|---|---|
| 1.00 | 76 |
| 1.25 | 87 |
| 1.50 | 98 |
| 1.75 | 114 |
| 2.00 | 136 |
| 2.25 | 152 |
| 2.50 | 174 |
| 2.75 | 205 |
| 3.00 | 235 |
| 3.25 | 273 |
| 3.50 | 311 |
| 3.75 | 356 |
| 4.00 | 409 |

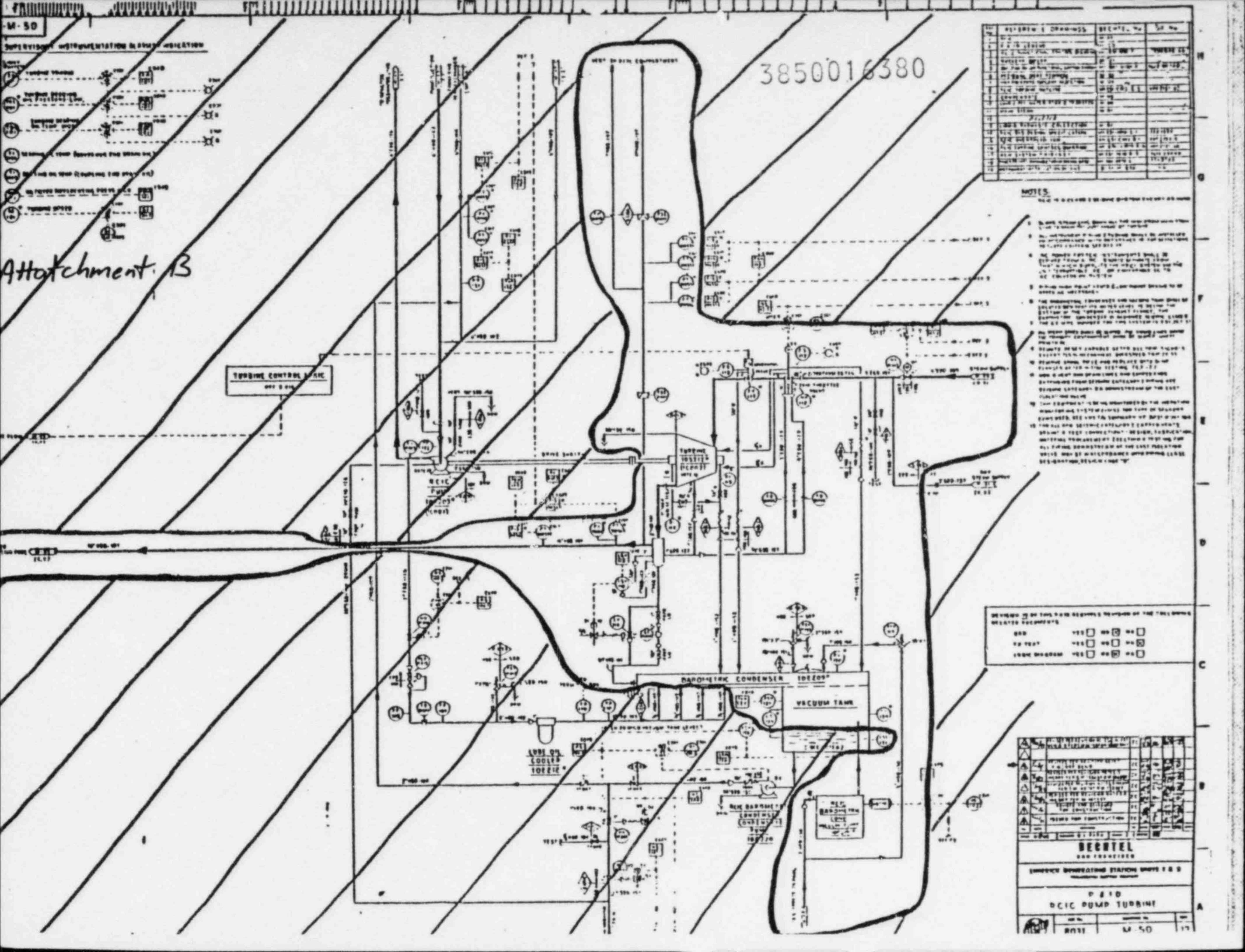
Attatchment B

3850016380



Attachment B

3850016380



ATTACHMENT 5B



GM Latch 10/4/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-049-702-1 RCIC TURBINE CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason 920# on S/U
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.d
FSAR 6.2.8.3
2. MRF No. ________

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Gary [signature] 1/11/85

Performed By: (Sign/Date) ________ ____

Informed Test Complete:(ACO or CO) (Sign/Date) [signature] 1-11-85
(Time) 12:10

Reviewed By:(SSVN or STA) (Sign/Date) [signature] 1/11/85

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ____

Informed of Test Results: (CO or ACO)(Sign/Date) ________ ____
(Time) ____

Shift Supervision: (Sign/Date) ________ ____

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ________

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) [signature] 1/11/85

1.0 PURPOSE

To inspect the R.C.I.C Turbine, associated piping and components for steam leakage while the system is being run in the test mode.

2.0 REFERENCES

2.1 8031-M-49, Reactor Core Isolation Cooling

2.2 8031-M-50, RCIC Pump Turbine

3.0 TEST EQUIPMENT

None

4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section.

4.2 Steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.3 Components to be inspected shall include all valves, capped vents, drains and test connections, seals and case joints, flanged connections and instrument taps on all system piping which carries primary steam or it's condensate.

4.4 If large steam leaks are encountered leave the area immediately and inform SSVN.

5.0 PREREQUISITES

5.1 Request RWP and HP assistance when required.

5.2 Inspector is familiar with the RCIC Turbine System location and layout.

5.3 Obtair a copy of the previous inspection's Attachment A.

5.4 The RCIC turbine must be running for ST-6-049-230-1 or per S49.1 to inspect it's associated piping and components. (This should be done in conjunction with ST-1-049-701-1).

## 6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation — INITIALS

6.1.1 Verify all prerequisites are satisfied. — JJR

6.2 Shift Permission to Test

6.2.1 Obtain Shift Supervision's permission to start test. — EDC

6.2.2 Obtain Control Room Operator's permission to start test. — RW

ACO

1-11-85 / 15:17
Date / Time

6.3 RCIC Turbine Contaminated Piping Inspection

6.3.1 Inspect the RCIC Turbine and it's associated In Line components for steam leakage while the system is at pressure and running.

INITIALS

6.3.2 For all system components, within the boundaries of Attachment C, which exhibit steam leakage, record on Attachment A, an estimate of the length of the steam plume, and adescription of the location of the leak. Pay particular attention to system components whichexhibited leakage in the previous inspection. Large steam leaks should not be quantified. A MRF should be issued for the component's repair, and this test will be considered a failed test.

6.3.3 Using Attachment B convert the steam plume lengths to valves of water volume and record them on Attachment A.

6.3.4 From the volumetric leak rate data on Attachment A, calculate the total steam system leakage rate and document the results below.

RCIC Turbin Leakage Rate
~~372~~ 371 99K 1/11/85 cc/min.
~~.098~~ .098 99K 1/11/85 gal/min.

(1cc/min. = 0.000264 gal./min.)

HAVE SHIFT SUPERVISION PERFORM THE TEST RESULTS EVALUATION, SECTION 6.4

6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit. GPC (*)

INITIALS

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component. GRC

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for it's repair. GRC

## 7.0 RETURN TO NORMAL

7.1 Inform SSVN & ACO test is complete GRC

## 8.0 ACCEPTANCE CRITERIA

8.1 The RCIC Turbine System shall not exhibit a leakage rate greater than (Later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS ______

MRF 8500645 ISSUED ON HV-50-1F045

Attachment A

INSPECTOR: Gary Hutchison

SYSTEM MODE: High press test DATE: 1/11/85
CST to CST

| Component No. | Component Description | Comp. Mode (on/off) (open/closed) | Steam Plume Length | Equivalent Water Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|---|
| HV-50-1F045 | Steam supply to turbine | Open | 3 ft plume | 235cc/min | | |
| 49-1007 | | open | 1/4 ft plume | 19 cc/min | | |
| 10S212 | RCIC turbine gland seal (governor side). | on | 1 ft plume | 76 cc/min | | |
| HV-49-1F008 | steam supply | open | 1/2 ft plume | 38 cc/min slight (undeterminable) leakage @ packing. | | |
| 10P219 | vacuum pump | on | | 3cc/min | | |

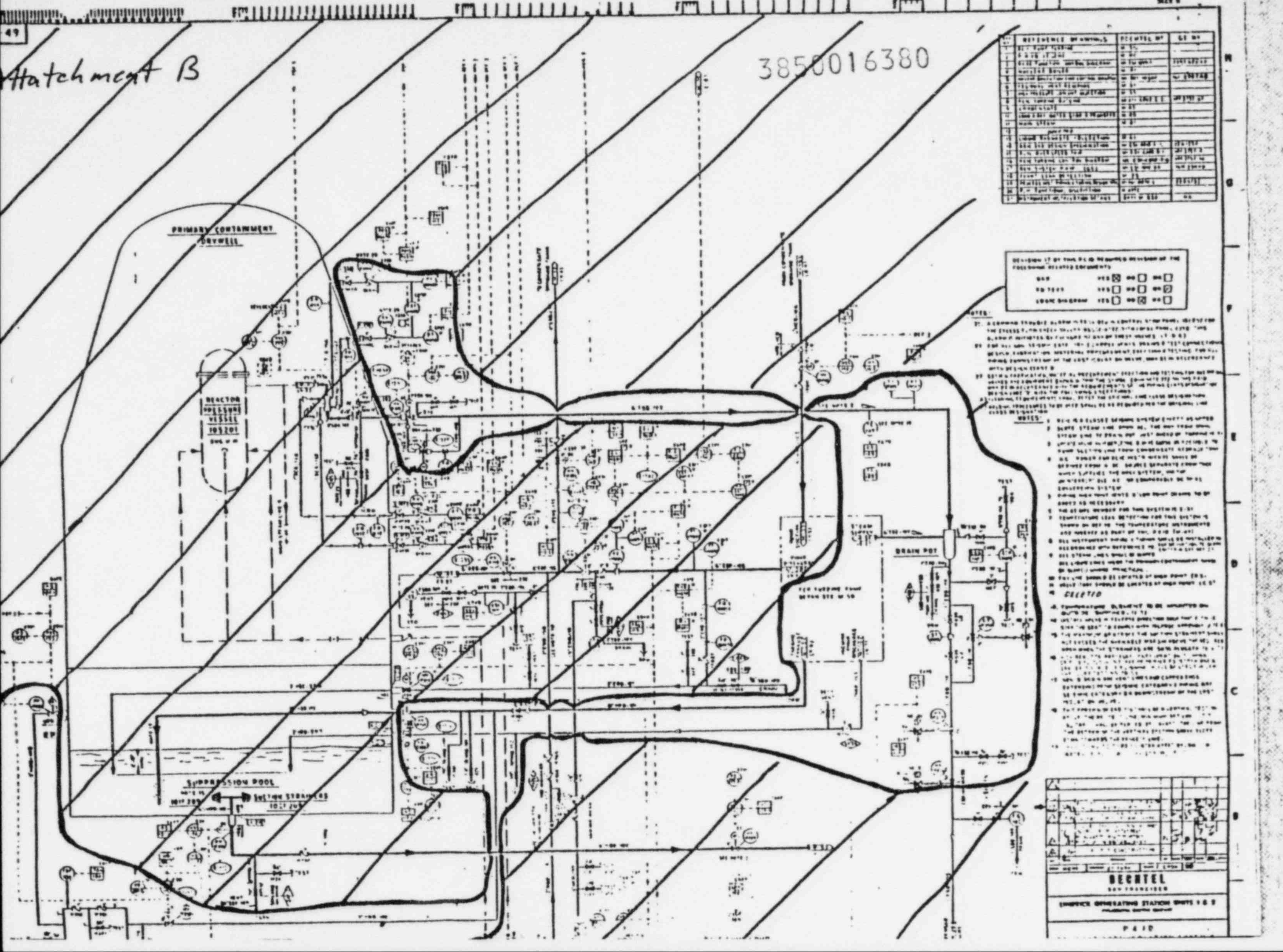
ATTACHMENT B

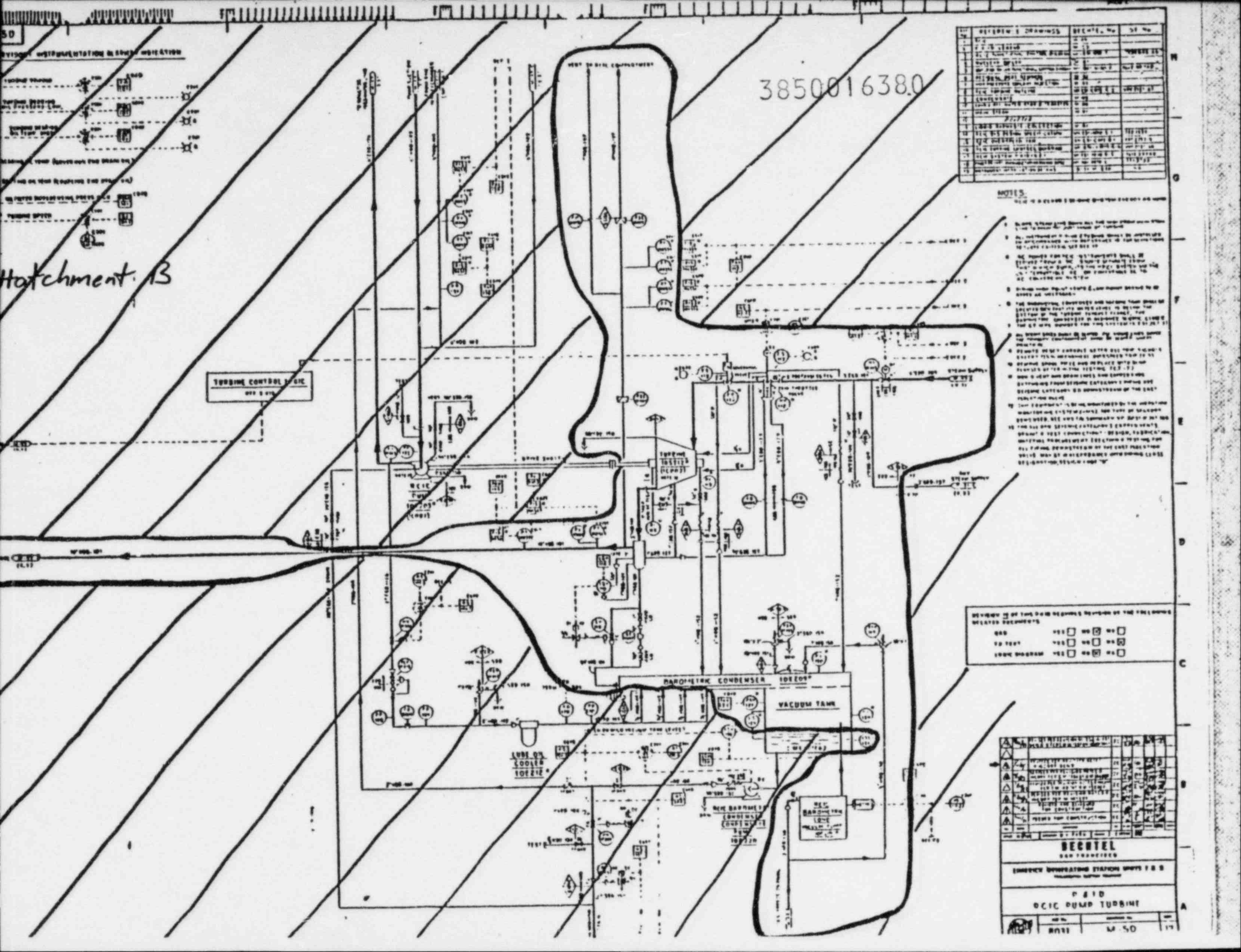
STEAM PLUME LENGTH CONVERSION TABLE

| Steam Plume Length (ft) | Water Volume (cc/min) |
|---|---|
| 1.00 | 76 |
| 1.25 | 87 |
| 1.50 | 98 |
| 1.75 | 114 |
| 2.00 | 136 |
| 2.25 | 152 |
| 2.50 | 174 |
| 2.75 | 205 |
| 3.00 | 235 |
| 3.25 | 273 |
| 3.50 | 311 |
| 3.75 | 356 |
| 4.00 | 409 |

Attachment B

3850016380





3850016380
Attachment 13
NOTES
TURBINE CONTROL LOGIC
RCIC PUMP
TURBINE
BAROMETRIC CONDENSER
VACUUM TANK
LUBE OIL COOLER
BECHTEL
SAN FRANCISCO
P & I D
RCIC PUMP TURBINE
M-50

49-702

3850016380



Attachment A

INSPECTOR: D.P. GOWER

SYSTEM MODE CST → CST LOW PRESSURE DATE: 1-3-85

| Component No. | Component Description | Comp. Mode (on/off) (open/closed) | Steam Plume Length | Equivalent Water Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|---|
| 10P219 | RCIC BAROMETRIC CONDENSER VACUUM PUMP | ON | NA | (PACKING LEAK) 100 DROPS/MIN ① | | SEE NOTE ① BELOW |

VACUUM PUMP PACKING LEAKAGE TO DRIP TRAY = 88 DROPS/MIN
" " " " TO FLOOR = 12 DROPS/MIN.

INITIALS

6.3.2 For all system components, within the boundaries of Attachment C, which exhibit steam leakage, record on Attachment A, an estimate of the length of the steam plume, and adescription of the location of the leak. Pay particular attention to system components whichexhibited leakage in the previous inspection. Large steam leaks should not be quantified. A MRF should be issued for the component's repair, and this test will be considered a failed test.

6.3.3 Using Attachment B convert the steam plume lengths to valves of water volume and record them on Attachment A.

6.3.4 From the volumetric leak rate data on Attachment A, calculate the total steam system leakage rate and document the results below.

RCIC Turbin Leakage Rate
100 cc/min. ← THIS SHOULD BE 5cc/min
($100\ \text{DROPS} \times \frac{1\text{cc}}{20\ \text{DROPS}} = .5^{cc}$

.0264 gal/min.

(1cc/min. = 0.000264 gal./min.)

HAVE SHIFT SUPERVISION PERFORM THE TEST RESULTS EVALUATION, SECTION 6.4

6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit. GFC (*)

3850016380 ATTACHMENT 6A

9/25/84
EFFECTIVE DATE

LIMERICK GENERATING STATION
PORC APPROVAL FORM

TPC #85-028

RH Moore 9-26-84
A-4, Form 1
Revision 1
Page 1 of 1
OM Leech 9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): 1-055-701-1 Rev. 1

2. REASON FOR SUBMITTAL: add attachment 'B' pg. 5

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☐ TEMPORARY CHANGE TO APPR'D PROC A-3 REVIEW REQUIRED BY ______

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | wfC | 1/5/85 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | WAT | 1/5/85 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| TE | JFM | 1/5/85 | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ______ ______ ADMIN OR PREPARER | ______/______ | #: ______ DATE: ______ |

DIRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE ______
☐ FILE THIS FORM PER ADMIN. PROC. ______
☐ OTHER: ______

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

10/25/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-055-701-1 HPCI PUMP CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason ____
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.c 2. MRF No. ____
FSAR 6.2.8.3

P

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) 1/5/85

Performed By: (Sign/Date) 1/5/85

Informed Test Complete: (ACO or CO) (Sign/Date) D.A. Robertshaw 1/5/85
(Time) 1120

Reviewed By: (SSVN or STA) (Sign/Date) 1-5-85

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ____ ____

Informed of Test Results: (CO or ACO) (Sign/Date) ____ ____
(Time) ____

Shift Supervision: (Sign/Date) ____ ____

Corrective Action: MRF No.: ____

Initiated By: (Sign/Date) ____ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ____

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ____

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) ____ ____

## 1.0 PURPOSE

To Inspect and measure any leakage of the HPCI Pump and HPCI System components that are directly associated with system piping that could carry contaminated fluids during a serious accident or transient. This inspection shall be implemented while the system is operating in the test mode.

## 2.0 REFERENCES

2.1 8031-M-55, High Pressure Coolant Injection

2.2 8031-M-56, HPCI Pump Turbine

2.3 NUREG-0737

## 3.0 TEST EQUIPMENT

3.1 Graduated Cylinder(s)

3.2 One-Liter Bottle(s)

3.3 Assorted funnels

3.4 Stopwatch

3.5 Inspection mirror w/handle

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section.

4.2 Leakage rates of greater than 5 drops per min. (.25 cc/Min) shall be quantified. Use "≤ 5 drops/min" on Attachment A for Components with leakage rates of 5 drops per min or less.

4.3 Steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 If any component exhibits excessive leakage notify SSVN immediately.

## 5.0 PREREQUISITES

5.1 Request RWP and HP Assistance when required.

5.2 Inspector is familiar with the HPCI system location and layout.

5.3 The HPCI pump must be running for surveillance ST-6-055-230-1 or per S55.1.D to inspect its associated piping and components.

| 5.4 Obtain copy of previous inspection's Attachment A.

5.5 Coordinate with Operator running the system to allow pump run durations to be extended for the inspection.

## 6.0 PROCEDURE — INITIALS

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation

6.1.1 Verify all prerequisites are satisfied. — mpB

| 6.1.2 Record appropriate information for each piece of measurement and test equipment used with a PECo number.

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| STOPWATCH | | 53-0194 | 9-13-85 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

INITIALS

6.2 Shift Permission to Test

6.2.1 Obtain Shift Supervision's permission to start test.

mPB

6.2.2 Obtain Control Room Operator's permission to start test.

JH
ACO

1-4-85 / 19:18
DATE TIME

6.3 HPCI Pump Contaminated Piping Inspection

ACTUAL LEAKAGE RATE MEASUREMENT METHODS WILL BE LEFT TO THE DISCRETION OF THE INSPECTOR. THE ONLY GUIDELINES BEING THAT ALL DATA WILL BE A MEASURED QUANTITY OF FLUID OVER TIME USING A STOPWATCH. DROPS PER MINUTE CAN BE USED AS A MEASUREMENT METHOD WHERE 20 DROPS = 1cc. ALL RECORDED DATA SHALL BE IN CUBIC CENTIMETERS PER MIN. (cc/min).

6.3.1 For all in line components, within the boundaries of Attachment B, which exhibit leakage, record on Attachment A the Leakage Rate and a description of the location of the leak. Pay particular attention to system components identified as having exhibited measurable leakage in the previous inspection.

6.3.2 From the leakage rate data on Attachment A, calculate the total system leakage rate and document the results below.

SYSTEM LEAKAGE RATE

3.20 cc/min NOTE # 1

.0008448 gal/min

(1 cc/min = 0.000264 gal/min)

INITIALS

6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit BT (*) SEE NOTE #2

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for its repair.

## 7.0 RETURN TO NORMAL

7.1 Inform SSVN and ACO test is complete. JEK

## 8.0 ACCEPTANCE CRITERIA

8.1 The HPCI Pump and it's associated components shall not exhibit a leakage rate of greater than (later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS #1 FOR THE PURPOSE OF CALCULATING SYSTEM LEAKAGE RATE, ALL VALVES WITH A LEAKAGE RATE OF ≤ 5 DROPS/MIN ARE ASSUMED TO HAVE A .25 CC/MIN RATE. #2 THIS TEST IS PART OF THE INITIAL TEST PROGRAM WHICH WILL BE USED TO ESTABLISH LEAK RATE CRITERIA IN 8.1.

3850016380 TAS/RSE:cjf

Attachment A

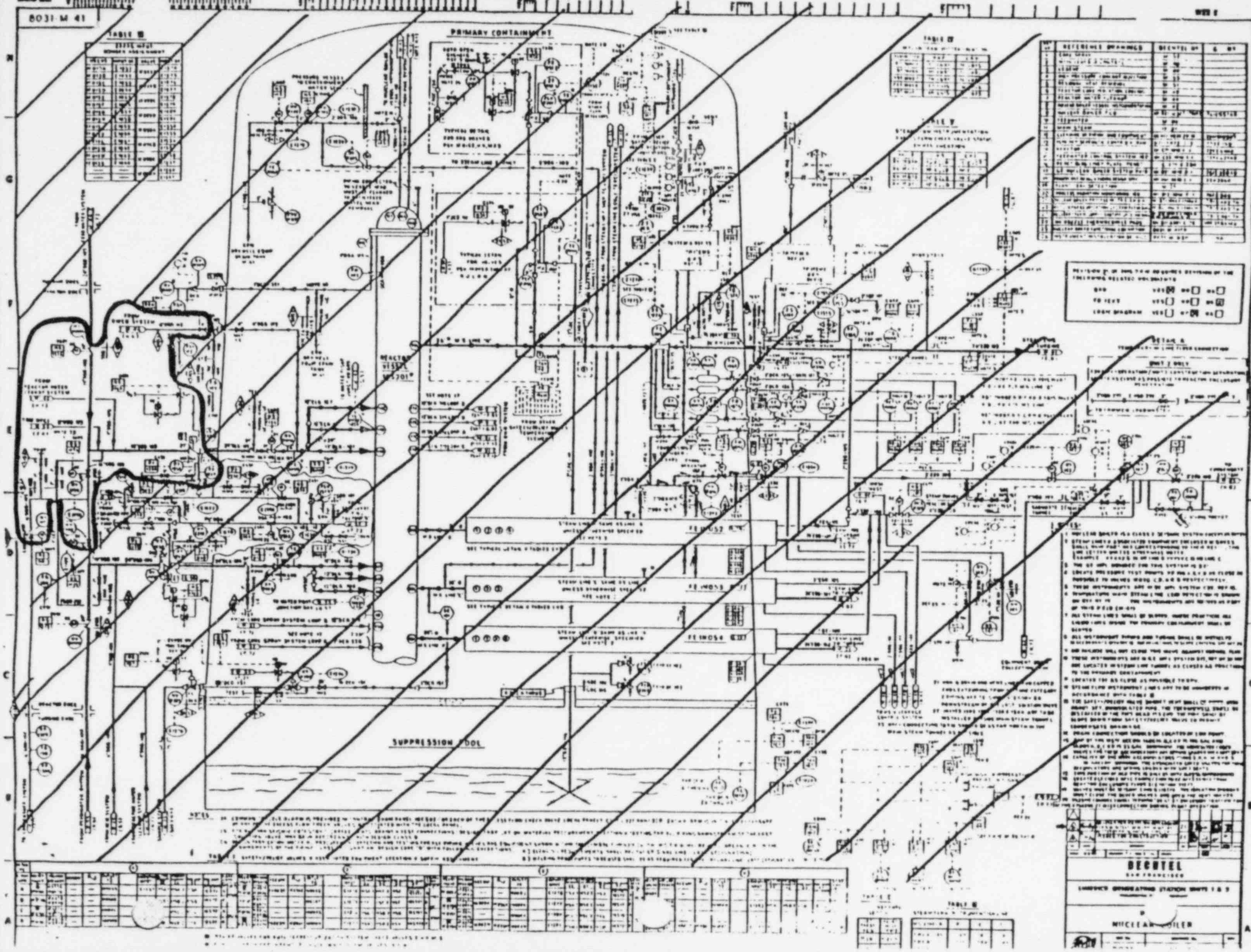
Inspector: Bob Mondik/Marc Lehman

System Mode Running in Test Date: Jan. 5, 1985

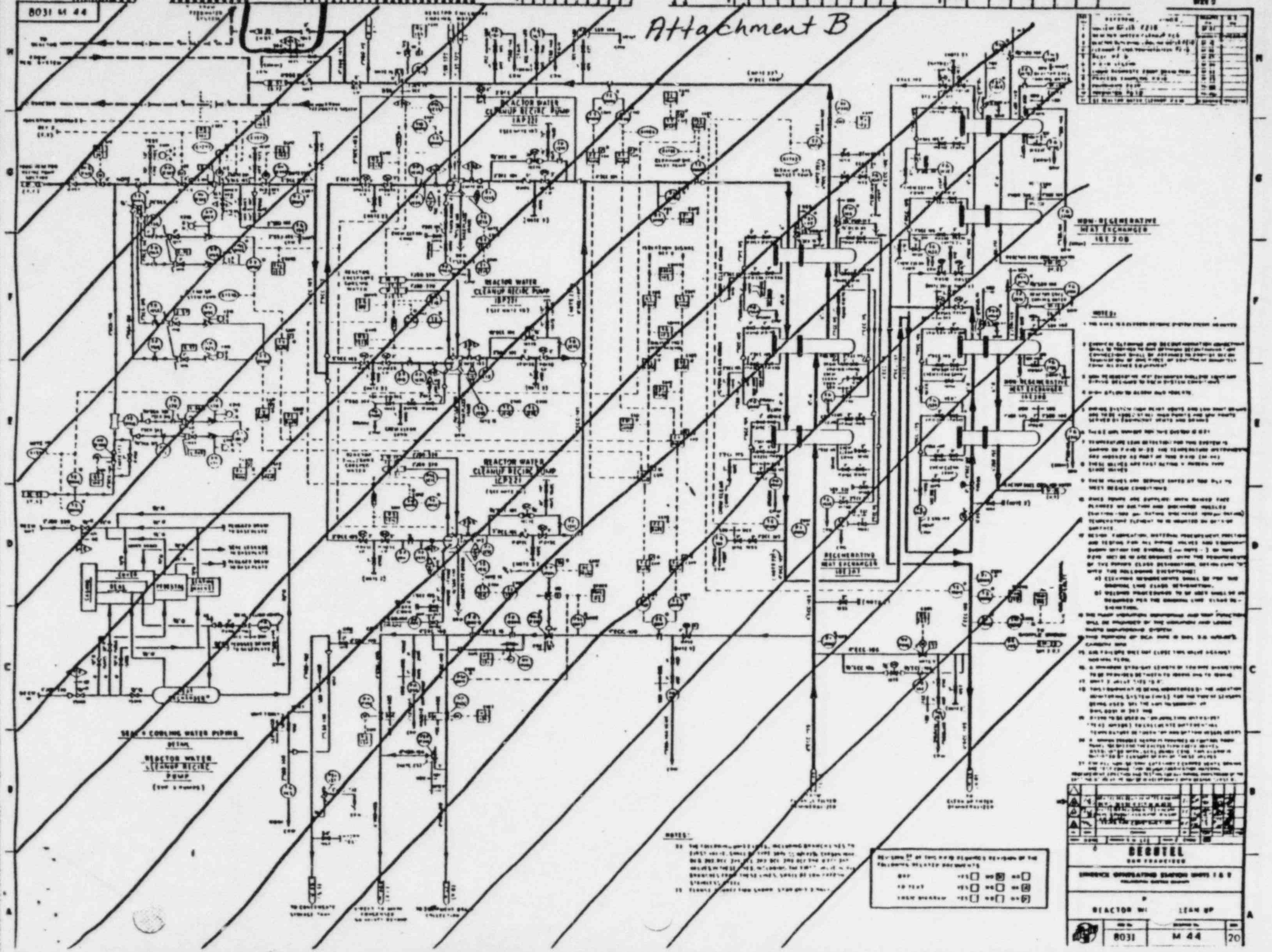
| Component No. | Component Description | Comp. Mode (on/Off (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| HV-55-1F008 | Test Return to CST Vlv. | Open | 1.65 cc/min | | |
| HV-55-1F006 | Pump Disch. Vlv. | closed | .3 cc/min | | |
| HV-55-1F041 | Pump Suct. from Supp Pool Vlv. | Closed | ≤ 5 Drops/min. | | |
| HV-55-1F004 | Pump Suct. from CST Vlv. | Open | ≤ 5 Drops/Min. | | |
| 55-1F010 | Pump Suct. from CST Man. Vlv. | Open | ≤ 5 Drops/Min. | | |
| HV-55-1F011 | Test Return to CST Vlv. | Open | ≤ 5 Drops/Min. | | |
| HV-C-51-154B | HPCI to RHR Vlv. | Closed | ≤ 5 Drops/Min. | | |

Attachment B

8500016380

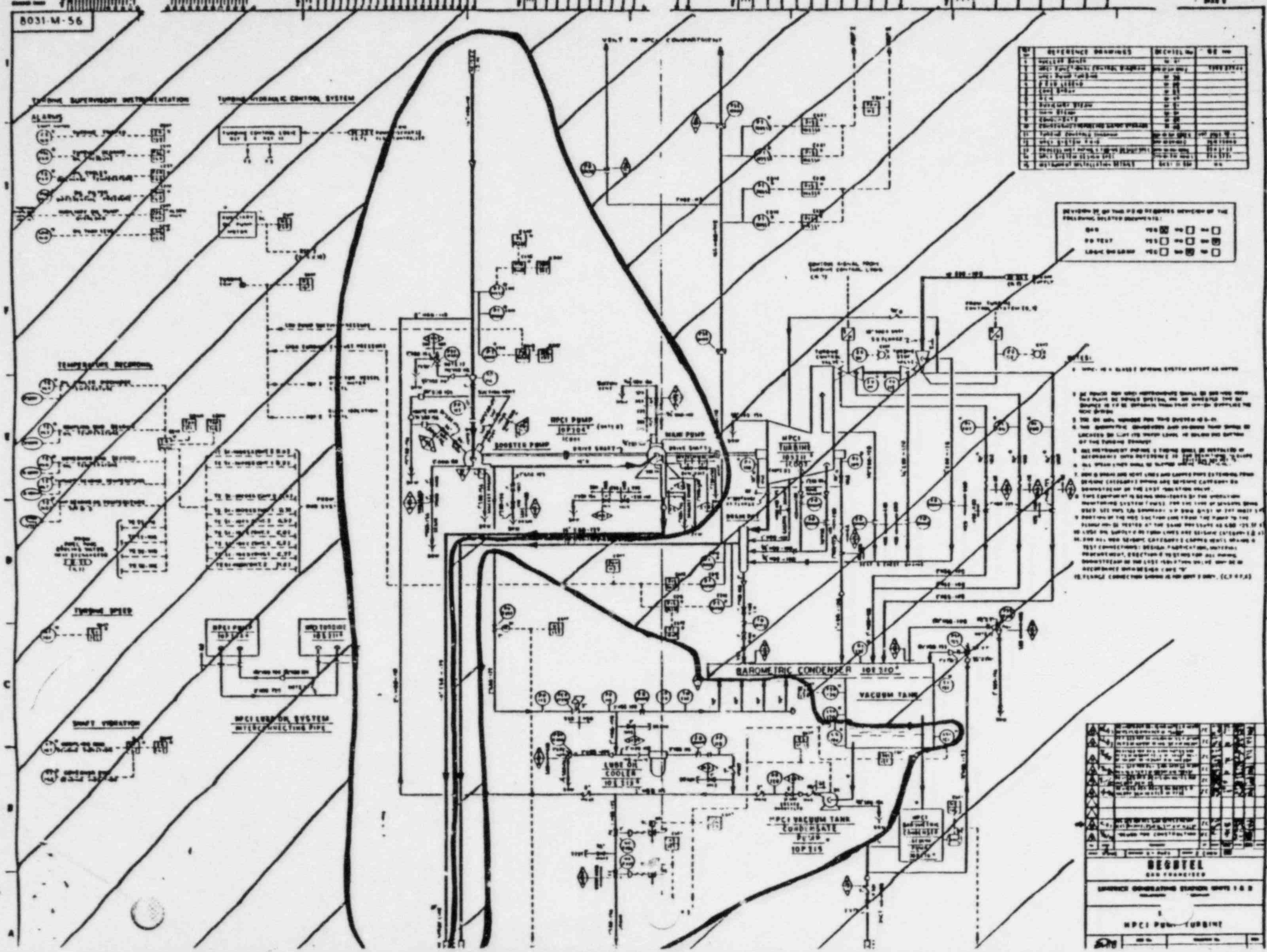


3850016380

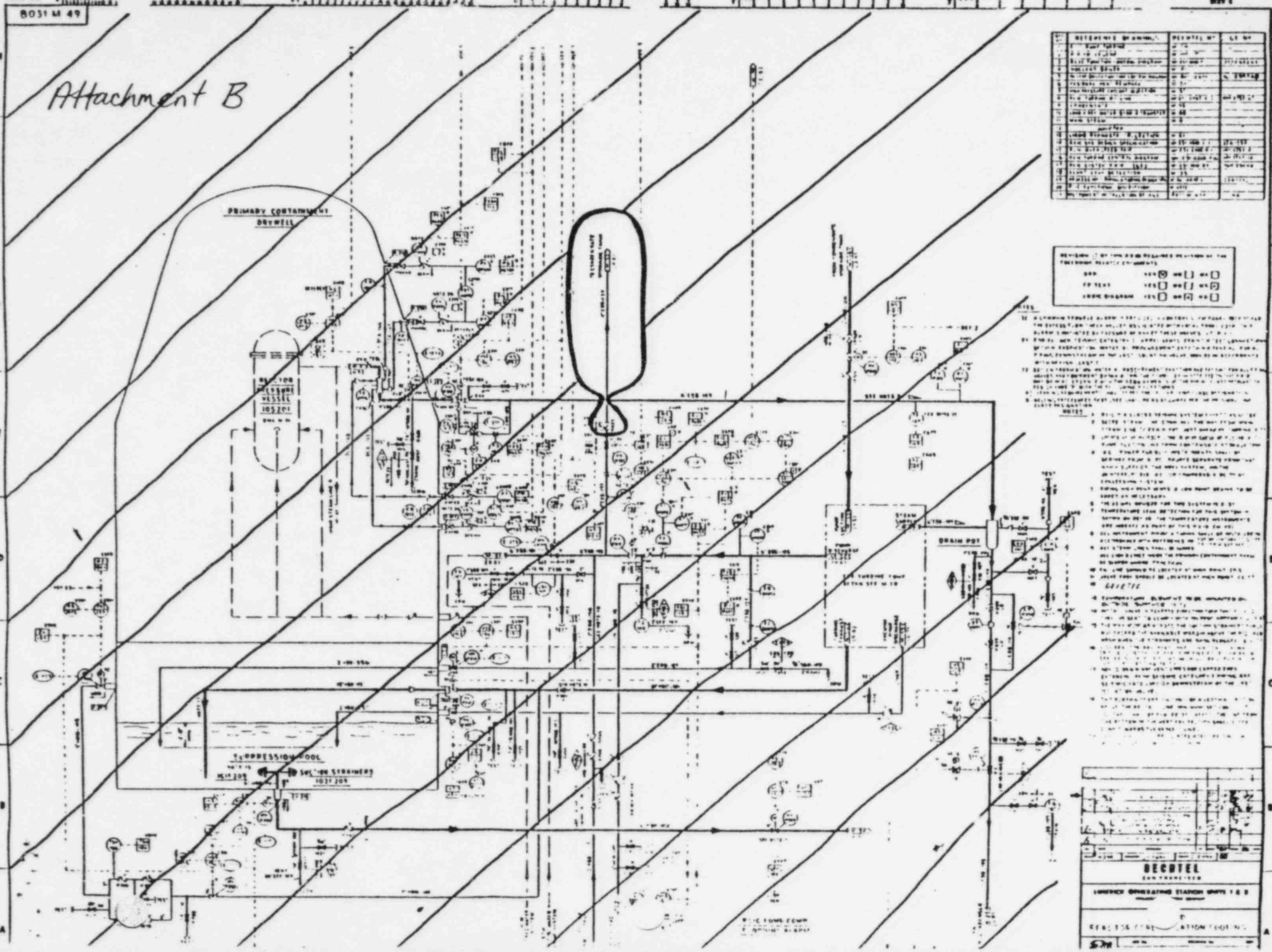

8031 M 44
Attachment B
REACTOR WATER CLEANUP RECIRC PUMP
NON-REGENERATIVE HEAT EXCHANGER
REGENERATIVE HEAT EXCHANGER
SEAL & COOLING WATER PIPING DETAIL
REACTOR WATER CLEANUP RECIRC PUMP
NOTES:
BECHTEL
SAN FRANCISCO
8031
M 44
20

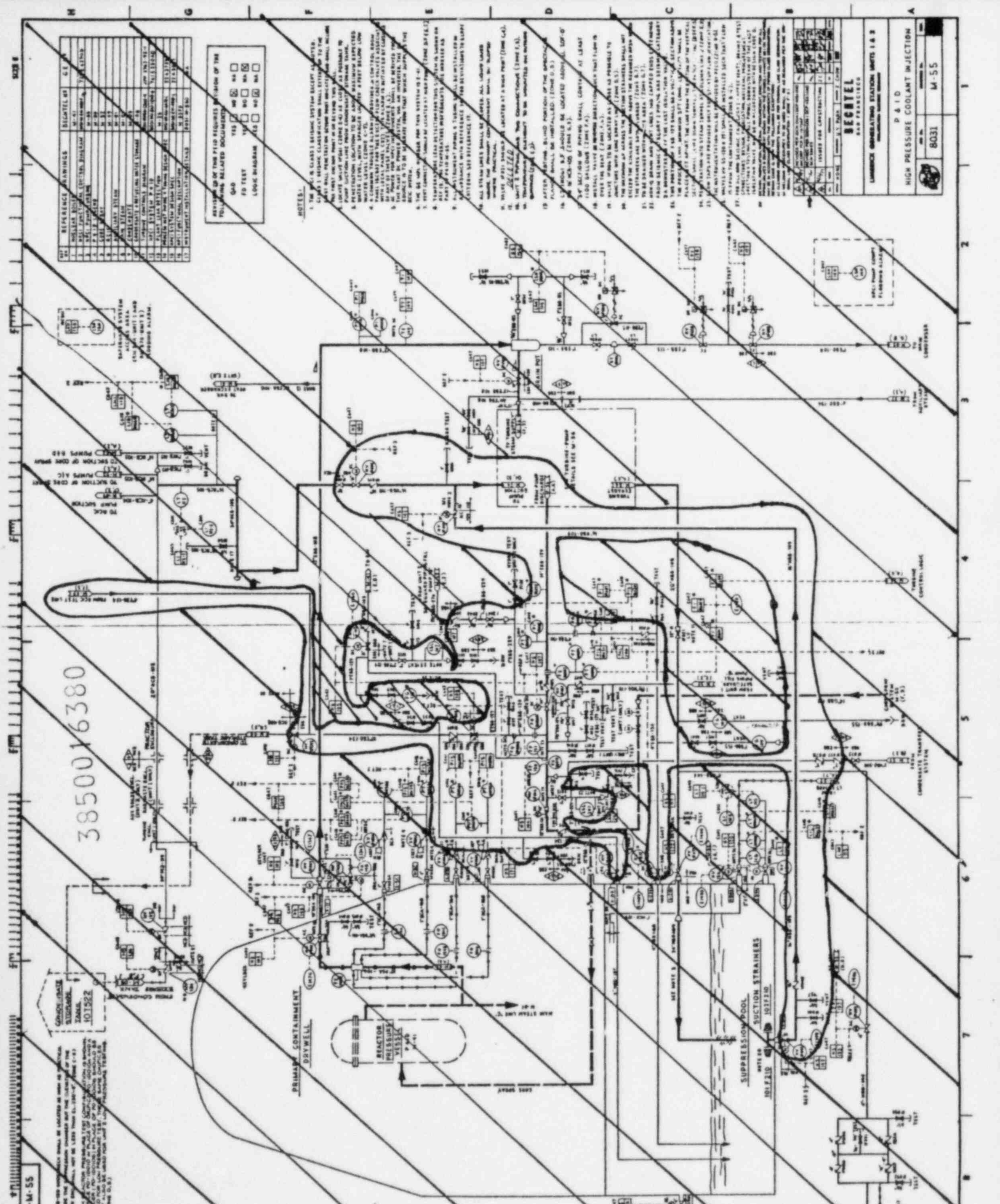
Attachment B

3850016380



3850016380


8031 M 49
Attachment B
PRIMARY CONTAINMENT
DRYWELL
SUPPRESSION POOL
SUCTION STRAINERS
DRAIN POT
NOTES
BECHTEL
SAN FRANCISCO




Attachment 'B' 1-OSS-701-1 Rev. 1

entire page

JC 5/15/85

Unit 1

3850016380 ATTACHMENT 6B

RJ Moore 9·26·84

A-4, Form 1
Revision 1
Page 1 of 1

9/28/84
EFFECTIVE DATE

LIMERICK GENERATING STATION
PORC APPROVAL FORM

TPC #85-048

CRE 9/10/84

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-055-701-1

2. REASON FOR SUBMITTAL: TEMPORARY CHANGE

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC A-3 REVIEW REQUIRED BY ______

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | LAH | 1/9/85 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | CPG | 1/9/85 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

CONTROLLED COPY

VALID ONLY WHEN RED

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ______ ______ ADMIN OR PREPARER | ______/______ | #: ______ DATE: ______ |

DIRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE______
☐ FILE THIS FORM PER ADMIN. PROC.______
☐ OTHER:______

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

10/25/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-055-701-1 HPCI PUMP CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason 920 as spec
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.c
FSAR 6.2.8.3
2. MRF No.________

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Marc Lehman 1-15-85

Performed By: (Sign/Date) [signature] 1-15-85

Informed Test Complete: (ACO or CO) (Sign/Date) R. [signature] 1-17-85
(Time) 1330

Reviewed By: (SSVN or STA) (Sign/Date) [signature] 1/17/85

---

B. One or More Asterisk(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ____

Informed of Test Results: (CO or ACO) (Sign/Date) ________ ____
(Time) ____

Shift Supervision: (Sign/Date) ________ ____

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________ ________

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ________

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) R.B. Dickinson 1-17-85

## 1.0 PURPOSE

To Inspect and measure any leakage of the HPCI Pump and HPCI System components that are directly associated with system piping that could carry contaminated fluids during a serious accident or transient. This inspection shall be implemented while the system is operating in the test mode.

## 2.0 REFERENCES

2.1 8031-M-55, High Pressure Coolant Injection

2.2 8031-M-56, HPCI Pump Turbine

2.3 NUREG-0737

## 3.0 TEST EQUIPMENT

3.1 Graduated Cylinder(s)

3.2 One-Liter Bottle(s)

3.3 Assorted funnels

3.4 Stopwatch

3.5 Inspection mirror w/handle

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section.

4.2 Leakage rates of greater than 5 drops per min. (.25 cc/Min) shall be quantified. Use "≤ 5 drops/min" on Attachment A for Components with leakage rates of 5 drops per min or less.

4.3 Steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 If any component exhibits excessive leakage notify SSVN immediately.

## 5.0 PREREQUISITES

5.1 Request RWP and HP Assistance when required.

5.2 Inspector is familiar with the HPCI system location and layout.

5.3 The HPCI pump must be running for surveillance ST-6-055-230-1 or per S55.1.D to inspect its associated piping and components.

5.4 Obtain copy of previous inspection's Attachment A.

5.5 Coordinate with Operator running the system to allow pump run durations to be extended for the inspection.

## 6.0 PROCEDURE

INITIALS

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation

6.1.1 Verify all prerequisites are satisfied. RDM

6.1.2 Record appropriate information for each piece of measurement and test equipment used with a PECo number.

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| Stopwatch | Micronta ~~53-8106~~ | 53-8106 | 1/26/84 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

INITIALS

6.2 Shift Permission to Test

6.2.1 Obtain Shift Supervision's permission to start test. RT

6.2.2 Obtain Control Room Operator's permission to start test. J Koelle ACO

1/15/85 DATE / 1557 TIME

6.3 HPCI Pump Contaminated Piping Inspection

ACTUAL LEAKAGE RATE MEASUREMENT METHODS WILL BE LEFT TO THE DISCRETION OF THE INSPECTOR. THE ONLY GUIDELINES BEING THAT ALL DATA WILL BE A MEASURED QUANTITY OF FLUID OVER TIME USING A STOPWATCH. DROPS PER MINUTE CAN BE USED AS A MEASUREMENT METHOD WHERE 20 DROPS = 1cc. ALL RECORDED DATA SHALL BE IN CUBIC CENTIMETERS PER MIN. (cc/min).

6.3.1 For all in line components, within the boundaries of Attachment B, which exhibit leakage, record on Attachment A the Leakage Rate and a description of the location of the leak. Pay particular attention to system components identified as having exhibited measurable leakage in the previous inspection.

6.3.2 From the leakage rate data on Attachment A, calculate the total system leakage rate and document the results below.

SYSTEM LEAKAGE RATE

1.2 cc/min cc/min

0.003168 gal/min

(1 cc/min = 0.000264 gal/min)

INITIALS

6.4 Test Results Evaluation

6.4.1 Verify the total leakage rate from 6.3.2 is less than the leakage limit in 8.1. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit mwf (*) see #1

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for its repair.

7.0 RETURN TO NORMAL

7.1 Inform SSVN and ACO test is complete. mwf

8.0 ACCEPTANCE CRITERIA

8.1 The HPCI Pump and it's associated components shall not exhibit a leakage rate of greater than (later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS #1 This test is part of the initial test program which will be used to establish leak rate criteria in 8.1

Attachment A

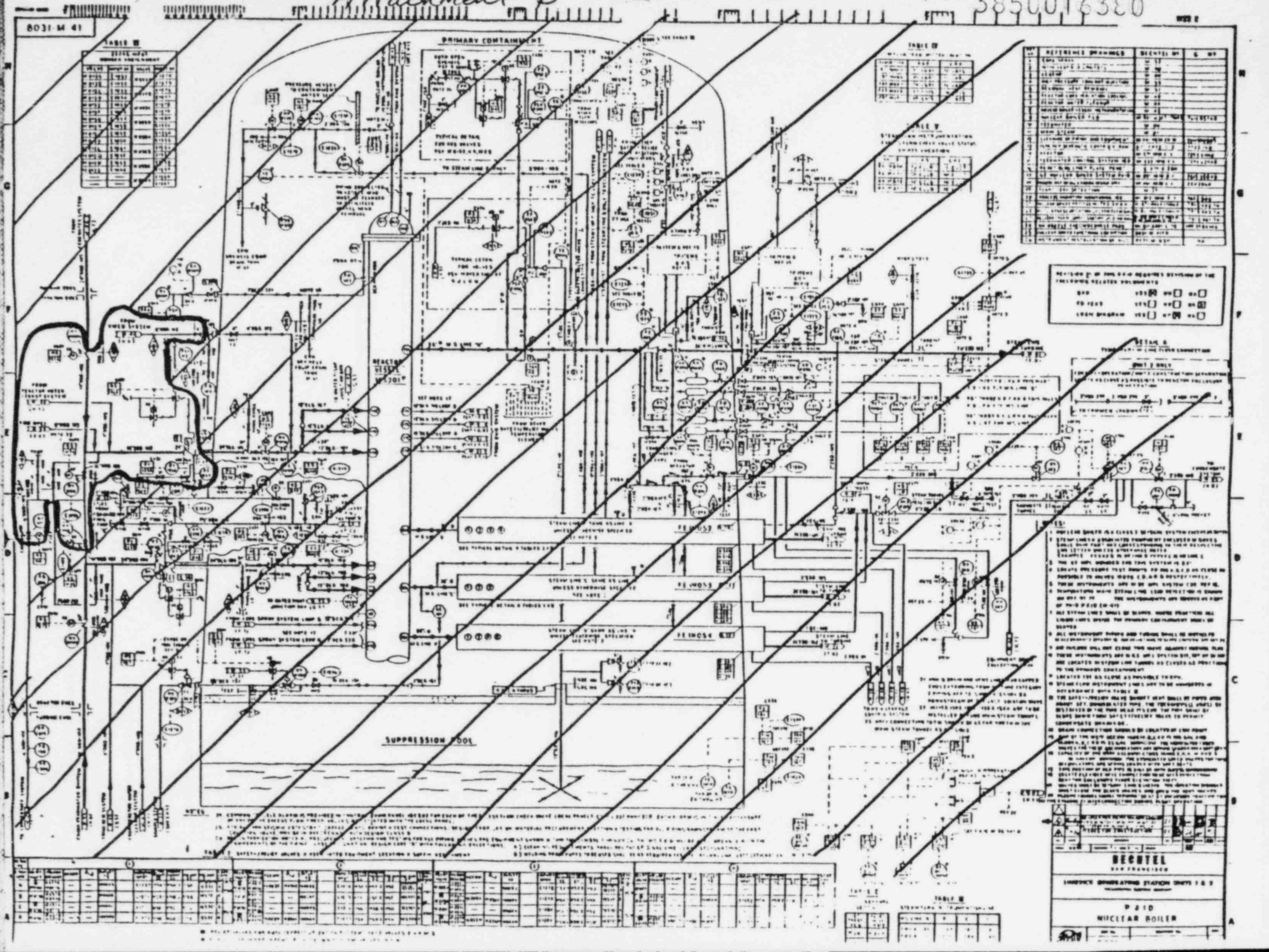
Inspector: M. Lehman, C. Klebe, D. Sustaita

System Mode Running in Test Date: 1-15-85

| Component No. | Component Description | Comp. Mode (on/Off (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| HV-55-1F011 | | | < 5 drops/min | | |
| HV-55-1F001 | | | < 5 drops/min | | |
| HV-55-1F006 | | | 14 drops/min | | |

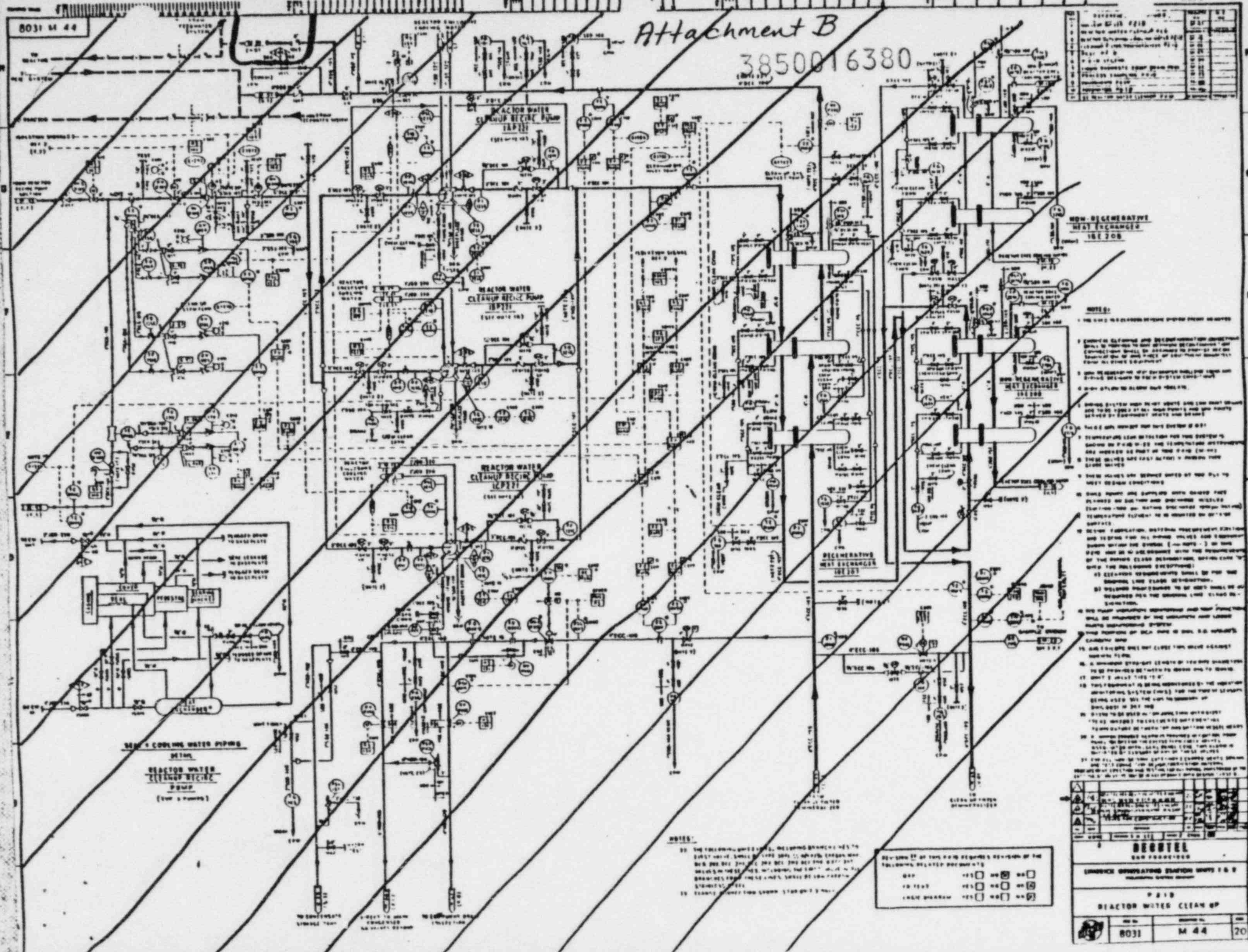
Attachment B

3850016380



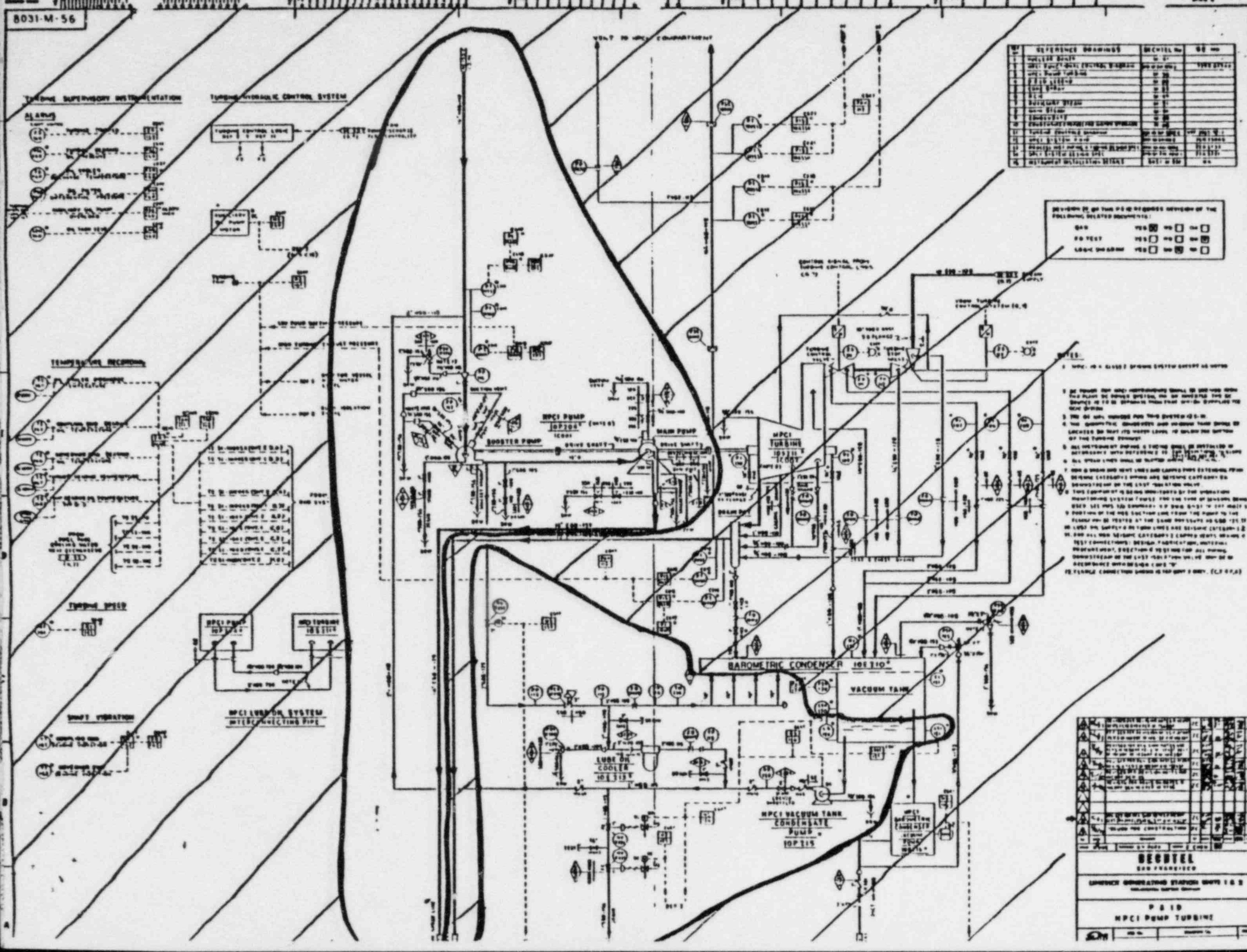
Attachment B

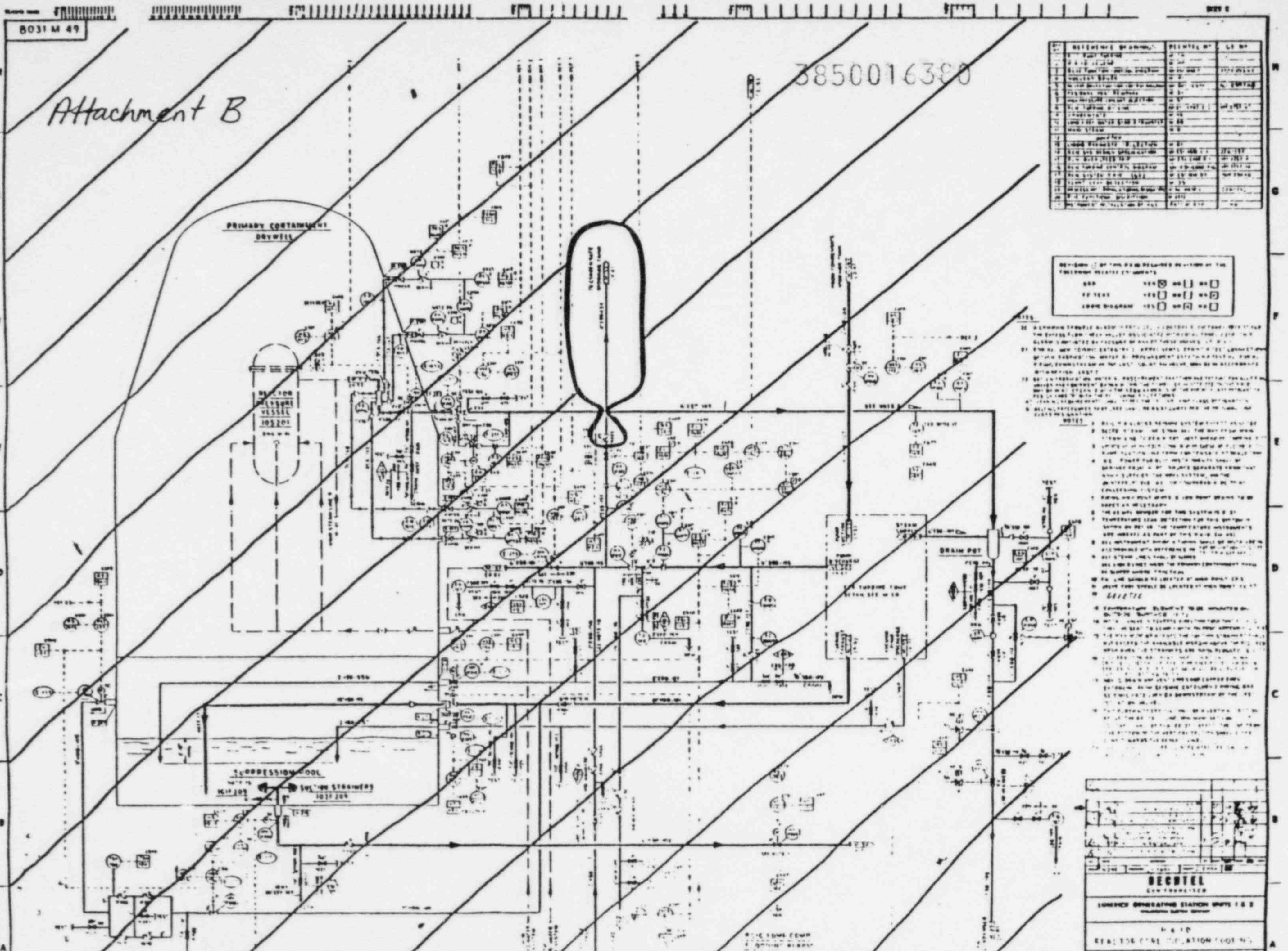
3850016380



Attachment B

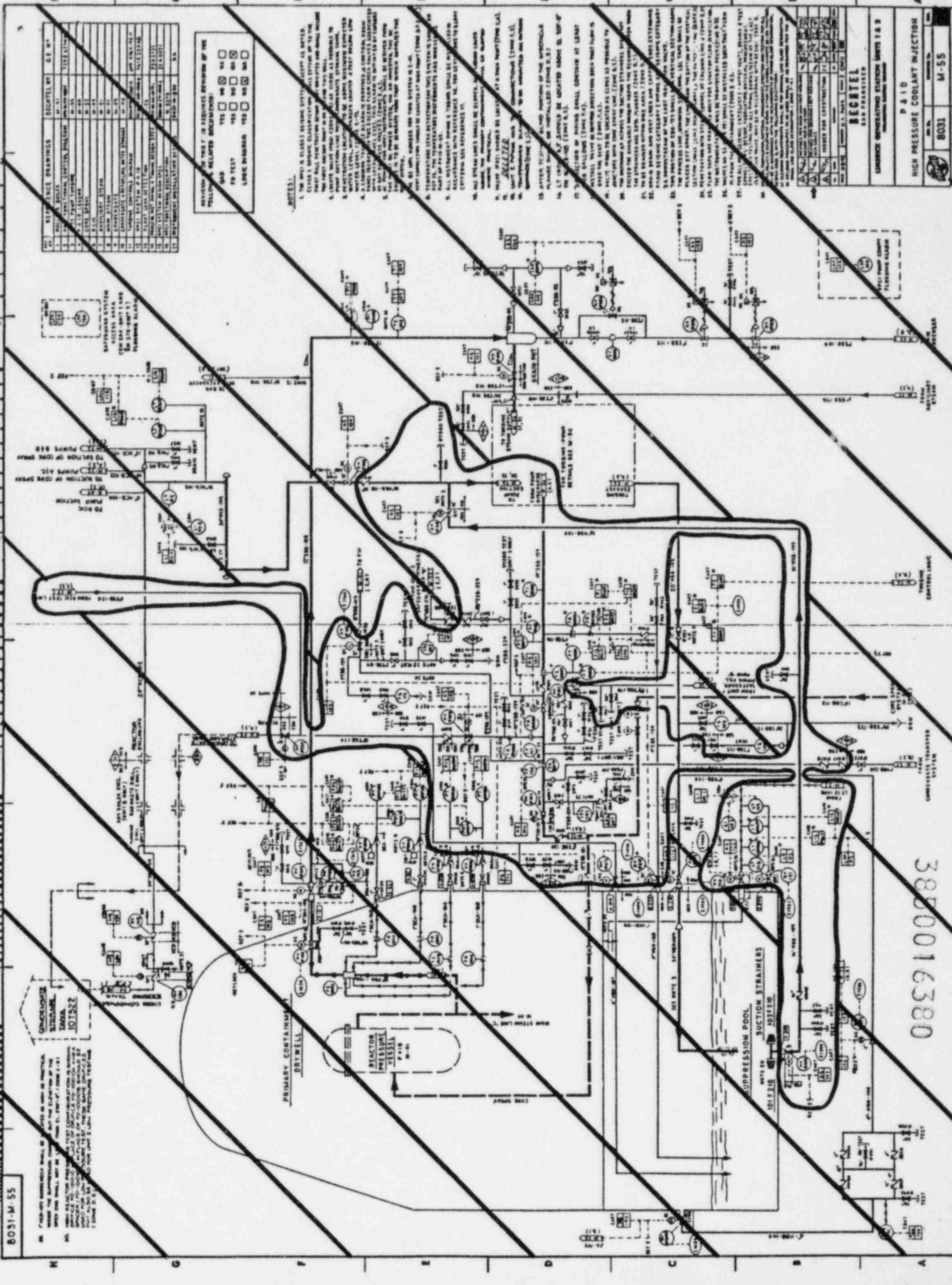
3850016380





8031 M 49
Attachment B
3850016380
PRIMARY CONTAINMENT
DRYWELL
SUPPRESSION POOL
DRAIN POT
BECHTEL
LIMERICK GENERATING STATION UNITS 1 & 2

ATTACHMENT B ST-1-055-701-1




3800016380

LAD 1/9/85 CPC 1/9/85

9/28/84
EFFECTIVE DATE
TPC #85-024

LIMERICK GENERATING STATION
PORC APPROVAL FORM

9-26-84 Revision 1
Page 1 of 1
9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-6-055-702-1 Rev.0

2. REASON FOR SUBMITTAL: attach 4 pages of "Attachment C" 3850016380

ATTACHMENT 7A

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☐ TEMPORARY CHANGE TO APPR'D PROC A-3 REVIEW REQUIRED BY ______

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| Telecon J.Monty PERF ENG | LAH | 1/4/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | J.M. | 1-4-85 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| RE : | JM | 1/4/84 | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ______ ______ ADMIN OR PREPARER | ______ / ______ | #: ______ DATE: ______ |

DIRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE ______
☐ FILE THIS FORM PER ADMIN. PROC. ______
☐ OTHER: ______

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

3850016380

GM Latch 9/10/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-055-702-1 HPCI TURBINE CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: A. Reason 200# on SU
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.c B. MRF No.

P

1A 85101

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Brian Tracy 1/5/85

Performed By: (Sign/Date) John Krais 1/5/85

Informed Test Complete:(ACO or CO) (Sign/Date) D. Olebutshrow 1/5/85
(Time) 1120

Reviewed By:(SSVN or STA) (Sign/Date) A Lomb 1-5-85

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ______ ____

Informed of Test Results: (CO or ACO)(Sign/Date) ______ ____
(Time) ____

Shift Supervision: (Sign/Date) ______ ____

Corrective Action: MRF No.: ______

Initiated By: (Sign/Date) ______ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ______

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ______

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) ______ ____

## 1.0 PURPOSE

To inspect the H.P.C.I. Turbine, associated piping and components for steam leakage while the system is being run in the test mode.

## 2.0 REFERENCES

2.1 8031-M-55, High Pressure Coolant Injection

2.2 8031-M-56, HPCI Pump Turbine

## 3.0 TEST EQUIPMENT

None

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.2 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.3 Data Sheet steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 Components to be inspected shall include all valves, capped vents, drains and test connections, seals and case joints, flanged connections and instrument taps on all system piping which carries primary steam or its condensate.

4.5 If large steam leaks are encountered leave the area immediately and inform SSVN.

## 5.0 PREREQUISITES

5.1 Request RWP and HP assistance when required.

5.2 Inspector is familiar with the HPCI Turbine System location and layout.

5.3 Obtain a copy of the previous inspection's Data Sheet.

5.4 The HPCI pump must be running for surveillance ST-6-055-230-1 or per S55.1.0 to inspect its associated piping and components. (This should be done in conjunction with ST-1-055-701-1.)

## 6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation

SO 6.1.1 Verify all prerequisites are satisfied.

6.2 Shift Permission to Test

SO 6.2.1 Obtain Shift Supervision's permission to start test.

SO 6.2.2 Obtain Control Room Operator's permission to start test.

6.3 HPCI Turbine Contaminated Piping Inspection.

6.3.1 Inspect the HPCI Turbine and it's associated in Line components for steam leakage while the system is at pressure and running.

6.3.2 For all system components, within the boundaries of Attachment C, which exhibit steam leakage, record on the Data Sheet Attachment A an estimate of the length of the steam plume and a description of the location of the leak. Pay particular attention to system components which exhibited leakage in the previous inspection. Large steam leaks should not be quantified. A MRF should be issued for the component's repair and this test should be considered a failed test.

6.3.3 Using Attachment B convert the steam plume lengths to values of water volume and record them on Attachment A.

6.3.4 From the volumetric leak rate data on Atachment A, calculate the total steam system leakage rate and document the results on the data sheet.

HAVE SHIFT SUPERVISION PERFORM THE TEST RESULTS EVALUATION, SECTION 6.4

6.4 Test Results Evaluation

SO 6.4.1 Compare the leakage limit in 8.1 to the total system leakage rate. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit.

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for its repair.

## 7.0 RETURN TO NORMAL

SO 7.1 Inform SSVN and ACO test is complete

## 8.0 ACCEPTANCE CRITERIA

8.1 The HPCI Turbine System shall not exhibit a leakage rate greater than (Later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

## H.P.C.I. TURBINE CONTAMINATED PIPING INSPECTION

DATA SHEET (1 of 2)

ACTION REQUIRED | INITIALS

6.0 PROCEDURE

6.1 Preparation

6.1.2 All prerequisites satisfied — mPS

6.1.3 Test Equipment — N/A

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

6.2 Shift Permission to Test

6.2.1 SSVN permission obtained — mPS

6.2.2 ACO permission to test — ACO

1-4-85 / 19:17
Date Time

6.3 HPCI Turbine Contaminated Piping Inspection.

6.3.4 HPCI Turbine Leakage rate:

136 cc/min SEE NOTE #1
.035904 gal/min
(1 cc/min = .000264 gal/min)

6.4 Test Results Evaluation.

6.4.1 The HPCI Turbine System leakage rate is within acceptable limits. — BT (*) SEE NOTE #2

## H.P.C.I. TURBINE CONTAMINATED PIPING INSPECTION

DATA SHEET (2 of 2)

ACTION REQUIRED | INITIALS

7.0 RETURN TO NORMAL

7.1 SSVN and ACO informed of test completion. JEK

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS #1 GLAND SEAL LEAKAGE IS PRESENT ONLY WHEN THE VACUUM PUMP IS NOT OPERATING. #2 THIS TEST IS PART OF THE INITIAL TEST PROGRAM WHICH WILL BE USED TO ESTABLISH LEAKRATE CRITERIA IN 8.1

## HPCI TURBINE CONTAMINATED PIPING INSPECTION

DATA SHEET

Attachment A

NSPECTOR: Bob Mondik / Marc Lehman

YSTEM MODE Running in Test DATE: Jan. 5, 1985

| Component No. | Component Description | Comp. Mode (on/off) (open/shut) | Steam Plume Length | Equivalent Water Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|---|
| 105211 | HPCI Turbine Shaft Gland Seal | ON | 2 FT. | 136 cc/min | | |

ATTACHMENT B

STEAM PLUME LENGTH CONVERSION TABLE

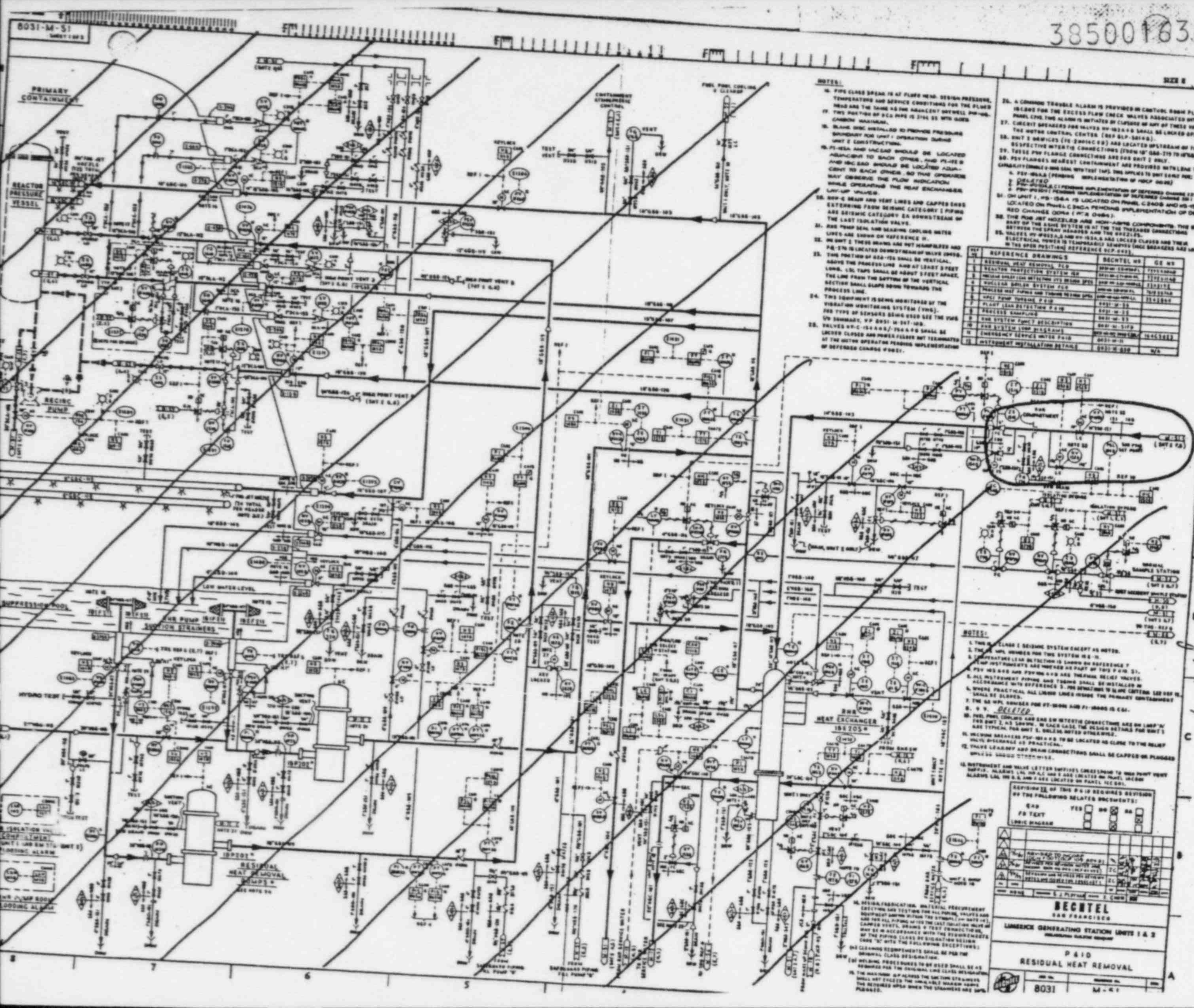
| Steam Plume Length (ft) | Water Volume (cc/min) |
|---|---|
| 1.00 | 76 |
| 1.25 | 87 |
| 1.50 | 98 |
| 1.75 | 114 |
| 2.00 | 136 |
| 2.25 | 152 |
| 2.50 | 174 |
| 2.75 | 205 |
| 3.00 | 235 |
| 3.25 | 273 |
| 3.50 | 311 |
| 3.75 | 356 |
| 4.00 | 409 |

4 pages

LMH 1/4/84 Telecon J Murty

Attachment C 1 of 4

J.M. 1-4-85



Attachment C 2 of 4

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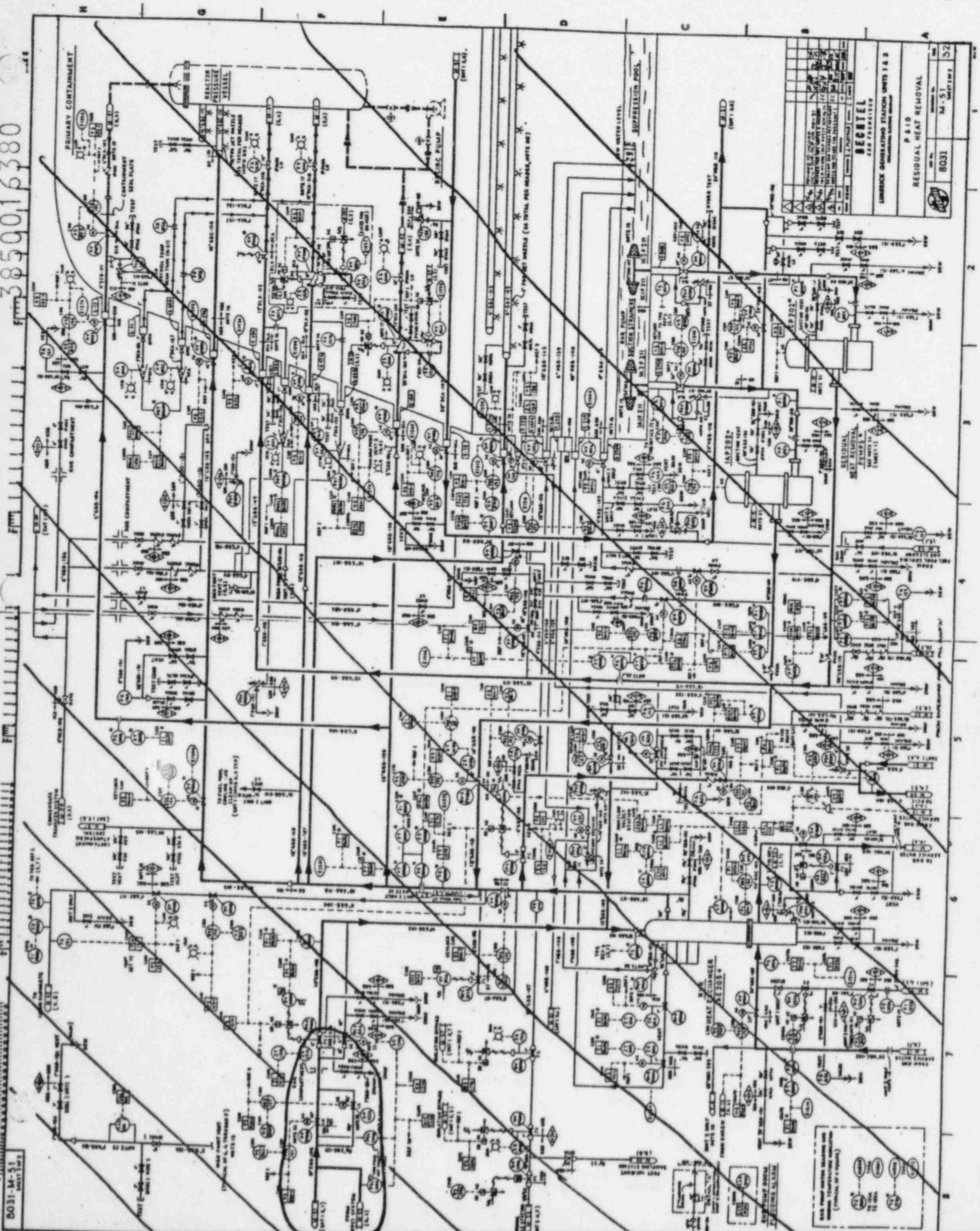
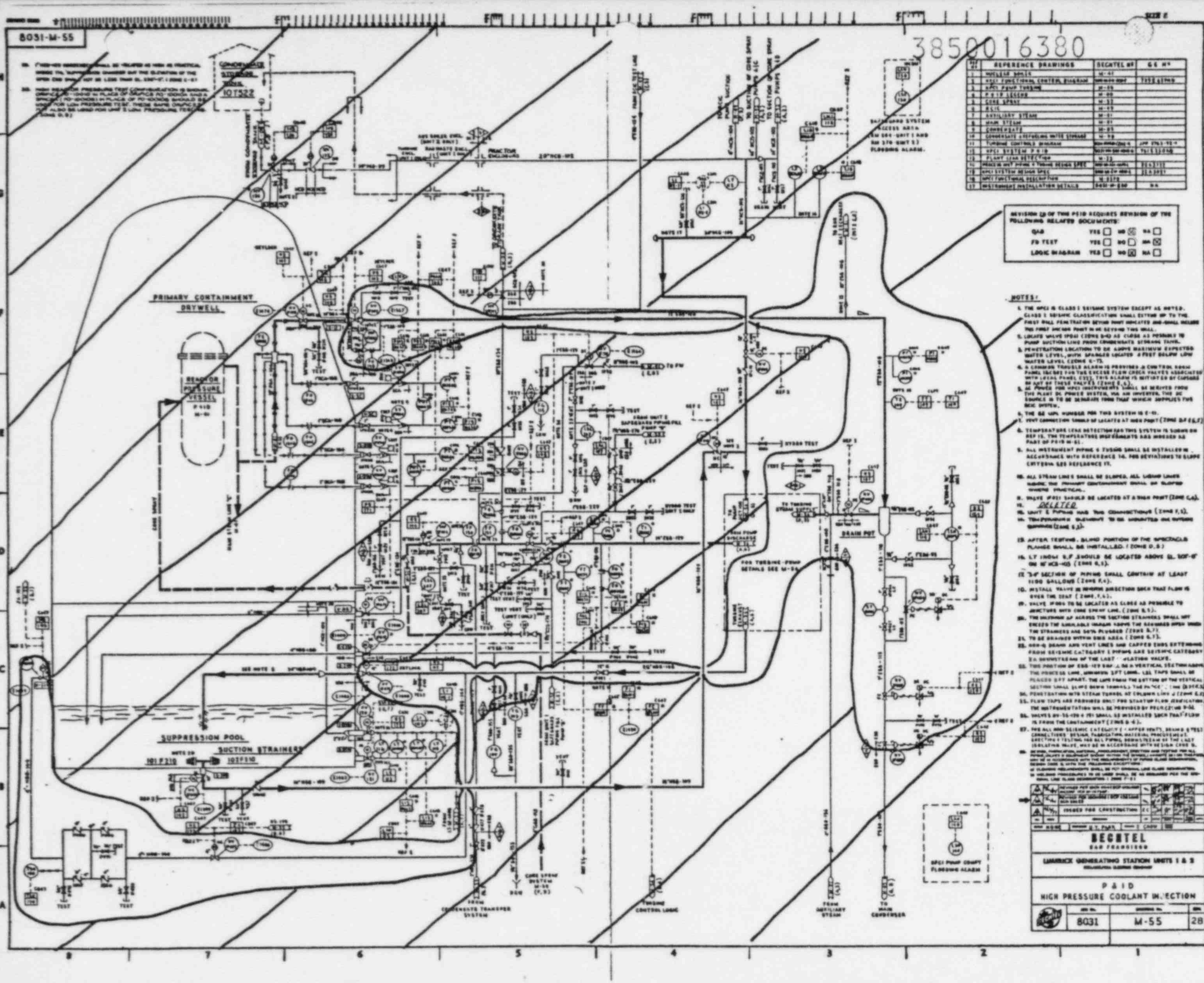
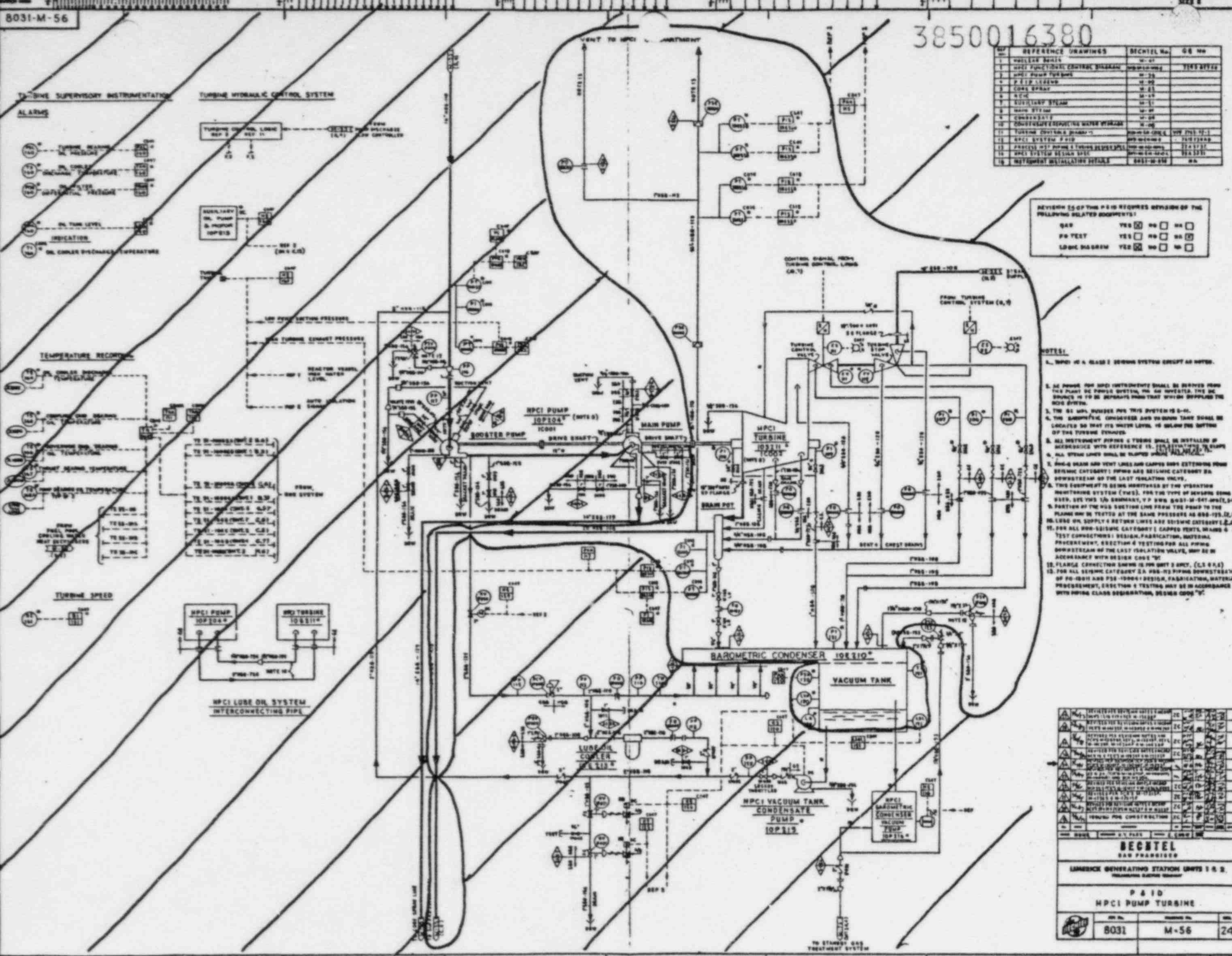





Attachment C 3 of 4

Attachment C 4 of 4



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9/28/84
EFFECTIVE DATE

TPC#85-047

LIMERICK GENERATING STATION
PORC APPROVAL FORM

RHMoore 9-26-84
A-4, Form 1
Revision 1
Page 1 of 1
9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-055-702-1

2. REASON FOR SUBMITTAL: TEMPORARY CHANGE

ATTACHMENT 7B

- [ ] NEW PROCEDURE
- [ ] PROCEDURE REVISION
  - [ ] ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)
  - [ ] PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED
- [x] TEMPORARY CHANGE TO APPR'D PROC
  A-3 REVIEW REQUIRED BY ______
- [x] REVIEW OF TEMP CHANGE ONLY
- [ ] REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | LDH | 1/9/85 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | CPF | 1/9/85 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

- [ ] Approved with comments/changes on attached document

CONTROLLED COPY
VALID ONLY WHEN RED

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE - - | SUPT. APPROVAL/DATE | PORC MEETING #: DATE: |
|---|---|---|
| ______ ______<br>ADMIN OR PREPARER | ______ / ______ | |

DIRECTIONS TO ADMIN. STAFF:
- [ ] ISSUE THE ATTACHED DOCUMENT
- [ ] FILE THE ATTACHED DOCUMENT IN FILE ______
- [ ] FILE THIS FORM PER ADMIN. PROC. ______
- [ ] OTHER: ______

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
- [ ] APPROVAL
- [ ] REVIEW
- [ ] INFO

GM Latch 9/10/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-055-702-1 HPCI TURBINE CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: A. Reason 920# on S/U.
Tech. Spec.: 6.8.4.a
FSAR 6.2.8.1.c B. MRF No._____

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Marc Lehman 1-15-85

Performed By: (Sign/Date) [signature] 1-15-85

Informed Test Complete:(ACO or CO) (Sign/Date) R. [signature] 1-17-85
(Time) 1330

Reviewed By:(SSVN or STA) (Sign/Date) [signature] 1/17/85

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ____

Informed of Test Results: (CO or ACO)(Sign/Date) ________ ____
(Time) ____

Shift Supervision: (Sign/Date) ________ ____

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ____

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________

Date/Time Notified: (Date/Time) ____ ____

Notified By: (Sign) ________

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making ~~initial~~ entry sign here

(Sign/Date) RB Dickinson 1/17/85

## 1.0 PURPOSE

To inspect the H.P.C.I. Turbine, associated piping and components for steam leakage while the system is being run in the test mode.

## 2.0 REFERENCES

2.1 8031-M-55, High Pressure Coolant Injection

2.2 8031-M-56, HPCI Pump Turbine

## 3.0 TEST EQUIPMENT

None

## 4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.2 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.3 Data Sheet steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.4 Components to be inspected shall include all valves, capped vents, drains and test connections, seals and case joints, flanged connections and instrument taps on all system piping which carries primary steam or its condensate.

4.5 If large steam leaks are encountered leave the area immediately and inform SSVN.

## 5.0 PREREQUISITES

5.1 Request RWP and HP assistance when required.

5.2 Inspector is familiar with the HPCI Turbine System location and layout.

5.3 Obtain a copy of the previous inspection's Data Sheet.

5.4 The HPCI pump must be running for surveillance ST-6-055-230-1 or per S55.1.0 to inspect its associated piping and components. (This should be done in conjunction with ST-1-055-701-1.)

## 6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation

SO 6.1.1 Verify all prerequisites are satisfied.

6.2 Shift Permission to Test

SO 6.2.1 Obtain Shift Supervision's permission to start test.

SO 6.2.2 Obtain Control Room Operator's permission to start test.

6.3 HPCI Turbine Contaminated Piping Inspection.

6.3.1 Inspect the HPCI Turbine and it's associated in Line components for steam leakage while the system is at pressure and running.

6.3.2 For all system components, within the boundaries of Attachment C, which exhibit steam leakage, record on the Data Sheet Attachment A an estimate of the length of the steam plume and a description of the location of the leak. Pay particular attention to system components which exhibited leakage in the previous inspection. Large steam leaks should not be quantified. A MRF should be issued for the component's repair and this test should be considered a failed test.

6.3.3 Using Attachment B convert the steam plume lengths to values of water volume and record them on Attachment A.

6.3.4 From the volumetric leak rate data on Atachment A, calculate the total steam system leakage rate and document the results on the data sheet.

HAVE SHIFT SUPERVISION PERFORM THE TEST RESULTS EVALUATION, SECTION 6.4

6.4 Test Results Evaluation

SO 6.4.1 Compare the leakage limit in 8.1 to the total system leakage rate. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit.

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF for its repair.

7.0 <u>RETURN TO NORMAL</u>

SO 7.1 Inform SSVN and ACO test is complete

8.0 <u>ACCEPTANCE CRITERIA</u>

8.1 The HPCI Turbine System shall not exhibit a leakage rate greater than <u>(Later)</u>.

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

## H.P.C.I. TURBINE CONTAMINATED PIPING INSPECTION

DATA SHEET (1 of 2)

ACTION REQUIRED | INITIALS

6.0 PROCEDURE

6.1 Preparation

6.1.2 All prerequisites satisfied RDM

6.1.3 Test Equipment N/A

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

6.2 Shift Permission to Test

6.2.1 SSVN permission obtained RT

6.2.2 ACO permission to test J Kolb
ACO
10/15/85/ 1530
Date Time

6.3 HPCI Turbine Contaminated Piping Inspection.

6.3.4 HPCI Turbine Leakage rate:

0.00 cc/min
0.00 gal/min
(1 cc/min = .000264 gal/min)

6.4 Test Results Evaluation.

6.4.1 The HPCI Turbine System leakage rate is within acceptable limits. mrf (*) Acc #1

## H.P.C.I. TURBINE CONTAMINATED PIPING INSPECTION

DATA SHEET (2 of 2)

ACTION REQUIRED | INITIALS

7.0 RETURN TO NORMAL

7.1 SSVN and ACO informed of test completion. mwf

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS (#1) this test is part of the initial test program which will be used to establish leak rate criteria 8.1

3850016380

## HPCI TURBINE CONTAMINATED PIPING INSPECTION

DATA SHEET

Attachment A

NSPECTOR: M. Lehman, E. Klebe, D. Sustiata

YSTEM MODE Running in Test DATE: 1-15-85

| Component No. | Component Description | Comp. Mode (on/off) (open/shut) | Steam Plume Length | Equivalent Water Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|---|
| | | No Leakage | | | | |

ATTACHMENT B

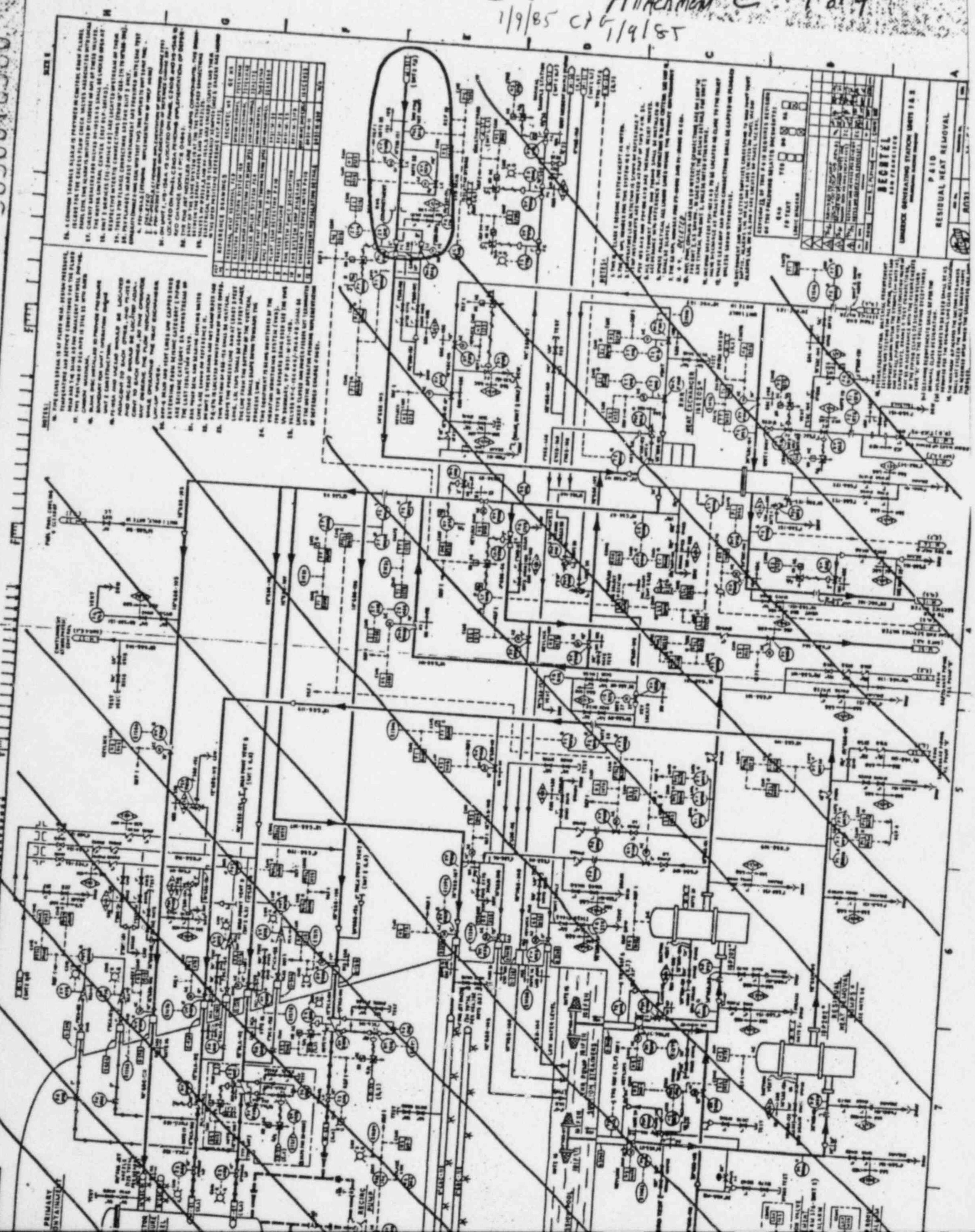
STEAM PLUME LENGTH CONVERSION TABLE

| Steam Plume Length (ft) | Water Volume (cc/min) |
|---|---|
| 1.00 | 76 |
| 1.25 | 87 |
| 1.50 | 98 |
| 1.75 | 114 |
| 2.00 | 136 |
| 2.25 | 152 |
| 2.50 | 174 |
| 2.75 | 205 |
| 3.00 | 235 |
| 3.25 | 273 |
| 3.50 | 311 |
| 3.75 | 356 |
| 4.00 | 409 |

LA14 1/9/85 CJG 1/9/85

Attachment C 1 of 4

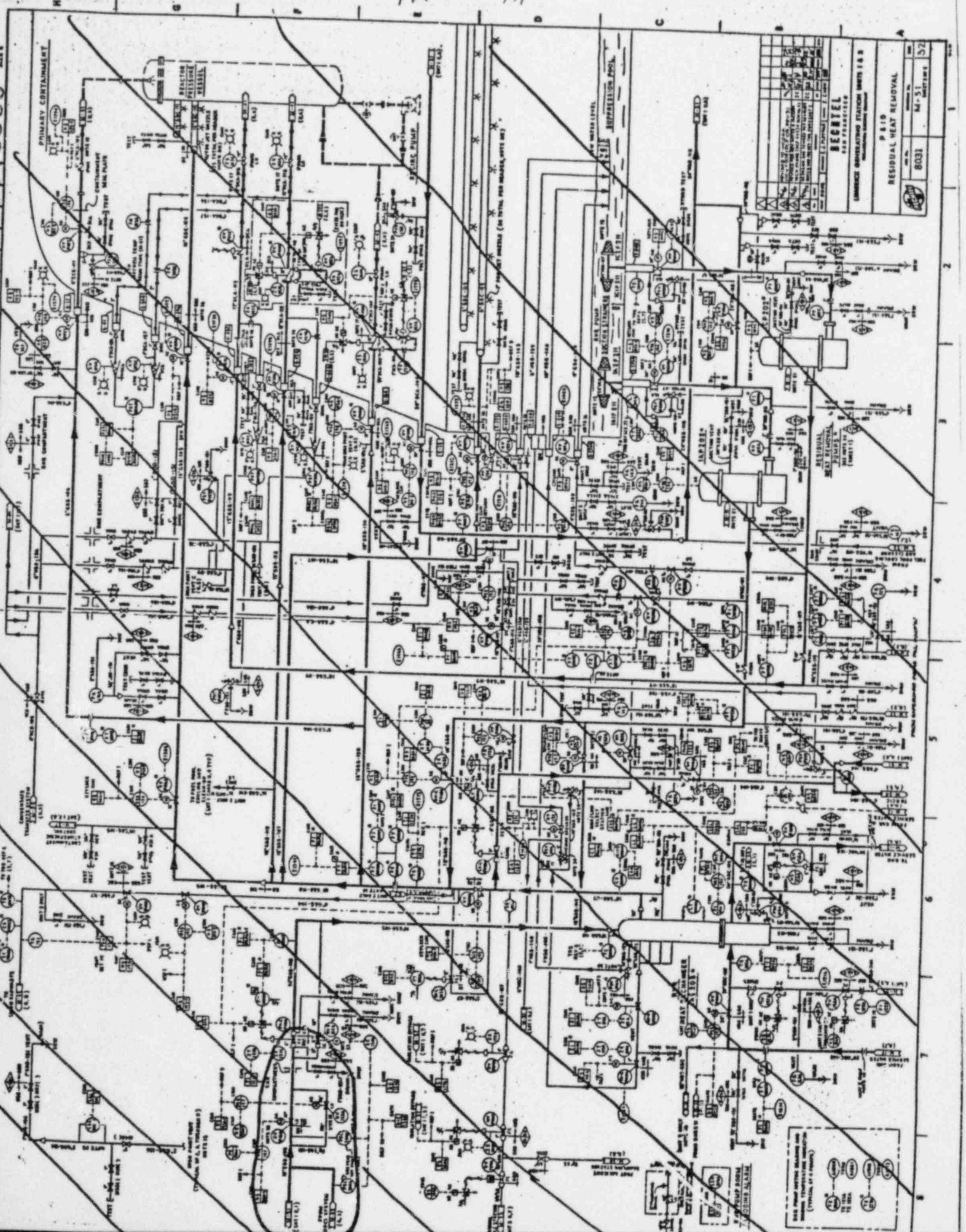
3850016380



CPG 1/9/85 LAB 1/9/05

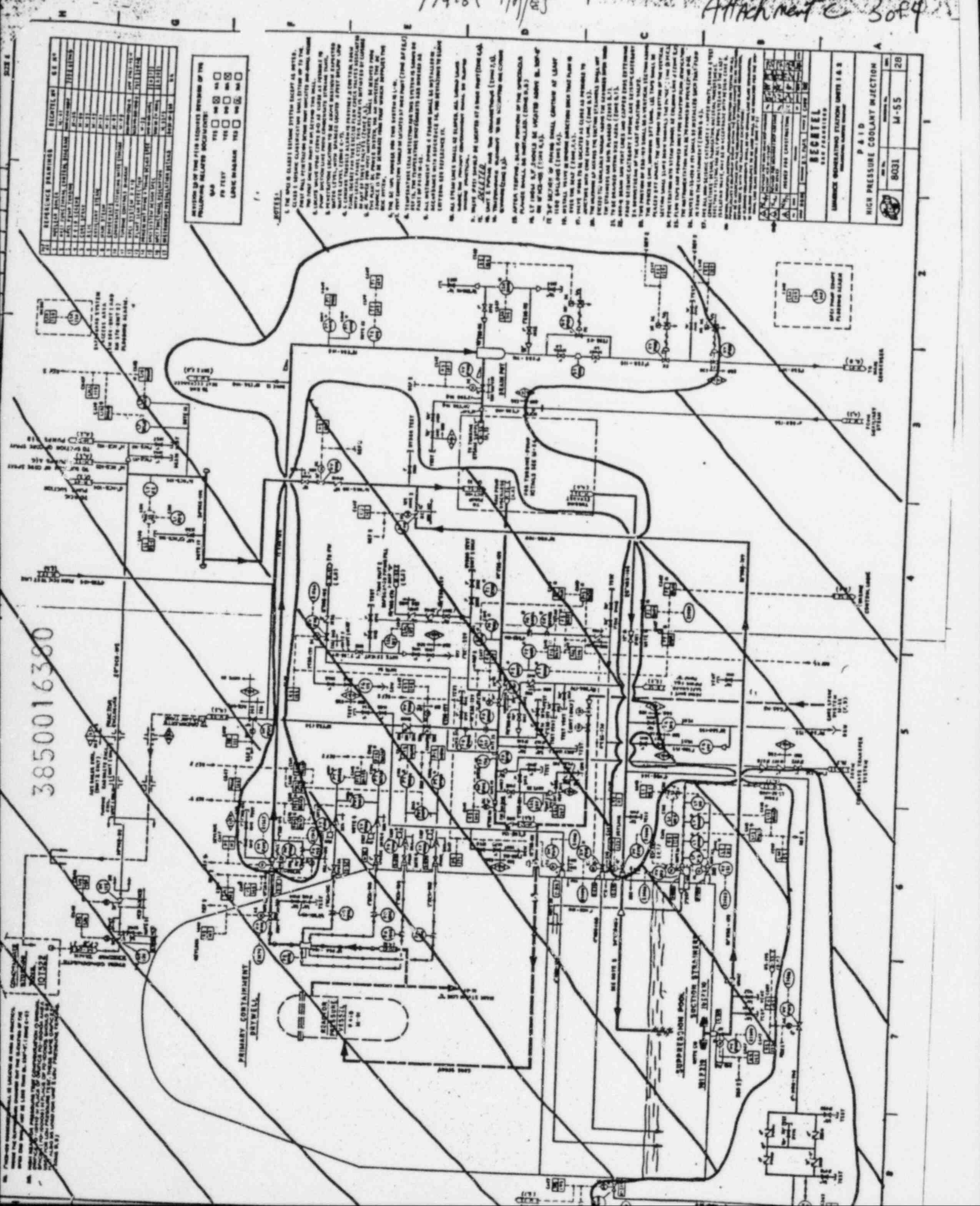
Attachment C 2 of 4

3850016380



CPG LAI4
1/9/85 1/17/85

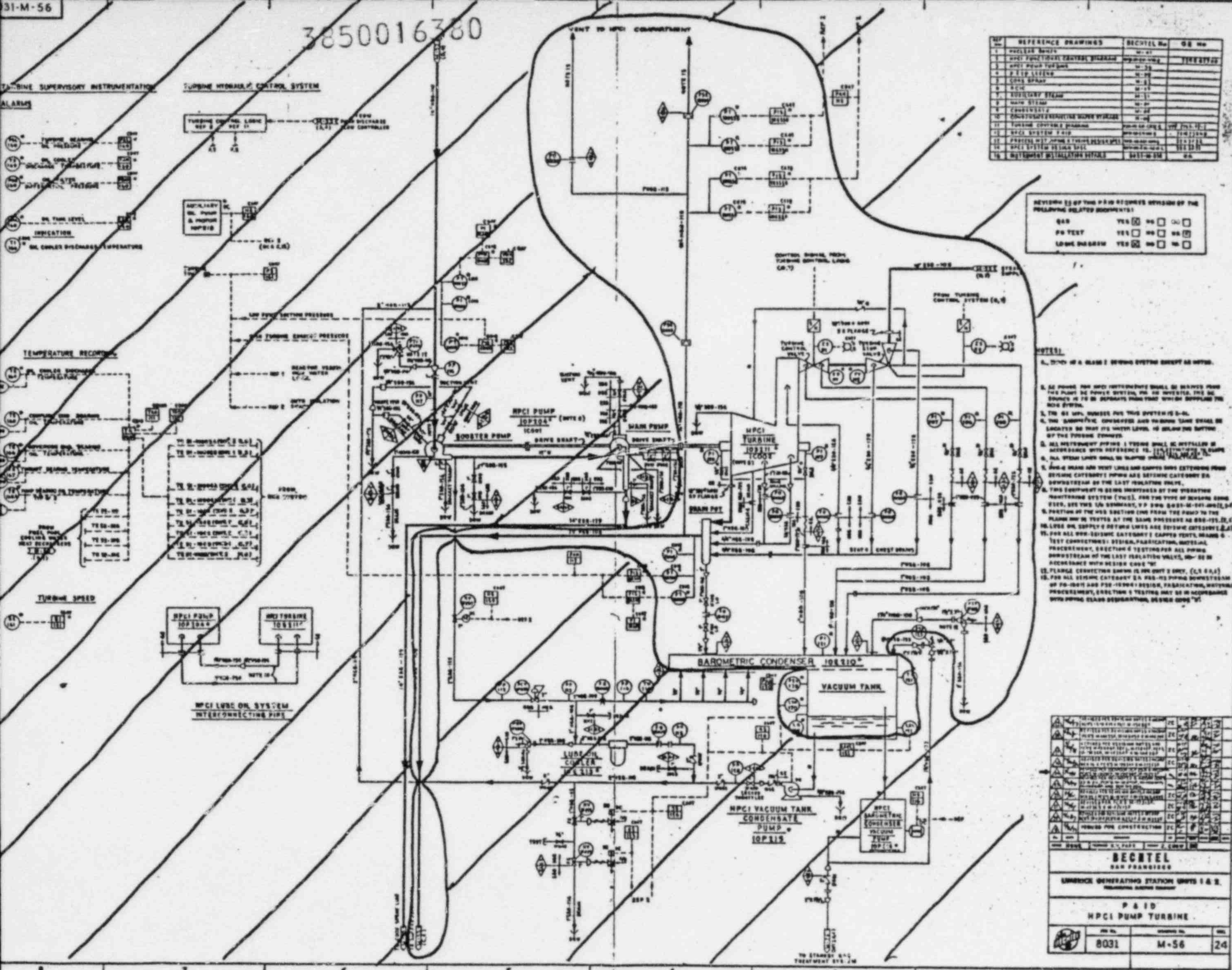
Attachment C 3 of 4



CPG LAY 1/9/85, 1/9/85

Attachment C 4 of 4

3850016380



ATTACHMENT 8A

3850016380

9/28/84
EFFECTIVE DATE

TPC# 1104

LIMERICK GENERATING STATION
PORC APPROVAL FORM

RHMoore 9-26-84

A-4, Form 1
Revision 1
Page 1 of 1
[illegible] 9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-058-701-1 REV O

2. REASON FOR SUBMITTAL: BOUNDARIES OF TEST CHANGED TO REFLECT INTENT OF FSAR
PAGES 12,13,14,17

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY ______

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | JC | 12/19/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | CPF | 12/20/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

Pgs 12, 13, 14 & 17

COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE

______ ______
ADMIN OR PREPARER

SUPT. APPROVAL/DATE

______ / ______

PORC MEETING
#: ______
DATE: ______

DIRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE ______
☐ FILE THIS FORM PER ADMIN. PROC. ______
☐ OTHER: ______

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

3850016380

(P) 10

SM Leitch 9/13/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-058-701-1 "A" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: A. Reason_______
Tech. Spec.: 6.8.4.a B. MRF No.______
FSAR 6.2.8.1.H
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Richard T. Mazzone 12-21-84

Performed By: (Sign/Date) ______ ______

Informed Test Complete:(ACO or CO) (Sign/Date) J Patusca 12-21-84
(Time) 0400

Reviewed By:(SSVN or STA) (Sign/Date) Lloyd Yoder 12-21-84

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ______ ______

Informed of Test Results: (CO or ACO)(Sign/Date) ______ ______
(Time) ______

Shift Supervision: (Sign/Date) ______ ______

Corrective Action: MRF No.: ______

Initiated By: (Sign/Date) ______ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ______

Date/Time Notified: (Date/Time) ______ ______

Notified By: (Sign) ______

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here.

(Sign/Date) ______ ______

## 1.0 PURPOSE

To verify that the total leakage rate for the A Hydrogen Recombiner Loop is within the acceptable limits specified in Section 8.0. If the system leakage rate is not within the acceptable limits, an inspection shall be performed to identify leaking components for repair.

## 2.0 REFERENCES

2.1 Generic LLRT Procedure ST-1-LLR-001-1

2.2 8031-M-57, Sheet 1

2.3 NUREG-0737

2.4 8031-M-40-45, Hydrogen Recombiner

## 3.0 TEST EQUIPMENT

3.1 Per Generic Procedure ST-1-LLR-001-1

3.2 Bottle(s) of SNOOP - or equivalent

3.3 Inspection mirror with handle

## 4.0 PRECAUTIONS AND LIMITATIONS

4.1 Per Generic Procedure ST-1-LLR-001-1 and Section 9.1 of Specific Procedure Section.

4.2 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.3 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.4 Data Sheet steps marked (*) are specific Tech. Spec. Requirements which will fail the test if not completed satisfactorily.

## 5.0 PREREQUISITES

5.1 Plant conditions are such that testing will not interfere with planned operations. Backup system availability has been established per Section 9.1. Request permission of Shift Supervision and ACO/CO to begin this test.

AFR / 12-20-84
Initials / Date

CTM / 12-20-84
ACO/CO / Date

5.2 RWP obtained if required. N/A

5.3 Safety permit issued if required per Section 9.5 or as determined by Results Engineer or alternate. Yes ____ No ✓

If Yes: Permit No. ______________

## 6.0 GENERAL LLRT PROCEDURE

Initials/Date

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Read Specific Procedure. Follow procedure for system draining and venting (Section 9.2) and valve lineup (Section 9.3). MJH / 12/20/84

6.2 With the box set up for a "FLOW IN TEST" and connected to the penetration test tap, perform LLRT per ST-1-LLR-002-1. Record leakage on the Test Data Sheet attached to this procedure. MJH / 12/20/84

6.3 Calculate test pressure as follows. Document calculations and reasoning below:

6.3.1 Determine the maximum back pressure against any <u>isolation boundary being tested</u> (existing at start of test or developing as the result of a water leg existing on the vent path). 0.0 psig

6.3.2 Determine the maximum back pressure against any <u>non-isolation boundary or isolation boundary not being tested</u>. 0.0 psig

IF THE PRESSURE CALCULATED IN SECTION 6.3.2 IS GREATER THAN 44 PSIG, A FLOW OUT TEST OR A WATER COLLECTION TEST MAY BE CONDUCTED TO MEASURE THE INLEAKAGE CONTRIBUTION AND ADDED TO LEAK TEST RESULTS. SECTION 6.3.2 PRESSURE CAN THEN BE REGARDED AS ZERO.

6.3.3 Add 44.0 psi for air or 48.4 psi for water to the pressure determined in section 6.3.1 ___44.0___ psig

6.3.4 Test pressure is the greater of Section 6.3.2 or Section 6.3.3. ___44.0___ psig
(Test Pressure)

Test Pressure Calculations:

6.4 Perform LLRT per Section 9.4.

## 7.0 PROCEDURE

7.1 Flow in Test (Test Volume Filled with Air)

7.1.1 Verify that the test volume is drained of water.

THE FOLLOWING STEPS ARE THE INITIAL SET UP OF VOLUMETRICS LEAK RATE MONITOR (LRM). SEE FIGURE 1.

7.1.2 Prior to performing leakage test or integrity check, set the LRM controls as follows:

| CONTROL | PRESSURE REGULATOR (V-1) | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|---|
| POSITION | FULL DECREASE (CCW) | CHARGE | DECAY | TEST |

7.1.3 Connect the LRM to a 110 volt, 60 Hz electrical power source. Press the power switch; allow a ten (10) minute warm-up period before proceeding with Section 7.1.5.

DUE TO THE NATURE OF THE THERMAL MASS FLOW TRANSDUCERS USED IN THE LRM, THE FLOW RATE INDICATOR MAY DISPLAY A READOUT OF -006 TO +006 AT A NO LEAK CONDITION. THIS IS A NORMAL INDICATION, AND DOES NOT AFFECT CALIBRATION OF THE LRM.

7.1.4 Apply clean, dry facility test gas supply pressure to INLET port and pressurize from 85 to 150 PSIG. (Use nitrogen on electrical penetrations)

7.1.5 Upon completion of warm-up period, adjust ZERO control as necessary to obtain a readout of ± 0.00 on the PRESSURE indicator. Be sure the TEST port is open to atmosphere.

7.1.6 Connect TEST port to the test volume.

7.1.7 Zeroing of the desired flow range(s) on the display must be completed before any flow measurements from that range are taken. The LRM MUST be isolated from the test volume by setting the ball valves as in Section 7.1.2. Adjust zero on all flow ranges, selecting each individually with the RANGE switch.

THERE MUST BE A CONSTANT SUPPLY PRESSURE OF 85-150 PSI CONNECTED TO THE INLET OF THE LRM FOR ZEROING OF THE FLOW DISPLAY.

THE FOLLOWING STEPS ARE THE LEAK TEST OPERATING SEQUENCE OF LRM.

7.1.8 Set the TEST LEVEL ball (V-4) valve to the CLOSED position. Set the TEST ball valve (V-3) to the FLOW position. Adjust the PRESSURE REGULATOR (V-1) to the desired test pressure level as displayed on the PRESSURE indicator. Set the RANGE SELECTOR switch and RANGE SELECTOR valve (V-2) to LOW RANGE and observe FL for any possible internal LRM leakage. Return the TEST LEVEL valve (V-4) to the TEST position. Return RANGE SELECTOR valve (V-2) to CHARGE position. The test volume should now be charging.

THE PRESSURE INDICATOR WILL SHOW A DROP IN PRESSURE UNTIL THE TEST VOLUME IS COMPLETELY CHARGED.

7.1.9 If the pressure within the test volume will not reach the desired test level (due to an excessive leakage rate), increase the REGULATOR control setting as necessary to obtain the desired test level pressure.

7.1.10 After the test volume is fully charged, set ball valves as follows:

| BALL VALVE | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|
| POSITION | HIGH | FLOW | TEST |

ALLOW A TEN (10) MINUTE (MINIMUM) TEMPERATURE STABILIZATION PERIOD.

7.1.11 Upon completion of temperature stabilization period, place the RANGE switch in the HIGH position and observe the FLOW RATE indicator for the leakage flow rate.

7.1.12 If the indicated leakage rate value is sufficiently low, set the RANGE switch to MID and the RANGE valve to MID for greater accuracy. If low range is desired, set RANGE switch to LOW and the RANGE valve (V-2) to LOW.

7.1.13 Verify the position of the following valves on LLRT Data Sheet.

Range Selector Switch
Range Selector Valve (V-2)
Test Valve (V-3)
Test Level Valve (V-4)

7.1.14 If leakage is evident but is below the calibrated range of the LRM, either assign a test leakage rate at the minimum calibrated range (20 sccm) or impose a known flow to raise total indicated flow rate to within the calibrated range of the LRM. This is done by closing the test connection valves and opening a vent valve between the test connection valves and valve V-4 on the LRM. Throttle the vent valve to attain a flow rate (Lo) within the calibrated range of the LRM. After flow has stabilized, record the imposed flow rate on the test data sheet, open the test connection valves and observe the total flow rate.

WHEN IMPOSED FLOW IS USED, THE MEASURED LEAKAGE (Lm) IS THE DIFFERENCE BETWEEN THE TOTAL FLOW AND THE IMPOSED KNOWN FLOW (Lo).

7.1.15 Read and record on Test Data Sheet the indicated flow and pressure at a minimum of 5-minute intervals for 15 minutes after stabilization. A minimum of 4 readings shall be taken.

## 8.0 RETURN TO NORMAL

8.1 When test is completed, consult Health Physicist or alternate concerning venting the test volume.

8.2 Leave 15 psig of nitrogen in electrical penetrations upon test completion.

## 9.0 SPECIFIC PROCEDURE

9.1 Backup System Availability and Requirements:

9.1.1 This test may be performed provided Tech. Spec. 3.6.6.1 requirements are met.

9.1.2 'A' HYDROGEN RECOMBINER will be out of service for the duration of this test.

9.2 System Draining and/or Venting:

CAUTION

CONSULT HEALTH PHYSICIST PRIOR TO VENTING OR DRAINING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.2.1 Align valves per the Tag Accountability Log. MJH / 12/20/84
Initials Date

9.2.2 Attach a drain hose to the test connections at valves 57-1031 and 57-1032 and route to a suitable drain. MJH / 12/20/84
Initials Date

9.2.3 Open valves 57-1031 and 57-1032 to drain and vent the test volume. MJH / 12/20/84
Initials Date

9.2.4 Remove cap from connection downstream of FV-57-110A and monitor for leakage into the test volume from RHR. MJH / 12/20/84
Initials Date

9.2.5 When RHR isolations valves have been verified leak tight as evidenced by no leakage from the opening created in step 9.2.4, reinstall the cap which was removed in step 9.2.4.

MJA / 12/20/84
Initials Date
DMS / 12/20/84
Verified By Date

9.3 Valve Lineup:

9.3.1 Complete LLRT Tag Accountability Log to position valves, and hang LLRT tags. Have valve lineup verified.

MJA / 12/20/84
Initials Date

9.4 Procedure:

PERFORM LLRT USING THE FOLLOWING PREFERRED METHOD(S). ALTERNATE METHODS AS DESCRIBED IN GENERIC PROCEDURE ST-1-LLR-001-1 MAY BE USED WHEN NEEDED AND SHALL BE ATTACHED TO AND FORM A PART OF THIS PROCEDURE ONLY WHEN USED.

9.4.1 Perform a flow in test on the HYDROGEN RECOMBINER and associated piping per Section 7.1 of this procedure. Record results on test data sheet. Test pressure is as determined in Section 6.3.

Test Valve: 57-1006
Vent: Primary Containment

RTW / 12-21-84
Initials Date

9.4.2 After system has stabilized record amount of leakage.
2.42 Sm scc/min

RTW / 12-21-84
Initials Date

9.4.3 If the system leakage rate is below (later) scc/min then continue to section 9.6 and mark remaining steps in 9.4 NA, if not, go on the next step.

9.4.4 While the system is still pressurized, walk it down using copies of Attachment A, and perform appropriate air leak detection methods (snoop or equivalent). Inspect all

recombiner and associated piping in line components for leakage within the boundaries of Attachment B. RTW / 12-21-84
Initials Date

9.4.5 Record on Attachment A all components inspected and a description of the size and location of any leakage ("small" or "large"). RTW / 12-21-84
Initials Date

9.4.6 Upon completion of inspection, issue MRF's for repair of components exhibiting excessive leakage. This shall be denoted in the Additional Actions/Test Comments section and brought to the attention of SSVN. WAZ / 12-21-84
Initials Date

9.4.7 Inspection completed RTW / 12-21-84
Initials Date

9.5 <u>Blocks Required</u>

None

9.6 <u>Restoration</u>:

9.6.1 At the conclusion of the test, isolate and vent the test box and the test volume separately. Disconnect test box from the test volume, close test connection valves and remove hoses. RTW / 12-21-84
Initials Date

<u>CAUTION</u>

CONTACT HEALTH PHYSICS PRIOR TO DRAINING OR VENTING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.6.2 Restore valve line up at test completion per Tag Accountability Log or as directed by Shift Supervision. Have second verification, performed by a qualified individual designated by the Results Engineer or his alternate.

IF ANY VALVE IS RESTORED TO A POSITION OTHER THAN THE "SUGGESTED RESTORED VALVE POSITION" NOTE IT ACCORDINGLY BY LINING THROUGH THE SUGGESTED POSITION AND WRITING IN ITS PLACE THE ACTUAL RESTORED VALVE POSITION.

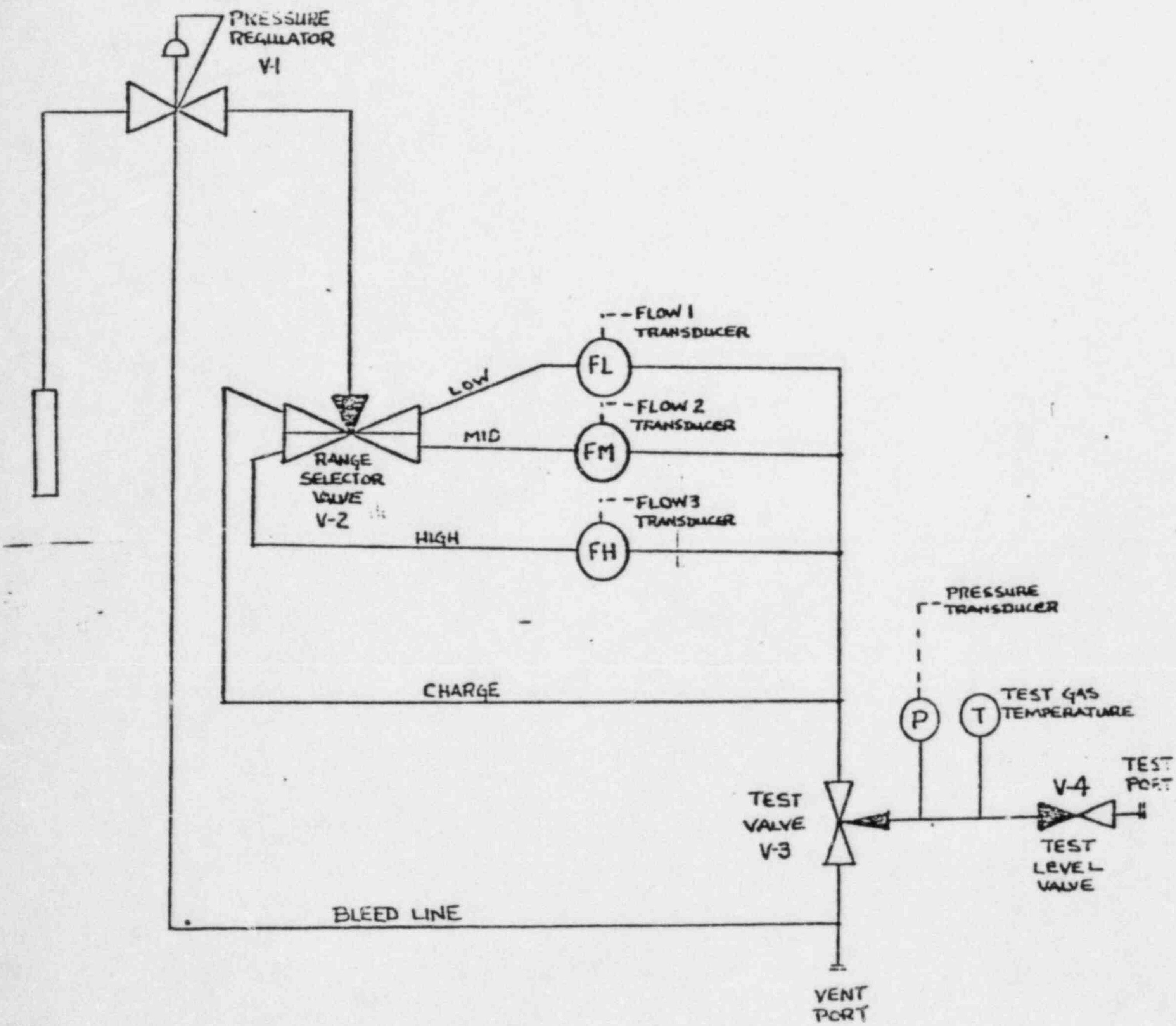
9.6.3 Verify no off-scale leakage. RTW / 12-21-84(*)
Initials Date

9.6.4 Return system to normal per Section 8.0 or as directed by Shift Supervision. RTW / 12-21-84
Initials Date

9.7 Inform shift supervision of results of test and fill out the test results section. (Note above asterisked step.) Have operator review accountability log.

RTW / 12-21-84
Initials Date

AT COMPLETION ENSURE THAT COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.




Volumetrics Leak Rate Monitor (LRM)
Figure 1

# LLRT TAG ACCOUNTABILITY LOG

P&ID M-57

PENETRATION NO. X-26/202

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| HYDROGEN RECOMBINER | HV-57-161 | CLOSED ~~OPEN~~ | -27471 -27470 | [illegible]/DMS | CLOSED | RTW RTW / mPB | 0340 12-21-84 |
| | HV-57-162 | CLOSED ~~OPEN~~ | -27472 -27473 | [illegible]/DMS | CLOSED | RTW RTW / mPB | 0340 12-21-84 |
| | HV-57-168A | CLOSED | -27474 -27475 | [illegible]/DMS | CLOSED LOCKED | RTW RTW / mPB | 0340 12-21-84 |
| | 57-1030A | OPEN UNCAPPED | -27476 | [illegible]/DMS | OPEN CAPPED | RTW / mPB | 0340 12-21-84 |
| | 57-1007 | CLOSED UNCAPPED | -27477 | [illegible]/DMS | CLOSED CAPPED | RTW / mPB | 0340 12-21-84 |
| | 57-1031 | CLOSED UNCAPPED | -27478 | [illegible]/DMS | CLOSED CAPPED | RTW / mPB | 0340 12-21-84 |
| | 57-1032 | CLOSED | -27479 | [illegible]/DMS | CLOSED | RTW / mPB | 0340 12-21-84 |
| | FV-57-101A | OPEN | -27480 ~~-27481~~ | [illegible]/DMS | OPEN | RTW RTW / mPB | 0340 12-21-84 |
| | FV-57-102A | OPEN | -27482 -27483 | [illegible]/DMS | OPEN | RTW RTW / mPB | 0340 12-21-84 |
| | FV-57-110A | CLOSED UNCAPPED | -27484 -27485 | [illegible]/DMS | Closed ~~OPEN~~ CAPPED | RTW RTW / mPB | 0340 12-21-84 |
| | 57-1006 (TEST) | AS REQ'D | -27486 | [illegible]/DMS | CLOSED | RTW / mPB | 12-21-84 |

3850016380

# LLRT TAG ACCOUNTABILITY LOG

P&ID M-57

PENETRATION NO. X-26/202

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| | HS-58-103A | OFF | 27318 | / | OFF | RTW / MPB | 0340 12-21-84 |
| | ~~HV-57-105~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | ~~HV-57-104~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ ~~LOCKED~~ | / | |
| | ~~HV-57-103~~ | ~~CLOSED~~ | | / | ~~OPEN~~ ~~LOCKED~~ | / | |
| | ~~HV-57-113~~ | ~~CLOSED~~ | | / | ~~OPEN~~ | | |
| | ~~HV-57-114~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | ~~HV-57-111~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | ~~SV-57-139~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | | | | / | | / | |
| | | | | / | | / | |
| | | | | / | | / | |

JC 12/19/84
CPG 12/20/84

3850016380 RPA/RSE/sp

LOCAL LEAKAGE RATE TEST DATA SHEET

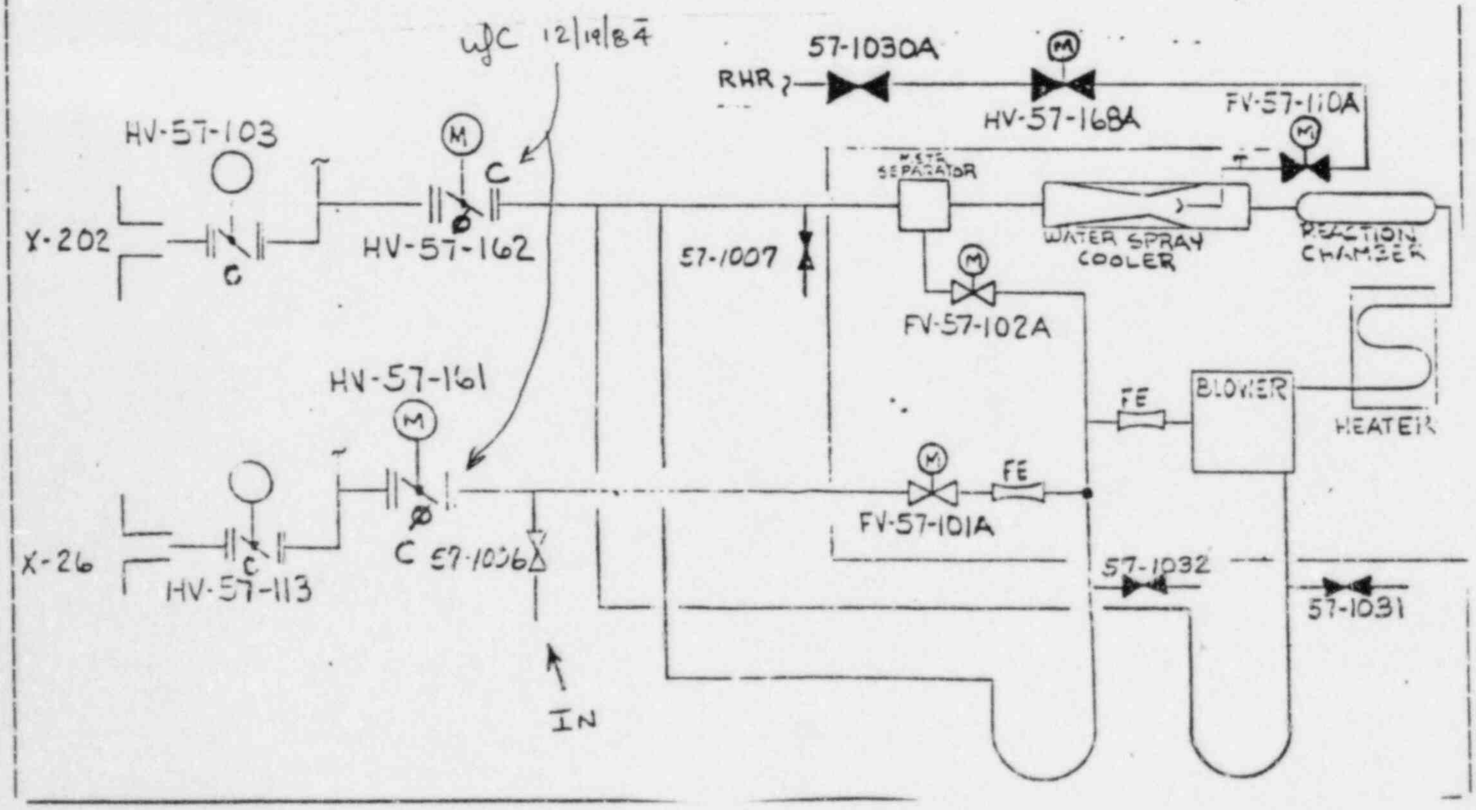
PENETRATION NO. HYDROGEN RECOMBINER

VALVE UNDER TEST "A" HYDROGEN RECOMBINER LOOP

TEST BOUNDARIES SEE SKETCH BELOW

TESTED BY RTW DATE 12-21-84

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. 21-1108 | | Cal. Due Date 1/18/85 | |
|---|---|---|---|---|---|---|
| 0 | 45.9 psig | 7.41 SLM | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| 5 | 45.9 | 7.43 SLM | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| 10 | 45.9 | 7.41 SLM | | | | |
| 15 | 45.9 | 7.45 SLM | High | Flow | Test | High |
| | | | ACCEPTANCE CRITERIA: No Off Scale Reading | | | |
| IMPOSED FLOW RATE= – sccm | | | TEST TAP VALVES: 57-1006 | | | |
| AVERAGE FLOW= 7.425 ~~scc~~/min SLM (ACTUAL) | | | TESTED PER PROCEDURE ST-1-058-701-1 | | LEAKAGE RATE = 9.5 scc/min | |



## ADDITIONAL ACTION/TEST COMMENTS

Additional Action:

Additional Action required if other portions of test did not function properly or other discrepancies were noted during test.

1. MRF Submitted (MRF - Number)________________ ______
2. Other Action (Signature - Time/Date)________________ ______

TEST COMMENTS

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

If ANY entry is made on this page, sign bottom of cover sheet.

"A" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

DATA SHEET (3 OF 3)

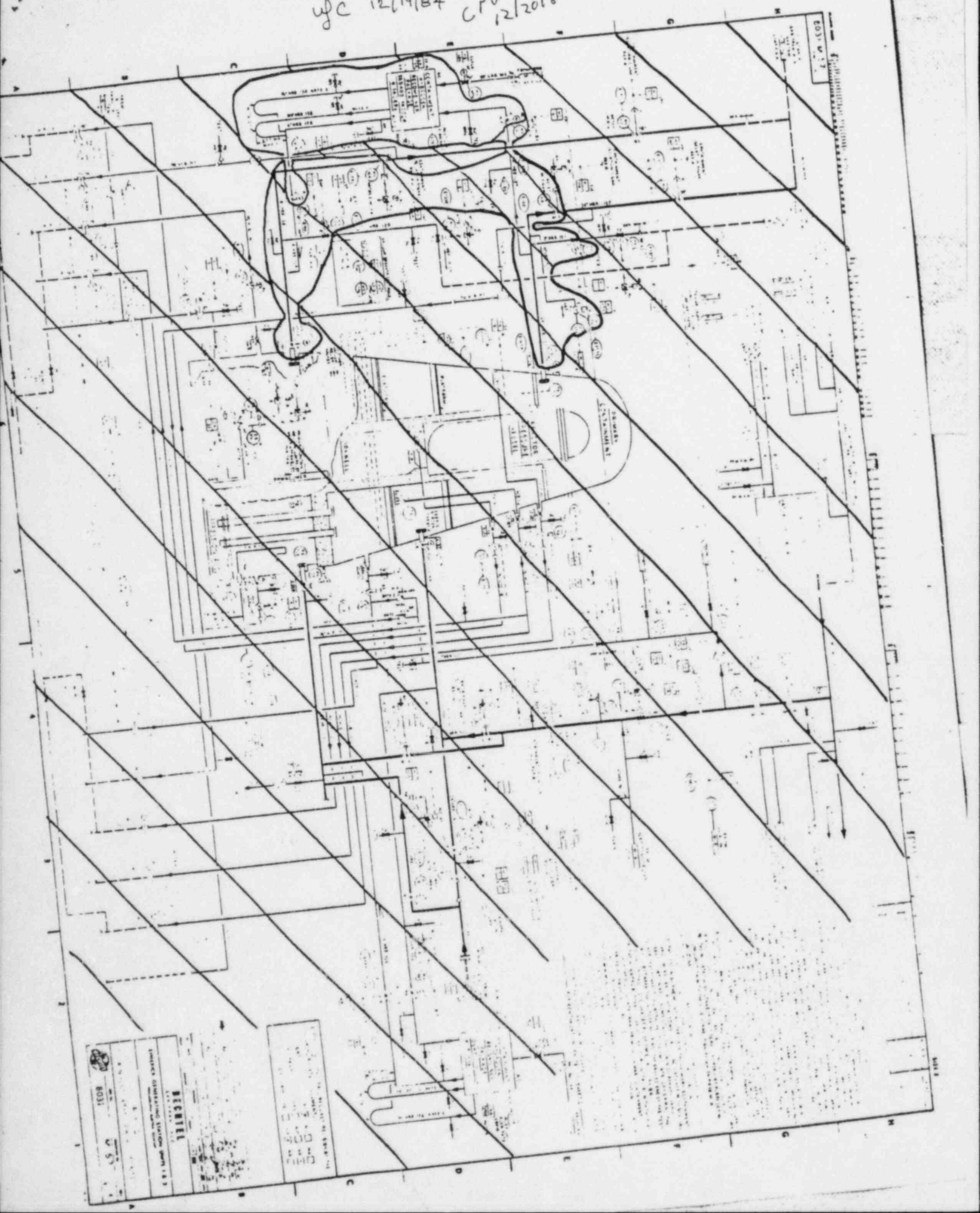
ATTACHMENT A

INSPECTOR: Richard T. Weidner

SYSTEM MODE ________ DATE 12-21-84

| COMPONENT NUMBER | COMPONENT DESCRIPTION | COMP. MODE (ON/OFF) (OPEN/SHUT) | LEAK RATE | CORRECTIVE ACTION DATE | REMARKS |
|---|---|---|---|---|---|
| 57-1006 | Test Valve | Open | | | |
| HV-57-161 | Valve | Closed | 0 | | |
| FV-57-101 A | Valve | open | 0 | | |
| | Swagelok | | 0 | | |
| | Root Valve from FE | Open | | | |
| | Root Valve from FE | open | | | |
| | Pressure Transmitter | | 0 | | |
| 57-1032 | Valve | closed | 0 | | |
| | Root Valve from FE | open | | | |
| | Root Valve from FE | open | | | |
| | Pressure Transmitter | | 0 | | |
| | Pressure Transmitter | | 0 | | |
| FV-57-102 A | Valve | Open | 0 | | |
| | Swagelok | | 0 | | |
| 57-1031 | Valve | Closed | 0 | | |
| 57-1007 | Valve | closed | 0 | | |
| FV-57-110A | Valve | Closed | neg. | | |
| HV-57-162 | Valve | Closed | 0 | | |

WJC 12/19/84 CPG 12/20/84



ATTACHMENT 8B

3850016380

9/25/84
EFFECTIVE DATE

LIMERICK GENERATING STATION
PORC APPROVAL FORM

TPC #1213

RHMoore 9-26-84
A-4, Form 1
Revision 1
Page 1 of 1
9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-058-701-1 Rev 0.

2. REASON FOR SUBMITTAL: TEST BOUNDARIES CHANGED TO REFLECT INTENT OF FSAR

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC A-3 REVIEW REQUIRED BY 1/11/85

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | LAB | 12/28/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | EDC | 12/28/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

Page 12, 13, 14, 17

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE - - ______ ______ ADMIN OR PREPARER | SUPT. APPROVAL/DATE ______/______ | PORC MEETING #: ______ DATE: ______ |
|---|---|---|

DIRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE ________
☐ FILE THIS FORM PER ADMIN. PROC. ________
☐ OTHER: ________

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

3850016380

SM Leitch 9/13/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-058-701-1 "A" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: A. Reason______
Tech. Spec.: 6.8.4.a B. MRF No.______
FSAR 6.2.8.1.H
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Richard T. Weidner 12-29-84

Performed By: (Sign/Date) ______ ______

Informed Test Complete:(ACO or CO) (Sign/Date) J Petaccia 12-29-84
(Time) 2011

Reviewed By:(SSVN or STA) (Sign/Date) Greg F. Callis 12-29-84

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ______ ______

Informed of Test Results: (CO or ACO)(Sign/Date) ______ ______
(Time) ______

Shift Supervision: (Sign/Date) ______ ______

Corrective Action: MRF No.: ______

Initiated By: (Sign/Date) ______ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ______

Date/Time Notified: (Date/Time) ______ ______

Notified By: (Sign) ______

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here.

(Sign/Date) Richard T. Weidner 12-29-84

## 1.0 PURPOSE

To verify that the total leakage rate for the A Hydrogen Recombiner Loop is within the acceptable limits specified in Section 8.0. If the system leakage rate is not within the acceptable limits, an inspection shall be performed to identify leaking components for repair.

## 2.0 REFERENCES

2.1 Generic LLRT Procedure ST-1-LLR-001-1

2.2 8031-M-57, Sheet 1

2.3 NUREG-0737

2.4 8031-M-40-45, Hydrogen Recombiner

## 3.0 TEST EQUIPMENT

3.1 Per Generic Procedure ST-1-LLR-001-1

3.2 Bottle(s) of SNOOP - or equivalent

3.3 Inspection mirror with handle

## 4.0 PRECAUTIONS AND LIMITATIONS

4.1 Per Generic Procedure ST-1-LLR-001-1 and Section 9.1 of Specific Procedure Section.

4.2 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.3 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.4 Data Sheet steps marked (*) are specific Tech. Spec. Requirements which will fail the test if not completed satisfactorily.

5.0 PREREQUISITES

5.1 Plant conditions are such that testing will not interfere with planned operations. Backup system availability has been established per Section 9.1. Request permission of Shift Supervision and ACO/CO to begin this test.
Per Greg Collins

AMZ / 12/28/84
Initials / Date

RLL / 12/28/84
ACO/CO / Date

5.2 RWP obtained if required. N/A

5.3 Safety permit issued if required per Section 9.5 or as determined by Results Engineer or alternate. Yes ____ No X

If Yes: Permit No. ____________

6.0 GENERAL LLRT PROCEDURE — Initials/Date

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Read Specific Procedure. Follow procedure for system draining and venting (Section 9.2) and valve lineup (Section 9.3). RTW / 12-29-84

6.2 With the box set up for a "FLOW IN TEST" and connected to the penetration test tap, perform LLRT per ST-1-LLR-002-1. Record leakage on the Test Data Sheet attached to this procedure. RTW / 12-29-84

6.3 Calculate test pressure as follows. Document calculations and reasoning below:

6.3.1 Determine the maximum back pressure against any isolation boundary being tested (existing at start of test or developing as the result of a water leg existing on the vent path). 0 psig

6.3.2 Determine the maximum back pressure against any non-isolation boundary or isolation boundary not being tested. 0 psig

IF THE PRESSURE CALCULATED IN SECTION 6.3.2 IS GREATER THAN 44 PSIG, A FLOW OUT TEST OR A WATER COLLECTION TEST MAY BE CONDUCTED TO MEASURE THE INLEAKAGE CONTRIBUTION AND ADDED TO LEAK TEST RESULTS. SECTION 6.3.2 PRESSURE CAN THEN BE REGARDED AS ZERO.

6.3.3 Add 44.0 psi for air or 48.4 psi for water to the pressure determined in section 6.3.1 ___44.0___ psig

6.3.4 Test pressure is the greater of Section 6.3.2 or Section 6.3.3. ___46.0___ psig
(Test Pressure)

Test Pressure Calculations:

6.4 Perform LLRT per Section 9.4.

## 7.0 PROCEDURE

7.1 Flow in Test (Test Volume Filled with Air)

7.1.1 Verify that the test volume is drained of water.

THE FOLLOWING STEPS ARE THE INITIAL SET UP OF VOLUMETRICS LEAK RATE MONITOR (LRM). SEE FIGURE 1.

7.1.2 Prior to performing leakage test or integrity check, set the LRM controls as follows:

| CONTROL | PRESSURE REGULATOR (V-1) | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|---|
| POSITION | FULL DECREASE (CCW) | CHARGE | DECAY | TEST |

7.1.3 Connect the LRM to a 110 volt, 60 Hz electrical power source. Press the power switch; allow a ten (10) minute warm-up period before proceeding with Section 7.1.5.

DUE TO THE NATURE OF THE THERMAL MASS FLOW TRANSDUCERS USED IN THE LRM, THE FLOW RATE INDICATOR MAY DISPLAY A READOUT OF -006 TO +006 AT A NO LEAK CONDITION. THIS IS A NORMAL INDICATION, AND DOES NOT AFFECT CALIBRATION OF THE LRM.

7.1.4 Apply clean, dry facility test gas supply pressure to INLET port and pressurize from 85 to 150 PSIG. (Use nitrogen on electrical penetrations)

7.1.5 Upon completion of warm-up period, adjust ZERO control as necessary to obtain a readout of ± 0.00 on the PRESSURE indicator. Be sure the TEST port is open to atmosphere.

7.1.6 Connect TEST port to the test volume.

7.1.7 Zeroing of the desired flow range(s) on the display must be completed before any flow measurements from that range are taken. The LRM MUST be isolated from the test volume by setting the ball valves as in Section 7.1.2. Adjust zero on all flow ranges, selecting each individually with the RANGE switch.

THERE MUST BE A CONSTANT SUPPLY PRESSURE OF 85-150 PSI CONNECTED TO THE INLET OF THE LRM FOR ZEROING OF THE FLOW DISPLAY.

THE FOLLOWING STEPS ARE THE LEAK TEST OPERATING SEQUENCE OF LRM.

7.1.8 Set the TEST LEVEL ball (V-4) valve to the CLOSED position. Set the TEST ball valve (V-3) to the FLOW position. Adjust the PRESSURE REGULATOR (V-1) to the desired test pressure level as displayed on the PRESSURE indicator. Set the RANGE SELECTOR switch and RANGE SELECTOR valve (V-2) to LOW RANGE and observe FL for any possible internal LRM leakage. Return the TEST LEVEL valve (V-4) to the TEST position. Return RANGE SELECTOR valve (V-2) to CHARGE position. The test volume should now be charging.

THE PRESSURE INDICATOR WILL SHOW A DROP IN PRESSURE UNTIL THE TEST VOLUME IS COMPLETELY CHARGED.

7.1.9 If the pressure within the test volume will not reach the desired test level (due to an excessive leakage rate), increase the REGULATOR control setting as necessary to obtain the desired test level pressure.

7.1.10 After the test volume is fully charged, set ball valves as follows:

| BALL VALVE | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|
| POSITION | HIGH | FLOW | TEST |

ALLOW A TEN (10) MINUTE (MINIMUM) TEMPERATURE STABILIZATION PERIOD.

7.1.11 Upon completion of temperature stabilization period, place the RANGE switch in the HIGH position and observe the FLOW RATE indicator for the leakage flow rate.

7.1.12 If the indicated leakage rate value is sufficiently low, set the RANGE switch to MID and the RANGE valve to MID for greater accuracy. If low range is desired, set RANGE switch to LOW and the RANGE valve (V-2) to LOW.

7.1.13 Verify the position of the following valves on LLRT Data Sheet.

Range Selector Switch
Range Selector Valve (V-2)
Test Valve (V-3)
Test Level Valve (V-4)

7.1.14 If leakage is evident but is below the calibrated range of the LRM, either assign a test leakage rate at the minimum calibrated range (20 sccm) or impose a known flow to raise total indicated flow rate to within the calibrated range of the LRM. This is done by closing the test connection valves and opening a vent valve between the test connection valves and valve V-4 on the LRM. Throttle the vent valve to attain a flow rate (Lo) within the calibrated range of the LRM. After flow has stabilized, record the imposed flow rate on the test data sheet, open the test connection valves and observe the total flow rate.

WHEN IMPOSED FLOW IS USED, THE MEASURED LEAKAGE (Lm) IS THE DIFFERENCE BETWEEN THE TOTAL FLOW AND THE IMPOSED KNOWN FLOW (Lo).

7.1.15 Read and record on Test Data Sheet the indicated flow and pressure at a minimum of 5-minute intervals for 15 minutes after stabilization. A minimum of 4 readings shall be taken.

## 8.0 RETURN TO NORMAL

8.1 When test is completed, consult Health Physicist or alternate concerning venting the test volume.

8.2 Leave 15 psig of nitrogen in electrical penetrations upon test completion.

## 9.0 SPECIFIC PROCEDURE

9.1 Backup System Availability and Requirements:

9.1.1 This test may be performed provided Tech. Spec. 3.6.6.1 requirements are met.

9.1.2 'A' HYDROGEN RECOMBINER will be out of service for the duration of this test.

9.2 System Draining and/or Venting:

CAUTION

CONSULT HEALTH PHYSICIST PRIOR TO VENTING OR DRAINING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.2.1 Align valves per the Tag Accountability Log. RTW / 12-29-84
Initials Date

9.2.2 Attach a drain hose to the test connections at valves 57-1031 and 57-1032 and route to a suitable drain. RTW / 12-29-84
Initials Date

9.2.3 Open valves 57-1031 and 57-1032 to drain and vent the test volume. RTW / 12-29-84
Initials Date

9.2.4 Remove cap from connection downstream of FV-57-110A and monitor for leakage into the test volume from RHR. RTW / 12-29-84
Initials Date

9.2.5 When RHR isolations valves have been verified leak tight as evidenced by no leakage from the opening created in step 9.2.4, reinstall the cap which was removed in step 9.2.4.

RTW / 12-29-84
Initials Date
WJC / 12/29/84
Verified By Date

9.3 Valve Lineup:

9.3.1 Complete LLRT Tag Accountability Log to position valves, and hang LLRT tags. Have valve lineup verified.

RTW / 12-29-84
Initials Date

9.4 Procedure:

PERFORM LLRT USING THE FOLLOWING PREFERRED METHOD(S). ALTERNATE METHODS AS DESCRIBED IN GENERIC PROCEDURE ST-1-LLR-001-1 MAY BE USED WHEN NEEDED AND SHALL BE ATTACHED TO AND FORM A PART OF THIS PROCEDURE ONLY WHEN USED.

9.4.1 Perform a flow in test on the HYDROGEN RECOMBINER and associated piping per Section 7.1 of this procedure. Record results on test data sheet. Test pressure is as determined in Section 6.3.

Test Valve: 57-1006
Vent: Primary Containment

RTW / 12-29-84
Initials Date

9.4.2 After system has stabilized record amount of leakage.
~~773~~ RTW 673 scc/min

RTW / 12-29-84
Initials Date

9.4.3 If the system leakage rate is below (later) scc/min then continue to section 9.6 and mark remaining steps in 9.4 NA, if not, go on the next step.

9.4.4 While the system is still pressurized, walk it down using copies of Attachment A, and perform appropriate air leak detection methods (snoop or equivalent). Inspect all

recombiner and associated piping in line components for leakage within the boundaries of Attachment B.

RTW 12-29-84
~~NA~~ /
Initials Date
RTW

9.4.5 Record on Attachment A all components inspected and a description of the size and location of any leakage ("small" or "large").

RTW 12-29-84
~~NA~~ RTW
Initials Date

9.4.6 Upon completion of inspection, issue MRF's for repair of components exhibiting excessive leakage. This shall be denoted in the Additional Actions/Test Comments section and brought to the attention of SSVN.

RTW 12-29-84
~~NA~~ RTW
Initials Date

9.4.7 Inspection completed

RTW 12-29-84
~~NA~~ RTW
Initials Date

9.5 Blocks Required

None

9.6 Restoration:

9.6.1 At the conclusion of the test, isolate and vent the test box and the test volume separately. Disconnect test box from the test volume, close test connection valves and remove hoses.

RTW / 12-29-84
Initials Date

CAUTION

CONTACT HEALTH PHYSICS PRIOR TO DRAINING OR VENTING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.6.2 Restore valve line up at test completion per Tag Accountability Log or as directed by Shift Supervision. Have second verification, performed by a qualified individual designated by the Results Engineer or his alternate.

IF ANY VALVE IS RESTORED TO A POSITION OTHER THAN THE "SUGGESTED RESTORED VALVE POSITION" NOTE IT ACCORDINGLY BY LINING THROUGH THE SUGGESTED POSITION AND WRITING IN ITS PLACE THE ACTUAL RESTORED VALVE POSITION.

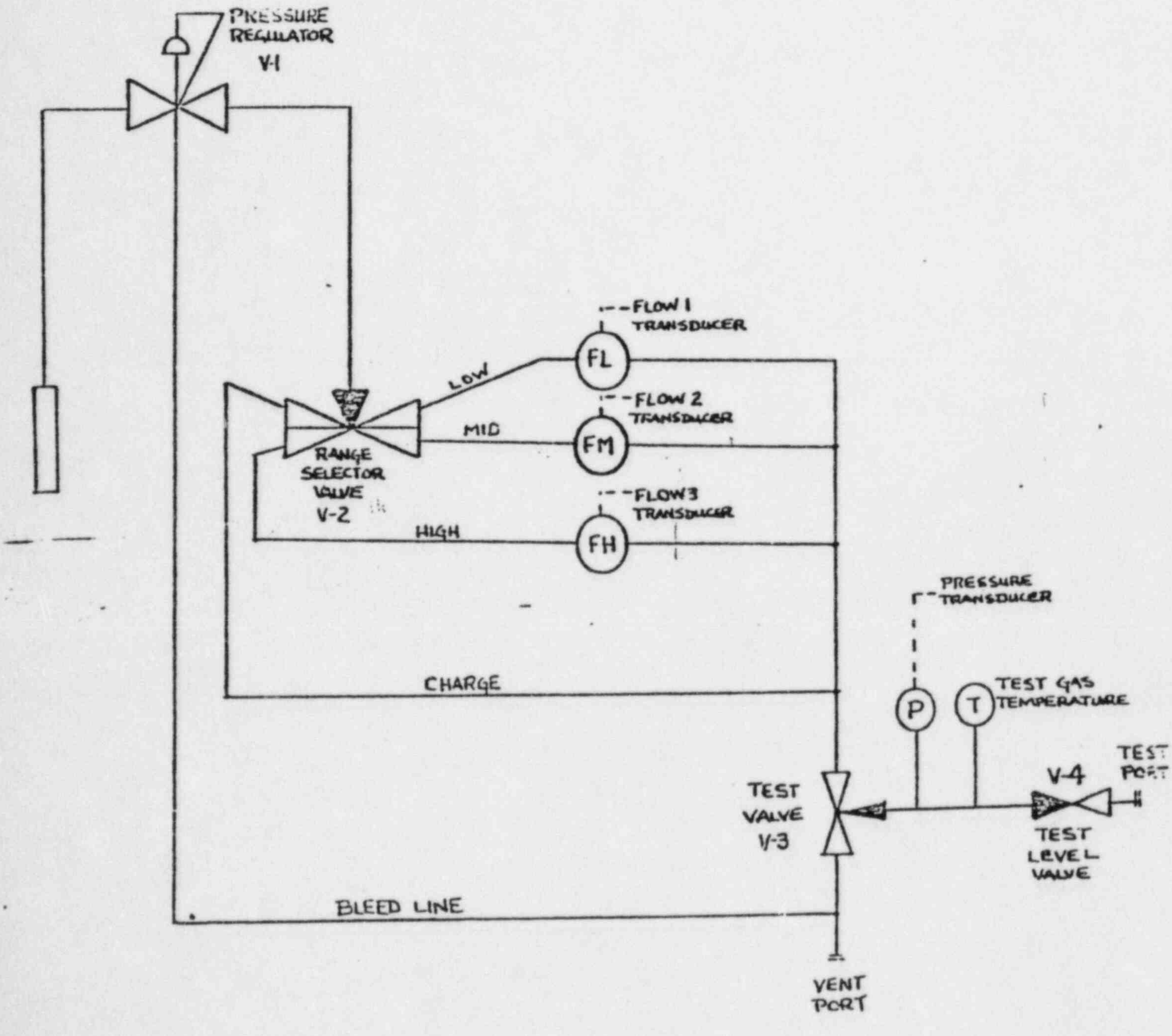
9.6.3 Verify no off-scale leakage. RTW / 12-29-84 *)
Initials Date

9.6.4 Return system to normal per Section 8.0 or as directed by Shift Supervision. RTW / 12-29-84
Initials Date

9.7 Inform shift supervision of results of test and fill out the test results section. (Note above asterisked step.) Have operator review accountability log.

RTW / 12-29-84
Initials Date

AT COMPLETION ENSURE THAT COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.




Volumetrics Leak Rate Monitor (LRM)
Figure 1

# LLRT TAG ACCOUNTABILITY LOG

PENETRATION NO. X-26/202 P&ID M-57

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| HYDROGEN RECOMBINER | LAW 12/28/84 EDC 12/28/84 BREAKER 1AC224-01 | OPEN | ~~27453~~ | RTW ufc | CLOSED | RTW ufc | |
| ~~LAW~~ 12/28/84 EDC 12/28/84 | HV-57-161 | CLOSED ~~OPEN~~ | 27455 27456 | RTW / ufc RTW ufc | CLOSED | RTW / ufc RTW ufc | 1540/ 12-29-84 |
| | HV-57-162 | CLOSED ~~OPEN~~ | 27457 27459 | RTW / ufc RTW ufc | CLOSED | RTW / ufc RTW ufc | 1540/ 12-29-84 |
| | HV-57-168A | CLOSED | 27460 27458 | RTW / ufc RTW ufc | CLOSED | RTW / ufc RTW ufc | 1540/ 12-29-84 |
| LAW 12/28/84 EDC 12/28/84 | 57-1030A | CLOSED ~~OPEN~~ | 27461 | RTW / ufc | LOCKED OPEN | RTW / ufc | 1540/ 12-29-84 |
| | 57-1007 | UNCAPPED CLOSED | 27462 | RTW / ufc | CAPPED CLOSED | RTW / ufc | 1540/ 12-29-84 |
| | 57-1031 | UNCAPPED CLOSED | 27464 | RTW / ufc | CAPPED CLOSED | RTW / ufc | 1540/ 12-29-84 |
| | 57-1032 | UNCAPPED CLOSED | 27465 | RTW / ufc | CAPPED CLOSED | RTW / ufc | 1540/ 12-29-84 |
| | FV-57-101A | OPEN | 27481 27466 | RTW / ufc RTW ufc | Closed ~~OPEN~~ see test connect | RTW / ufc RTW ufc | 1540/ 12-29-84 |
| | FV-57-102A | OPEN | 27483 27467 | RTW / ufc RTW ufc | OPEN | RTW / ufc RTW ufc | 1540/ 12-29-84 |
| | FV-57-110A | CLOSED | 27484 27468 | RTW / ufc RTW ufc | Closed ~~OPEN~~ | RTW / ufc RTW ufc | 1540/ 12-29-84 |
| | 57-1006 (TEST) | UNCAPPED AS REQ'D | 27469 | RTW / ufc | CAPPED CLOSED | RTW / ufc | 1540/ 12-29-84 |

LLRT TAG ACCOUNTABILITY LOG

PENETRATION NO. X-26/202 P&ID M-57

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| | HS-58-103A | OFF | 27240 | RTW / ufc | OFF | RTW / ufc | 1540 / 12-29-84 |
| | ~~HV-57-105~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| LAG 12/28/84 | ~~HV-57-104~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | ~~HV-57-103~~ | ~~CLOSED~~ | | / | ~~LOCKED OPEN~~ | / | |
| EDC 12/28/84 | ~~HV-57-113~~ | ~~CLOSED~~ | | / | ~~LOCKED OPEN~~ | / | |
| | ~~HV-57-114~~ | CLOSED | | / | ~~CLOSED~~ | | |
| | ~~HV-57-111~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | ~~SV-57-139~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | | |
| | | | | / | | / | |
| | | | | / | | / | |
| | | | | / | | / | |

LOCAL LEAKAGE RATE TEST DATA SHEET

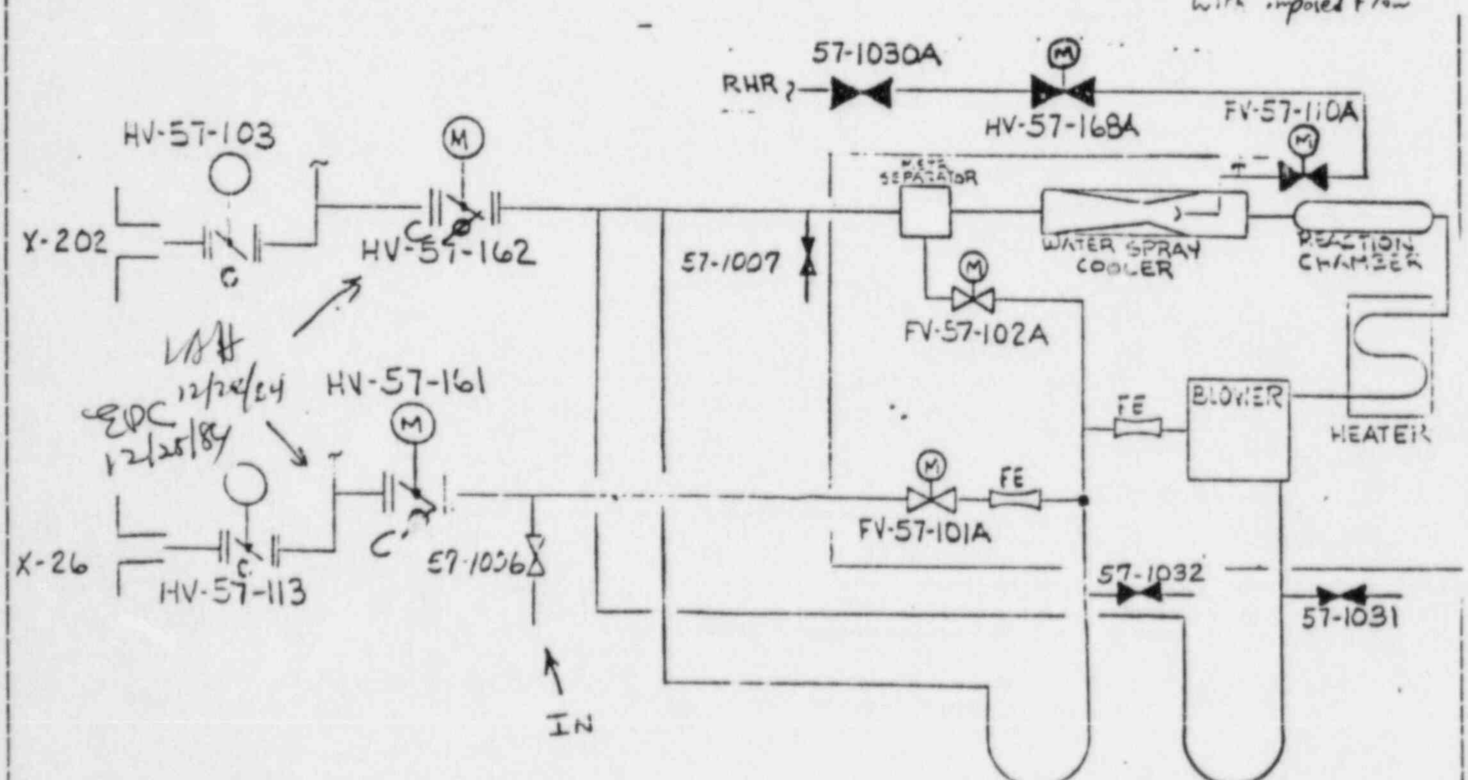
PENETRATION NO. HYDROGEN RECOMBINER

VALVE UNDER TEST "A" HYDROGEN RECOMBINER LOOP

TEST BOUNDARIES SEE SKETCH BELOW

TESTED BY RTW DATE 12-29-84

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. 26-1106 | | Cal. Due Date 1-10-85 | |
|---|---|---|---|---|---|---|
| 0 | 45.9 | 695 SCCM | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| 5 | 45.9 | 635 | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| 10 | 45.9 | 673 | | | | |
| 15 | 45.9 | 691 | Mid | Flow | Test | Mid |
| | | | | | | |
| | | | ACCEPTANCE CRITERIA: No Off Scale Reading | | | |
| IMPOSED FLOW RATE= 0 sccm | | | TEST TAP VALVES: 57-1006 | | | |
| AVERAGE FLOW= 673.5 scc/min (ACTUAL) | | | TESTED PER PROCEDURE ST-1-058-701-1 | | LEAKAGE RATE = 10.2 scc/min with imposed flow | |



## ADDITIONAL ACTION/TEST COMMENTS

Additional Action:

Additional Action required if other portions of test did not function properly or other discrepancies were noted during test.

1. MRF Submitted (MRF - Number)________ ______
2. Other Action (Signature - Time/Date)________ ______

TEST COMMENTS

FV-57-101A would close when energized
so it was left in this position.
FV-57-110A was found closed and left closed.

If ANY entry is made on this page, sign bottom of cover sheet.

"A" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

DATA SHEET (3 OF 3)

ATTACHMENT A

INSPECTOR: Richard T. Wetdner

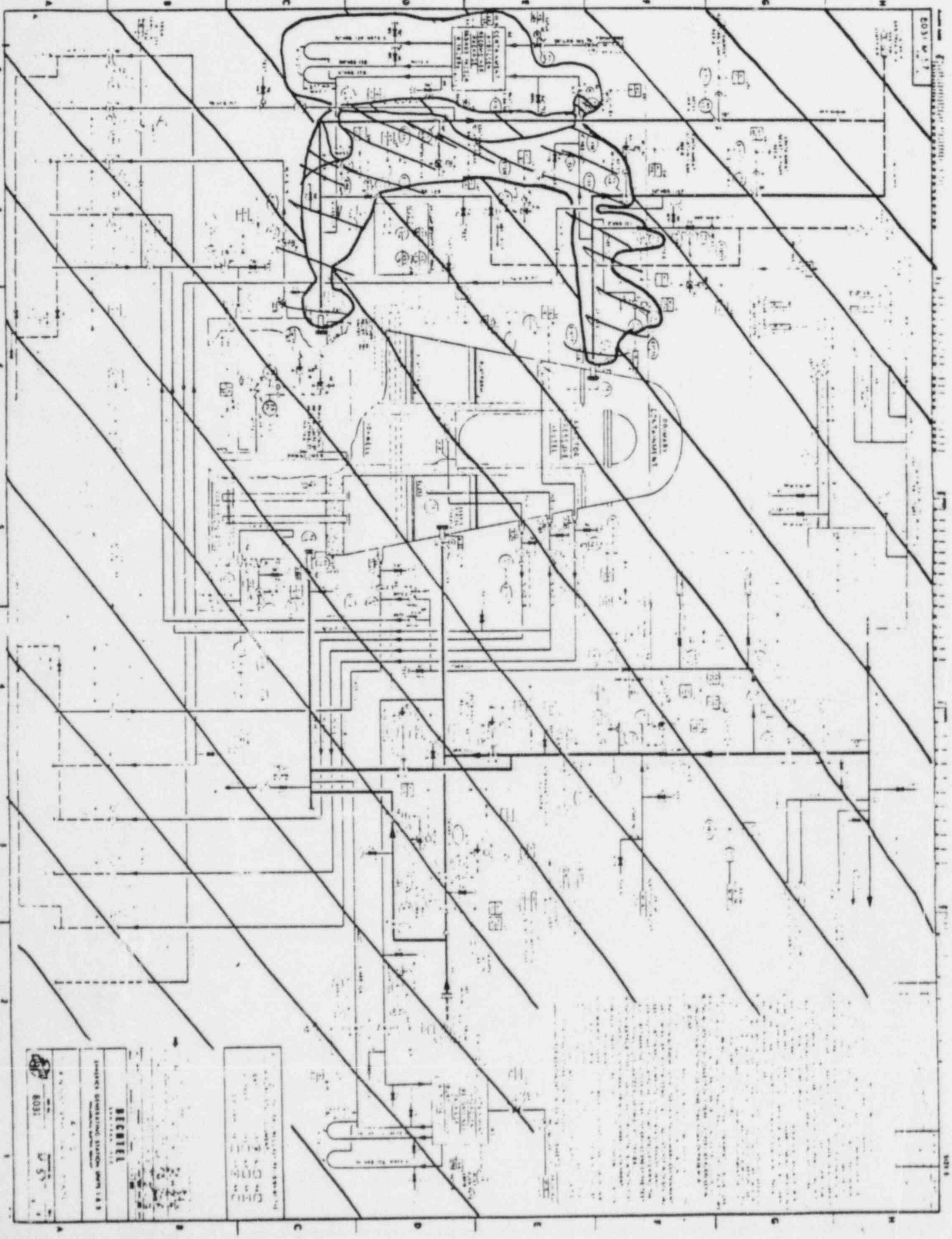
SYSTEM MODE ______ DATE 12-29-84

| COMPONENT NUMBER | COMPONENT DESCRIPTION | COMP. MODE (ON/OFF) (OPEN/SHUT) | LEAK RATE | CORRECTIVE ACTION DATE | REMARKS |
|---|---|---|---|---|---|
| HV-57-162 | Valve | | 0 | | |
| 57-1007 | Valve | | 0 | | |
| FV-57-102A | Valve | | 0 | | |
| FV-57-101A | Valve | | 0 | | |
| 57-1006 | Test Valve Connection | | Very Very Small | | |
| HV-57-161 | Valve | | 0 | | |
| 57-1032 | Valve | | 0 | | |
| 57-1031 | Valve | | 0 | | |
| FV-57-110A | Valve | | 0 | | |
| HV-57-168A | Valve | | 0 | | |
| 57-1030A | Valve | | 0 | | |
| FT-101A + Root Valves | Flow Transmitter | | Very Small ~~from LO S.~~ RTL | | Leaking from LO Side root valve |
| FT-102A + Root Valves | | | 0 | | |
| DT-102A | | | 0 | | |

LAW 12/28/84

EDC 12/28/84

3850016380



3850016380 ATTACHMENT 9A

R T Moore 9-26-84

9/25/84
'FECTIVE DATE

TPC# 1141

LIMERICK GENERATING STATION
PORC APPROVAL FORM

A-4, Form 1
Revision 1
Page 1 of 1
9/10/84 CRE

DOCUMENT (TITLE, OR PROC # & REV.): ST-1-058-702-1

REASON FOR SUBMITTAL: Boundaries of test changed to reflect intent of FSAR

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY 1-3-84

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| UPT | | | | |
| SST SUPT | | | | |
| NG-TECH | | | | |
| NG-OPS. | | | | |
| NG-MAINT | | | | |
| R HP | | | | |
| R CHEM | | | | |
| PERF ENG | WJC | 12/21/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | WNB | 12/21/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

Pages 12, 13, 14 & 17

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ____________ ______ ADMIN OR PREPARER | ____________/________ | #: ________ DATE: ________ |

IRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE ________
☐ FILE THIS FORM PER ADMIN. PROC. ________
☐ OTHER: ________

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

3850016380 RPA/RSE:sp
9/13/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-058-702-1 "B" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: A. Reason_______
Tech. Spec.: 6.8.4.a B. MRF No._______
FSAR 6.2.8.1.H
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) ________ 12/21/84

Performed By: (Sign/Date) Scott Wagner 12/21/84

Informed Test Complete:(ACO or CO) (Sign/Date) ________ 12-21-84
(Time) 19:37

Reviewed By:(SSVN or STA) (Sign/Date) Glenn A Paton 1930 12/21/84

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ________ ______

Informed of Test Results: (CO or ACO)(Sign/Date)________ ______
(Time) ______

Shift Supervision: (Sign/Date) ________ ______

Corrective Action: MRF No.: ________

Initiated By: (Sign/Date) ________ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ________

Date/Time Notified: (Date/Time) ______ ______

Notified By: (Sign) ________

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) ________ 12/21/84

## 1.0 PURPOSE

To verify that the total leakage rate for the B Hydrogen Recombiner Loop is within the acceptable limits specified in Section 9.4, while LLR Test is being performed. If the system leakage rate is not within the acceptable limits, an inspection shall be performed to identify leaking components for repair.

## 2.0 REFERENCES

2.1 Generic LLRT Procedure ST-1-LLR-001-1

2.2 8031-M-57, Sheet 1

2.3 NUREG-0737

2.4 Bechtel Drawing, M-40-45, Hydrogen Recombiner

## 3.0 TEST EQUIPMENT

3.1 Per Generic Procedure ST-1-LLR-001-1

3.2 Bottle(s) of SNOOP - or equivalent

3.3 Inspection mirror with handle

## 4.0 PRECAUTIONS AND LIMITATIONS

4.1 Per Generic Procedure ST-1-LLR-001-1 and Section 9.1 of Specific Procedure Section.

4.2 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.3 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.4 Data Sheet steps marked (*) are specific Tech. Spec. Requirements which will fail the test if not completed satisfactorily.

3850016380

## 5.0 PREREQUISITES

5.1 Plant conditions are such that testing will not interfere with planned operations. Backup system availability has been established per Section 9.1. Request permission of Shift Supervision and ACO/CO to begin this test.

TVC / 12/21/84
Initials / Date

Rum / 12-21-84
ACO/CO / Date

5.2 RWP obtained if required. N/A

5.3 Safety permit issued if required per Section 9.5 or as determined by Results Engineer or alternate. Yes ____ No X

If Yes: Permit No. ____________

## 6.0 GENERAL LLRT PROCEDURE

Initials/Date

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Read Specific Procedure. Follow procedure for system draining and venting (Section 9.2) and valve lineup (Section 9.3). QQH / 12/21/84

6.2 With the box set up for a "FLOW IN TEST" and connected to the penetration test tap, perform LLRT per ST-1-LLR-002-1. Record leakage on the Test Data Sheet attached to this procedure. QQH / 12/21/84

6.3 Calculate test pressure as follows. Document calculations and reasoning below:

6.3.1 Determine the maximum back pressure against any isolation boundary being tested (existing at start of test or developing as the result of a water leg existing on the vent path). 0.0 QQH 12/21/84 ~~6.0~~ psig

6.3.2 Determine the maximum back pressure against any non-isolation boundary or isolation boundary not being tested. 0.0 QQH 12/21/84 ~~6.0~~ psig

IF THE PRESSURE CALCULATED IN SECTION 6.3.2 IS GREATER THAN 44 PSIG, A FLOW OUT TEST OR A WATER COLLECTION TEST MAY BE CONDUCTED TO MEASURE THE INLEAKAGE CONTRIBUTION AND ADDED TO LEAK TEST RESULTS. SECTION 6.3.2 PRESSURE CAN THEN BE REGARDED AS ZERO.

6.3.3 Add 44.0 psi for air or 48.4 psi for water to the pressure determined in section 6.3.1 ___46.0___ psig

6.3.4 Test pressure is the greater of Section 6.3.2 or Section 6.3.3. ___46.0___ psig (Test Pressure)

Test Pressure Calculations:

44.0 + 2.0 (LRM accuracy) = 46.0

6.4 Perform LLRT per Section 9.4.

7.0 PROCEDURE

7.1 Flow in Test (Test Volume Filled with Air)

7.1.1 Verify that the test volume is drained of water.

THE FOLLOWING STEPS ARE THE INITIAL SET UP OF VOLUMETRICS LEAK RATE MONITOR (LRM). SEE FIGURE 1.

7.1.2 Prior to performing leakage test or integrity check, set the LRM controls as follows:

| CONTROL | PRESSURE REGULATOR (V-1) | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|---|
| POSITION | FULL DECREASE (CCW) | CHARGE | DECAY | TEST |

7.1.3 Connect the LRM to a 110 volt, 60 Hz electrical power source. Press the power switch; allow a ten (10) minute warm-up period before proceeding with Section 7.1.5.

DUE TO THE NATURE OF THE THERMAL MASS FLOW TRANSDUCERS USED IN THE LRM, THE FLOW RATE INDICATOR MAY DISPLAY A READOUT OF -006 TO +006 AT A NO LEAK CONDITION. THIS IS A NORMAL INDICATION, AND DOES NOT AFFECT CALIBRATION OF THE LRM.

7.1.4 Apply clean, dry facility test gas supply pressure to INLET port and pressurize from 85 to 150 PSIG. (Use nitrogen on electrical penetrations)

7.1.5 Upon completion of warm-up period, adjust ZERO control as necessary to obtain a readout of $\pm$ 0.00 on the PRESSURE indicator. Be sure the TEST port is open to atmosphere.

7.1.6 Connect TEST port to the test volume.

7.1.7 Zeroing of the desired flow range(s) on the display must be completed before any flow measurements from that range are taken. The LRM MUST be isolated from the test volume by setting the ball valves as in Section 7.1.2. Adjust zero on all flow ranges, selecting each individually with the RANGE switch.

THERE MUST BE A CONSTANT SUPPLY PRESSURE OF 85-150 PSI CONNECTED TO THE INLET OF THE LRM FOR ZEROING OF THE FLOW DISPLAY.

THE FOLLOWING STEPS ARE THE LEAK TEST OPERATING SEQUENCE OF LRM.

7.1.8 Set the TEST LEVEL ball (V-4) valve to the CLOSED position. Set the TEST ball valve (V-3) to the FLOW position. Adjust the PRESSURE REGULATOR (V-1) to the desired test pressure level as displayed on the PRESSURE indicator. Set the RANGE SELECTOR switch and RANGE SELECTOR valve (V-2) to LOW RANGE and observe FL for any possible internal LRM leakage. Return the TEST LEVEL valve (V-4) to the TEST position. Return RANGE SELECTOR valve (V-2) to CHARGE position. The test volume should now be charging.

THE PRESSURE INDICATOR WILL SHOW A DROP IN PRESSURE UNTIL THE TEST VOLUME IS COMPLETELY CHARGED.

7.1.9 If the pressure within the test volume will not reach the desired test level (due to an excessive leakage rate), increase the REGULATOR control setting as necessary to obtain the desired test level pressure.

7.1.10 After the test volume is fully charged, set ball valves as follows:

| BALL VALVE | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|
| POSITION | HIGH | FLOW | TEST |

ALLOW A TEN (10) MINUTE (MINIMUM) TEMPERATURE STABILIZATION PERIOD.

7.1.11 Upon completion of temperature stabilization period, place the RANGE switch in the HIGH position and observe the FLOW RATE indicator for the leakage flow rate.

7.1.12 If the indicated leakage rate value is sufficiently low, set the RANGE switch to MID and the RANGE valve to MID for greater accuracy. If low range is desired, set RANGE switch to LOW and the RANGE valve (V-2) to LOW.

7.1.13 Verify the position of the following valves on LLRT Data Sheet.

Range Selector Switch
Range Selector Valve (V-2)
Test Valve (V-3)
Test Level Valve (V-4)

7.1.14 If leakage is evident but is below the calibrated range of the LRM, either assign a test leakage rate at the minimum calibrated range (20 sccm) or impose a known flow to raise total indicated flow rate to within the calibrated range of the LRM. This is done by closing the test connection valves and opening a vent valve between the test connection valves and valve V-4 on the LRM. Throttle the vent valve to attain a flow rate (Lo) within the calibrated range of the LRM. After flow has stabilized, record the imposed flow rate on the test data sheet, open the test connection valves and observe the total flow rate.

WHEN IMPOSED FLOW IS USED, THE MEASURED LEAKAGE (Lm) IS THE DIFFERENCE BETWEEN THE TOTAL FLOW AND THE IMPOSED KNOWN FLOW (Lo).

7.1.15 Read and record on Test Data Sheet the indicated flow and pressure at a minimum of 5-minute intervals for 15 minutes after stabilization. A minimum of 4 readings shall be taken.

8.0 RETURN TO NORMAL

8.1 When test is completed, consult Health Physicist or alternate concerning venting the test volume.

8.2 Leave 15 psig of nitrogen in electrical penetrations upon test completion.

9.0 SPECIFIC PROCEDURE

9.1 Backup System Availability and Requirements:

9.1.1 This test may be performed provided Tech. Spec. 3.6.6.1 requirements are met.

9.1.2 'B' HYDROGEN RECOMBINER will be out of service for the duration of this test.

9.2 System Draining and/or Venting:

CAUTION

CONSULT HEALTH PHYSICIST PRIOR TO VENTING OR DRAINING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.2.1 Align valves per the Tag Accountability Log. — QGH, 12/21/84 Initials Date

9.2.2 Attach a drain hose to the test connections at valves 57-1008, 57-1009, 57-1033, and 57-1034 and route to a suitable drain. — QGH, 12/21/84 Initials Date

9.2.3 Open valves listed in Step 9.2.2 to drain and vent the test volume. — QGH, 12/21/84 Initials Date

9.2.4 Remove cap from connection downstream of FV-57-110B and monitor for leakage into the test volume from RHR. — QGH, 12/21/84 Initials Date

9.2.5 When RHR isolations valves have been verified leak tight as evidenced by no leakage from the opening created in step 9.2.4. reinstall the cap which was removed in step 9.2.4.

QQH, 12/21/84
Initials Date
SCW 12/21/84
Verified By Date

9.3 Valve Lineup:

9.3.1 Complete LLRT Tag Accountability Log to position valves, and hang LLRT tags. Have valve lineup verified.

QQH, 12/21/84
Initials Date

9.4 Procedure:

PERFORM LLRT USING THE FOLLOWING PREFERRED METHOD(S). ALTERNATE METHODS AS DESCRIBED IN GENERIC PROCEDURE ST-1-LLR-001-1 MAY BE USED WHEN NEEDED AND SHALL BE ATTACHED TO AND FORM A PART OF THIS PROCEDURE ONLY WHEN USED

9.4.1 Perform a flow in test on the HYDROGEN RECOMBINER and associated piping per Section 7.1 of this procedure. Record results on test data sheet. Test pressure is as determined in Section 6.3.

Test Valve: 57-1008
Vent: Primary Containment

QQH, 12/21/84
Initials Date

9.4.2 After system has stabilized record amount of leakage.
180 scc/min

QQH, 12/21/84
Initials Date

9.4.3 If the system leakage rate is below (later) scc/min then continue section 9.6 and mark remaining steps in 9.4 NA. If not, go on the next step

9.4.4 While the system is still pressurized, walk it down using copies of Attachment A, and perform appropriate air leak detection methods (snoop or

equivalent). Inspect all recombiner and associated piping in line components for leakage within the boundaries of Attachment B

QGH / 12/21/84
Initials Date

9.4.5 Record on Attachment A all components inspected and a description of the size and location of any leakage ("small" or "large").

QGH / 12/21/84
Initials Date

9.4.6 Upon completion of inspection, issue MRF's for repair of components exhibiting excessive leakage. This shall be denoted in the additional actions/test comments section and brought to the attention of SSVN.

QGH / 12/21/84
Initials Date

9.4.7 Inspection completed

QGH / 12/21/84
Initials Date

## 9.5 Blocks Required

None

## 9.6 Restoration:

9.6.1 At the conclusion of the test, isolate and vent the test box and the test volume separately. Disconnect test box from the test volume, close test connection valves and remove hoses.

QGH / 12/21/84
Initials Date

CAUTION

CONTACT HEALTH PHYSICS PRIOR TO DRAINING OR VENTING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.6.2 Restore valve line up at test completion per Tag Accountability Log or as directed by Shift Supervision. Have second verification, performed by a qualified individual designated by the Results Engineer or his alternate.

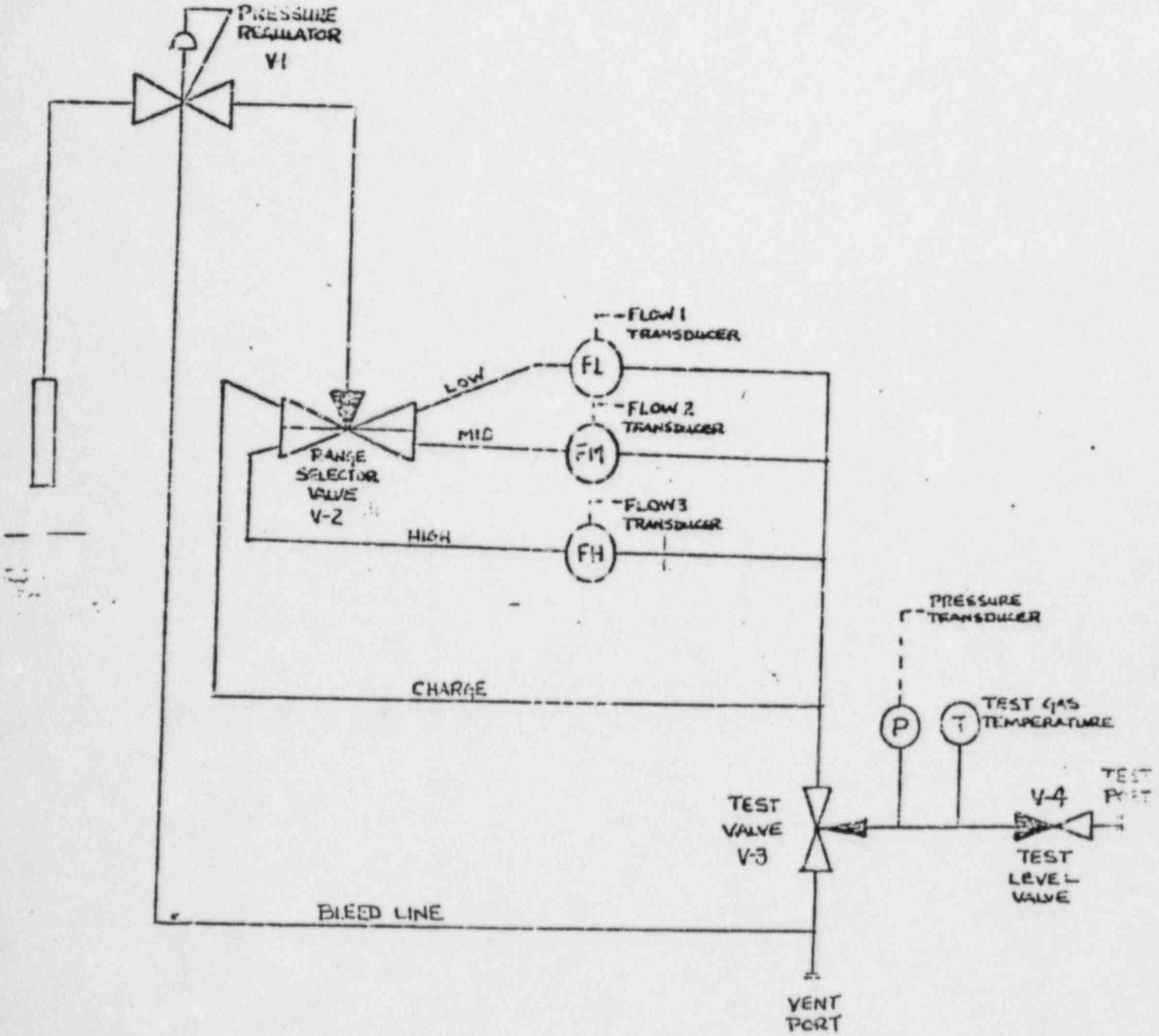
IF ANY VALVE IS RESTORED TO A POSITION OTHER THAN THE "SUGGESTED RESTORED VALVE POSITION" NOTE IT ACCORDINGLY BY LINING THROUGH THE SUGGESTED POSITION AND WRITING IN ITS PLACE THE ACTUAL RESTORED VALVE POSITION.

9.6.3 Verify no off-scale leakage. QOH , 12/21/84
Initials Date(*)

9.6.4 Return system to normal per Section 8.0 or as directed by Shift Supervision. QOH , 12/21/84
Initials Date

9.7 Inform shift supervision of results of test and fill out the test results section. (Note above asterisked step.) Have operator review accountability log. WAZ , 12/21/84
Initials Date

AT COMPLETION ENSURE THAT COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.




Volumetrics Leak Rate Monitor (LRM)
Figure 1

3850016380

# LLRT TAG ACCOUNTABILITY LOG

PENETRATION NO. X-25/201A     P&ID M-57

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| 'B' HYDROGEN RECOMBINER | HV-57-163 | Closed ~~OPEN~~ | 27269 ~~27263~~ | QGH/sew | CLOSED | QGH/sew | 6P 12/21/84 |
| HV-57-163 | HV-57-164 | Closed ~~OPEN~~ | 27270 ~~27264~~ | QGH/sew | CLOSED | QGH/sew | 6P 12/21/84 |
| HV-57-164 | HV-57-168B | CLOSED | 27271 ~~27267~~ | QGH/sew | CLOSED | QGH/sew | 6P 12/21/84 |
| | 57-1030B | CLOSED | 27274 | QGH/sew | LOCKED OPEN | QGH/sew | 6P 12/21/84 |
| | HS-58-103B | OFF | 27272 | QGH/sew | OFF | QGH/sew | 6P 12/21/84 |
| | | | | / | | / | |
| | FV-57-110B | CLOSED | 27273 | QGH/sew | OPEN | QGH/sew | 6P 12/21/84 |
| | FV-57-101B | OPEN | 27443 | QGH/sew | OPEN | QGH/sew | 6P 12/21/84 |
| | FV-57-102B | OPEN | 27442 | QGH/sew | OPEN | QGH/sew | 6P 12/21/84 |
| | 57-1033 | UNCAPPED CLOSED | 27441 | QGH/sew | CAPPED CLOSED | QGH/sew | 6P 12/21/84 |
| | 57-1034 | UNCAPPED CLOSED | 27440 | QGH/sew | CAPPED CLOSED | QGH/sew | 6P 12/21/84 |

WJC 12/21/84

WNB 12/21/84

LLRT TAG ACCOUNTABILITY LOG

PENETRATION NO. X-25/201A

P&ID M-57

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| | 57-1008 (TEST) | UNCAPPED AS REQ'D | 27444 | [illegible] / SCW | CAPPED CLOSED | [illegible] / SCW | 630P 12/21/84 |
| | 57-1009 | UNCAPPED CLOSED | 27246 | [illegible] / SCW | CAPPED CLOSED | [illegible] / SCW | 6P 12/21/84 |
| | ~~HV-57-122~~ | ~~OPEN~~ | | / | ~~LOCKED~~ ~~OPEN~~ | / | |
| | ~~HV-57-125~~ | ~~OPEN~~ | | / | ~~LOCKED~~ ~~OPEN~~ | / | |
| | ~~HV-57-123~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | ~~HV-57-124~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | ~~HV-57-121~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | ~~HV-57-131~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | | | | / | | / | |
| | | | | / | | / | |

WNB 12/21/84
JC 12/21/84

# LOCAL LEAKAGE RATE TEST DATA SHEET

PENETRATION NO. HYDROGEN RECOMBINER

VALVE UNDER TEST "B" HYDROGEN RECOMBINER LOOP

TEST BOUNDARIES SEE SKETCH BELOW

TESTED BY [signature] DATE 12/21/84

| TIME | PRESSURE (psig) | FLOW (scc/min) |
|---|---|---|
| 0 | 46.0 | 180* |
| 5 | 46.0 | 180 |
| 10 | 46.0 | 180 |
| 15 | 46.0 | 180 |
| | | |
| | | |

LLRT Test Box No. 21-1106 | Cal. Due Date 1/10/85

VOLUMETRICS LRM VALVE/SWITCH POSITIONS

| RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
|---|---|---|---|
| MID | FLOW | TEST | MID |

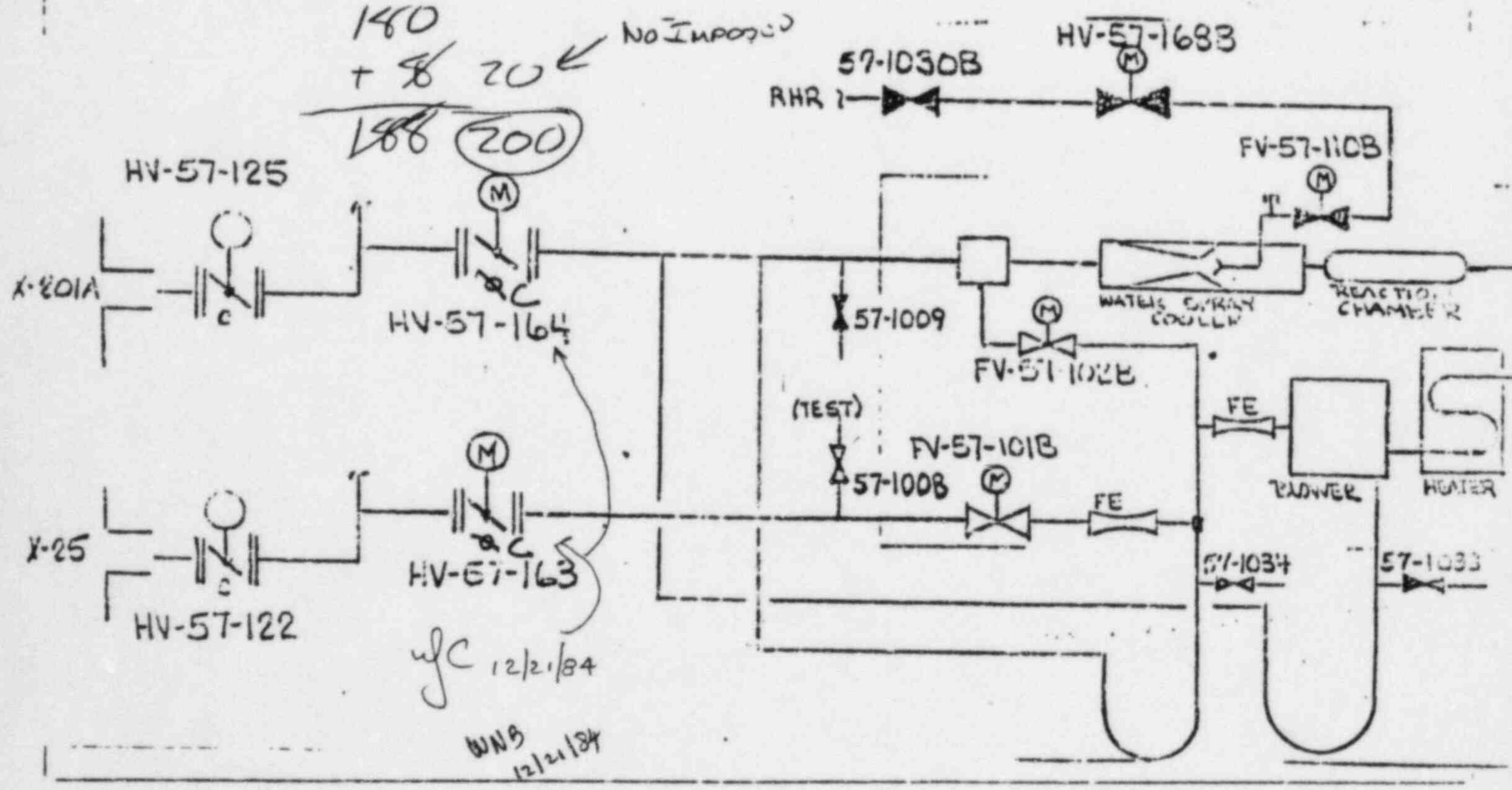
ACCEPTANCE CRITERIA: No Off Scale Reading

IMPOSED FLOW RATE= ______ sccm
AVERAGE FLOW= ______ scc/min (ACTUAL)

TEST TAP VALVES:

| TESTED PER PROCEDURE | LEAKAGE |
|---|---|
| ST-1-058-702-1 | RATE = 8 scc/min |

140
+ 8 20 ← No Imposed
188 200



ADDITIONAL ACTION/TEST COMMENTS

Additional Action:

Additional Action required if other portions of test did not function properly or other discrepancies were noted during test.

1. MRF Submitted (MRF - Number)________________ ____

2. Other Action (Signature - Time/Date)________________ ____

TEST COMMENTS

Due to temp stabilization in test volume flow readings oscillated starting @ (+) 180 sccm to (-) 180 sccm and decreased linear i.e. (+) 170 to (-) 170 sccm, (+) 60 to (-) 60 sccm. During this time maintenance began adding heat shrink insulation to the wires resulting in unstable temp readings yielding to very unstable flow readings. Due to time concerns for conclusion of ST to coincide with maintenance close out, the worst case (+) 180 sccm was recorded. This test will be conducted in accordance with LLR-004-1 @ the next possible window.

If ANY entry is made on this page, sign bottom of cover sheet.

## "B" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

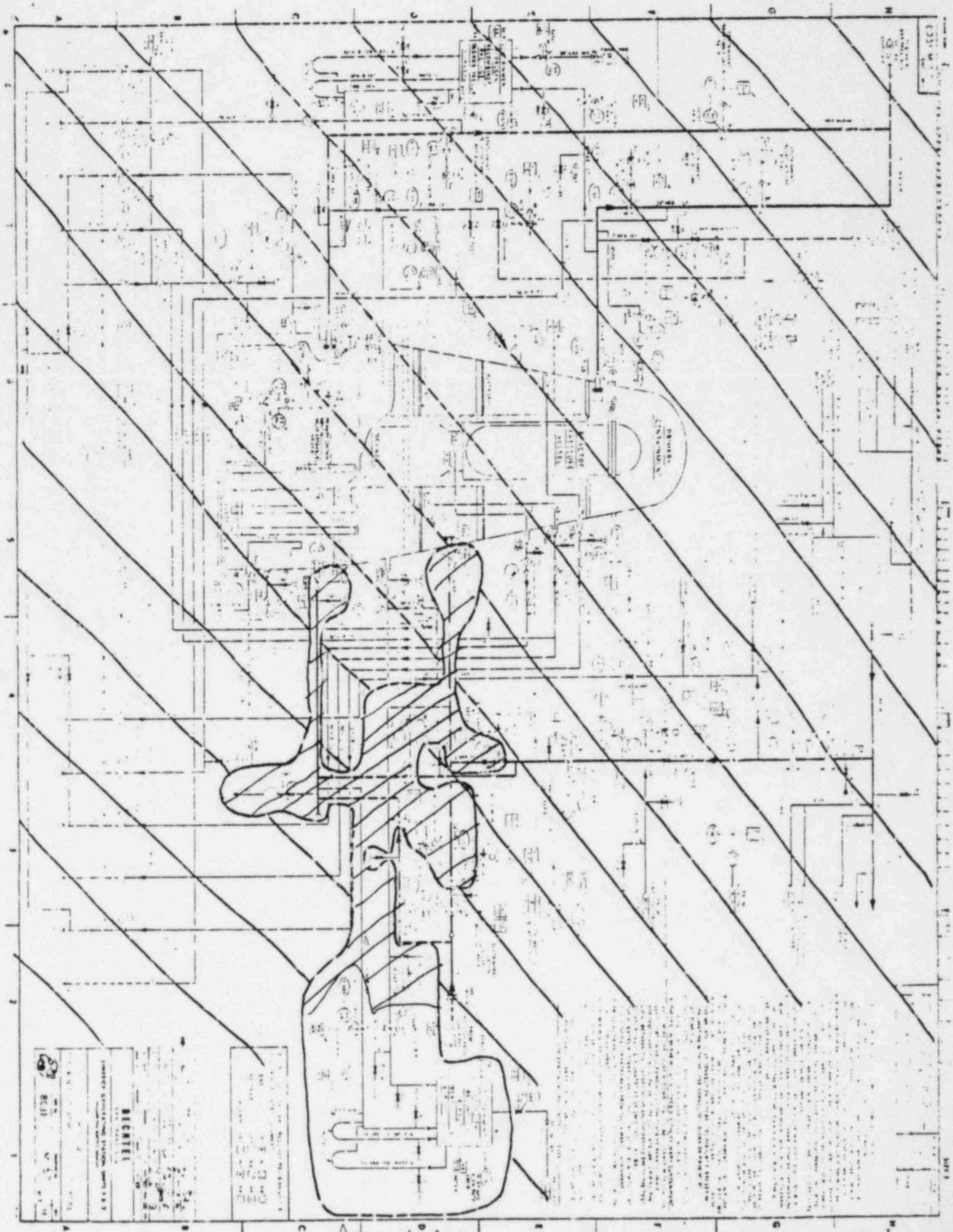
DATA SHEET

ATTACHMENT A

Inspector: Gary Hutchison

System Mode________________ Date 12/21/84

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | NO leak rate found on walkdown with snoop. | | ϕ | | |



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ЏC 12/21/84

WNB 12/21/84

ATTACHMENT 9B

3850016380

9/28/84
EFFECTIVE DATE

LIMERICK GENERATING STATION
PORC APPROVAL FORM

TPC #1214

RH Moore 9-26-84

A-4, Form 1
Revision 1
Page 1 of 1

9/10/84 CRE

1. DOCUMENT (TITLE, OR PROC # & REV.): ST-1-058-702-1 Rev 0

2. REASON FOR SUBMITTAL: TEST BOUNDARIES CHANGED TO REFLECT FSAR INTENT

☐ NEW PROCEDURE

☐ PROCEDURE REVISION

☐ ENTIRE PROC. REVIEWED & SUGGESTED CHANGES INDICATED (PERIODIC REVIEW A-2)

☐ PORTIONS OF PROC. REVIEWED & SUGGESTED CHANGES INDICATED

☒ TEMPORARY CHANGE TO APPR'D PROC
A-3 REVIEW REQUIRED BY 1/11/85

☒ REVIEW OF TEMP CHANGE ONLY

☐ REVIEW OF TEMP CHANGE AND PERMANENT PROC. REVISION

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| SUPT | | | | |
| ASST SUPT | | | | |
| ENG-TECH | | | | |
| ENG-OPS | | | | |
| ENG-MAINT | | | | |
| SR HP | | | | |
| SR CHEM | | | | |
| PERF ENG | LAK | 12/28/84 | | |
| I&C ENG | | | | |
| ADMN SUPV | | | | |

| PORC REVIEWER | REV'D&APP'D INITIAL | REV'D&APP'D DATE | REV'D&APP'D WITH COMMENT INITIAL | REV'D&APP'D WITH COMMENT DATE |
|---|---|---|---|---|
| REAC ENG | | | | |
| SFT SUPT | GDC | 12/28/84 | | |
| REG ENG | | | | |
| OUT MGR | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

3. COMMENTS/CORRECTIVE ACTION:

☐ Approved with comments/changes on attached document

Pages 12, 13, 14, 17

| COMMENTS/CORRECTIVE ACTION TAKEN & CHECKED/DATE | SUPT. APPROVAL/DATE | PORC MEETING |
|---|---|---|
| ________ / ________ | ________ / ________ | #: ________ DATE: ________ |
| ADMIN OR PREPARER | | |

DIRECTIONS TO ADMIN. STAFF:
☐ ISSUE THE ATTACHED DOCUMENT
☐ FILE THE ATTACHED DOCUMENT IN FILE ________
☐ FILE THIS FORM PER ADMIN. PROC. ________
☐ OTHER: ________

TRANSMIT A COPY OF THIS FORM AND DOCUMENT TO NRB FOR:
☐ APPROVAL
☐ REVIEW
☐ INFO

3850016380

[signature] 9/13/84

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-058-702-1 "B" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: A. Reason_______
Tech. Spec.: 6.8.4.a B. MRF No.______
FSAR 6.2.8.1.H
FSAR 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) Pete Brown 12-29-84

Performed By: (Sign/Date) Edward J. Boscola 12/29/84

Informed Test Complete:(ACO or CO) (Sign/Date) R Alyyne 12-29-84
(Time) 0640

Reviewed By:(SSVN or STA) (Sign/Date) C. Jessie 12/29/84

---

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ______________ ______

Informed of Test Results: (CO or ACO)(Sign/Date) ______________ ______
(Time) ______

Shift Supervision: (Sign/Date) ______________ ______

Corrective Action: MRF No.: ____________________

Initiated By: (Sign/Date) ______________ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ____________________

Date/Time Notified: (Date/Time) ______ ______

Notified By: (Sign) ____________________

---

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) ______________ ______

1.0 PURPOSE

To verify that the total leakage rate for the B Hydrogen Recombiner Loop is within the acceptable limits specified in Section 9.4, while LLR Test is being performed. If the system leakage rate is not within the acceptable limits, an inspection shall be performed to identify leaking components for repair.

2.0 REFERENCES

2.1 Generic LLRT Procedure ST-1-LLR-001-1

2.2 8031-M-57, Sheet 1

2.3 NUREG-0737

2.4 Bechtel Drawing, M-40-45, Hydrogen Recombiner

3.0 TEST EQUIPMENT

3.1 Per Generic Procedure ST-1-LLR-001-1

3.2 Bottle(s) of SNOOP - or equivalent

3.3 Inspection mirror with handle

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Per Generic Procedure ST-1-LLR-001-1 and Section 9.1 of Specific Procedure Section.

4.2 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.3 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.4 Data Sheet steps marked (*) are specific Tech. Spec. Requirements which will fail the test if not completed satisfactorily.

3850016380

## 5.0 PREREQUISITES

5.1 Plant conditions are such that testing will not interfere with planned operations. Backup system availability has been established per Section 9.1. Request permission of Shift Supervision and ACO/CO to begin this test.

Per Greg Collins

[illegible] / 12/28/84
Initials / Date

RW / 12/28/84
ACO/CO / Date

5.2 RWP obtained if required. N/A

5.3 Safety permit issued if required per Section 9.5 or as determined by Results Engineer or alternate. Yes ____ No ✓

If Yes: Permit No. NA

## 6.0 GENERAL LLRT PROCEDURE

Initials/Date

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Read Specific Procedure. Follow procedure for system draining and venting (Section 9.2) and valve lineup (Section 9.3). BB / 12-29-84

6.2 With the box set up for a "FLOW IN TEST" and connected to the penetration test tap, perform LLRT per ST-1-LLR-002-1. Record leakage on the Test Data Sheet attached to this procedure. BB / 12-29-84

6.3 Calculate test pressure as follows. Document calculations and reasoning below:

6.3.1 Determine the maximum back pressure against any <u>isolation boundary being tested</u> (existing at start of test or developing as the result of a water leg existing on the vent path). ϕ psig

6.3.2 Determine the maximum back pressure against any <u>non-isolation boundary or isolation boundary not being tested</u>. ϕ psig

IF THE PRESSURE CALCULATED IN SECTION 6.3.2 IS GREATER THAN 44 PSIG, A FLOW OUT TEST OR A WATER COLLECTION TEST MAY BE CONDUCTED TO MEASURE THE INLEAKAGE CONTRIBUTION AND ADDED TO LEAK TEST RESULTS. SECTION 6.3.2 PRESSURE CAN THEN BE REGARDED AS ZERO.

6.3.3 Add 44.0 psi for air or 48.4 psi for water to the pressure determined in section 6.3.1 ___44.0___ psig

6.3.4 Test pressure is the greater of Section 6.3.2 or Section 6.3.3. ___44.0___ psig
(Test Pressure)

Test Pressure Calculations:

6.4 Perform LLRT per Section 9.4.

## 7.0 PROCEDURE

7.1 Flow in Test (Test Volume Filled with Air)

7.1.1 Verify that the test volume is drained of water.

THE FOLLOWING STEPS ARE THE INITIAL SET UP OF VOLUMETRICS LEAK RATE MONITOR (LRM). SEE FIGURE 1.

7.1.2 Prior to performing leakage test or integrity check, set the LRM controls as follows:

| CONTROL | PRESSURE REGULATOR (V-1) | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|---|
| POSITION | FULL DECREASE (CCW) | CHARGE | DECAY | TEST |

7.1.3 Connect the LRM to a 110 volt, 60 Hz electrical power source. Press the power switch; allow a ten (10) minute warm-up period before proceeding with Section 7.1.5.

DUE TO THE NATURE OF THE THERMAL MASS FLOW TRANSDUCERS USED IN THE LRM, THE FLOW RATE INDICATOR MAY DISPLAY A READOUT OF -006 TO +006 AT A NO LEAK CONDITION. THIS IS A NORMAL INDICATION, AND DOES NOT AFFECT CALIBRATION OF THE LRM.

7.1.4 Apply clean, dry facility test gas supply pressure to INLET port and pressurize from 85 to 150 PSIG. (Use nitrogen on electrical penetrations)

7.1.5 Upon completion of warm-up period, adjust ZERO control as necessary to obtain a readout of $\pm$ 0.00 on the PRESSURE indicator. Be sure the TEST port is open to atmosphere.

7.1.6 Connect TEST port to the test volume.

7.1.7 Zeroing of the desired flow range(s) on the display must be completed before any flow measurements from that range are taken. The LRM MUST be isolated from the test volume by setting the ball valves as in Section 7.1.2. Adjust zero on all flow ranges, selecting each individually with the RANGE switch.

THERE MUST BE A CONSTANT SUPPLY PRESSURE OF 85-150 PSI CONNECTED TO THE INLET OF THE LRM FOR ZEROING OF THE FLOW DISPLAY.

THE FOLLOWING STEPS ARE THE LEAK TEST OPERATING SEQUENCE OF LRM.

7.1.8 Set the TEST LEVEL ball (V-4) valve to the CLOSED position. Set the TEST ball valve (V-3) to the FLOW position. Adjust the PRESSURE REGULATOR (V-1) to the desired test pressure level as displayed on the PRESSURE indicator. Set the RANGE SELECTOR switch and RANGE SELECTOR valve (V-2) to LOW RANGE and observe FL for any possible internal LRM leakage. Return the TEST LEVEL valve (V-4) to the TEST position. Return RANGE SELECTOR valve (V-2) to CHARGE position. The test volume should now be charging.

THE PRESSURE INDICATOR WILL SHOW A DROP IN PRESSURE UNTIL THE TEST VOLUME IS COMPLETELY CHARGED.

7.1.9 If the pressure within the test volume will not reach the desired test level (due to an excessive leakage rate), increase the REGULATOR control setting as necessary to obtain the desired test level pressure.

7.1.10 After the test volume is fully charged, set ball valves as follows:

| BALL VALVE | RANGE SELECTOR (V-2) | TEST VALVE (V-3) | TEST LEVEL VALVE (V-4) |
|---|---|---|---|
| POSITION | HIGH | FLOW | TEST |

ALLOW A TEN (10) MINUTE (MINIMUM) TEMPERATURE STABILIZATION PERIOD.

7.1.11 Upon completion of temperature stabilization period, place the RANGE switch in the HIGH position and observe the FLOW RATE indicator for the leakage flow rate.

7.1.12 If the indicated leakage rate value is sufficiently low, set the RANGE switch to MID and the RANGE valve to MID for greater accuracy. If low range is desired, set RANGE switch to LOW and the RANGE valve (V-2) to LOW.

7.1.13 Verify the position of the following valves on LLRT Data Sheet.

Range Selector Switch
Range Selector Valve (V-2)
Test Valve (V-3)
Test Level Valve (V-4)

7.1.14 If leakage is evident but is below the calibrated range of the LRM, either assign a test leakage rate at the minimum calibrated range (20 sccm) or impose a known flow to raise total indicated flow rate to within the calibrated range of the LRM. This is done by closing the test connection valves and opening a vent valve between the test connection valves and valve V-4 on the LRM. Throttle the vent valve to attain a flow rate (Lo) within the calibrated range of the LRM. After flow has stabilized, record the imposed flow rate on the test data sheet, open the test connection valves and observe the total flow rate.

WHEN IMPOSED FLOW IS USED, THE MEASURED LEAKAGE (Lm) IS THE DIFFERENCE BETWEEN THE TOTAL FLOW AND THE IMPOSED KNOWN FLOW (Lo).

7.1.15 Read and record on Test Data Sheet the indicated flow and pressure at a minimum of 5-minute intervals for 15 minutes after stabilization. A minimum of 4 readings shall be taken.

## 8.0 RETURN TO NORMAL

8.1 When test is completed, consult Health Physicist or alternate concerning venting the test volume.

8.2 Leave 15 psig of nitrogen in electrical penetrations upon test completion.

## 9.0 SPECIFIC PROCEDURE

### 9.1 Backup System Availability and Requirements:

9.1.1 This test may be performed provided Tech. Spec. 3.6.6.1 requirements are met.

9.1.2 'B' HYDROGEN RECOMBINER will be out of service for the duration of this test.

### 9.2 System Draining and/or Venting:

CAUTION

CONSULT HEALTH PHYSICIST PRIOR TO VENTING OR DRAINING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.2.1 Align valves per the Tag Accountability Log. BB / 12-29-84 Initials Date

9.2.2 Attach a drain hose to the test connections at valves 57-1008, 57-1009, 57-1033, and 57-1034 and route to a suitable drain. BB / 12-29-84 Initials Date

9.2.3 Open valves listed in Step 9.2.2 to drain and vent the test volume. BB / 12-29-84 Initials Date

9.2.4 Remove cap from connection downstream of FV-57-110B and monitor for leakage into the test volume from RHR. BB / 12-29-84 Initials Date

9.2.5 When RHR isolations valves have been verified leak tight as evidenced by no leakage from the opening created in step 9.2.4, reinstall the cap which was removed in step 9.2.4.

BB / 12-29-84
Initials Date
EHS / 12/29/84
Verified By Date

## 9.3 Valve Lineup:

9.3.1 Complete LLRT Tag Accountability Log to position valves, and hang LLRT tags. Have valve lineup verified.

BB / 12-29-84
Initials Date

## 9.4 Procedure:

PERFORM LLRT USING THE FOLLOWING PREFERRED METHOD(S). ALTERNATE METHODS AS DESCRIBED IN GENERIC PROCEDURE ST-1-LLR-001-1 MAY BE USED WHEN NEEDED AND SHALL BE ATTACHED TO AND FORM A PART OF THIS PROCEDURE ONLY WHEN USED.

9.4.1 Perform a flow in test on the HYDROGEN RECOMBINER and associated piping per Section 7.1 of this procedure. Record results on test data sheet. Test pressure is as determined in Section 6.3.

Test Valve: 57-1008
Vent: Primary Containment

BB / 12-29-84
Initials Date

9.4.2 After system has stabilized record amount of leakage.
75.85 scc/min

BB / 12-29-84
Initials Date

9.4.3 If the system leakage rate is below (later) scc/min then continue section 9.6 and mark remaining steps in 9.4 NA. If not, go on the next step

9.4.4 While the system is still pressurized, walk it down using copies of Attachment A, and perform appropriate air leak detection methods (snoop or

3850016380

equivalent). Inspect all recombiner and associated piping in line components for leakage within the boundaries of Attachment B.

BB ~~NA~~ / 12-29-84
Initials Date

9.4.5 Record on Attachment A all components inspected and a description of the size and location of any leakage ("small" or "large").

BB ~~NA~~ / 12-29-84
Initials Date

9.4.6 Upon completion of inspection, issue MRF's for repair of components exhibiting excessive leakage. This shall be denoted in the additional actions/test comments section and brought to the attention of SSVN.

NA /
Initials Date

9.4.7 Inspection completed

BB ~~NA~~ / 12-29-84
Initials Date

9.5 Blocks Required

None

9.6 Restoration:

9.6.1 At the conclusion of the test, isolate and vent the test box and the test volume separately. Disconnect test box from the test volume, close test connection valves and remove hoses.

BB / 12-29-84
Initials Date

CAUTION

CONTACT HEALTH PHYSICS PRIOR TO DRAINING OR VENTING ANY POTENTIALLY CONTAMINATED SYSTEMS.

9.6.2 Restore valve line up at test completion per Tag Accountability Log or as directed by Shift Supervision. Have second verification, performed by a qualified individual designated by the Results Engineer or his alternate.

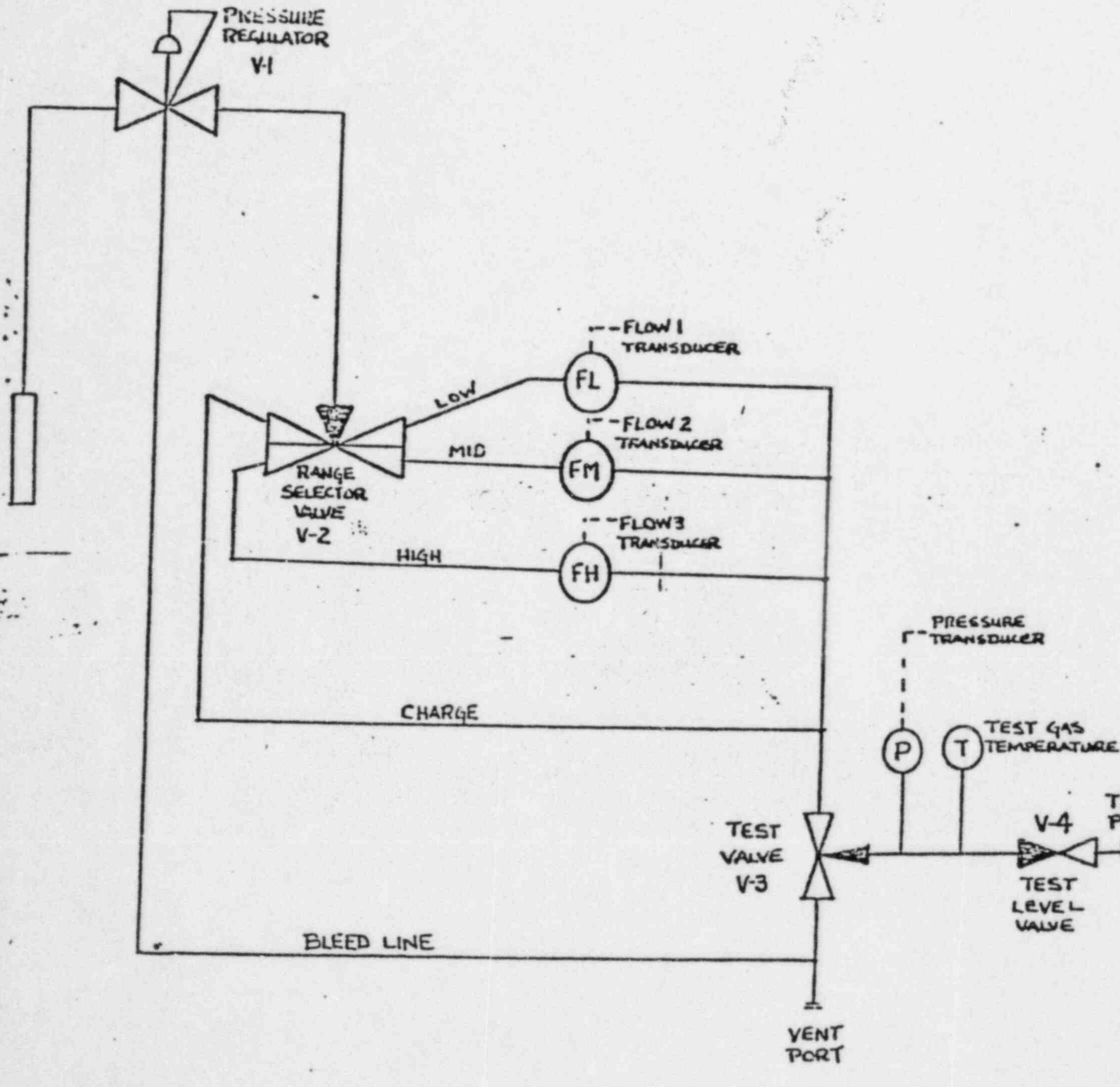
IF ANY VALVE IS RESTORED TO A POSITION OTHER THAN THE "SUGGESTED RESTORED VALVE POSITION" NOTE IT ACCORDINGLY BY LINING THROUGH THE SUGGESTED POSITION AND WRITING IN ITS PLACE THE ACTUAL RESTORED VALVE POSITION.

9.6.3 Verify no off-scale leakage. BB / 12-29-84
Initials Date(*)

9.6.4 Return system to normal per Section 8.0 or as directed by Shift Supervision. BB / 12-29-84
Initials Date

9.7 Inform shift supervision of results of test and fill out the test results section. (Note above asterisked step.) Have operator review accountability log. BB / 12-29-84
Initials Date

AT COMPLETION ENSURE THAT COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.




Volumetrics Leak Rate Monitor (LRM)
Figure 1

3850016380

# LLRT TAG ACCOUNTABILITY LOG

PENETRATION NO. X-25/201A P&ID M-57

LA# 12/28/84 EDC 12/28/84

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| | LA# 12/28/84 EDC 12/28/84 | | 27220 | BB/EJB | | | |
| | BREAKER 1BC224-01 | OPEN | 27202 | BB/EJB | CLOSED | BB EJB | 0615 |
| 'B' HYDROGEN RECOMBINER | HV-57-163 | CLOSED ~~OPEN~~ | 27203 | BB EJB | CLOSED | BB/EJB BB EJB | 12-29-84 |
| HV-57-163 | HV-57-164 | CLOSED ~~OPEN~~ | 27204 27205 | BB/EJB BB EJB | CLOSED | BB/EJB BB EJB | 0615 12-29-84 |
| HV-57-164 | HV-57-168B | CLOSED | 27206 27207 | BB/EJB BB EJB | CLOSED ~~LOCKED~~ | BB/EJB BB EJB | 0603 12-29-84 |
| | 57-1030B | CLOSED | 27208 | BB/EJB | OPEN | BB/EJB | 0603 12-29-84 |
| | HS-58-103B | OFF | 27209 | BB/EJB | OFF | BB/EJB | 0614 12-29-84 |
| | | | | / | | / | |
| | FV-57-110B | CLOSED | 27210 | BB/EJB | OPEN | BB/EJB | 0605 12-29-84 |
| | FV-57-101B | OPEN | 27211 | BB/EJB | OPEN | BB/EJB | 0601 12-29-84 |
| | FV-57-102B | OPEN | 27212 | BB/EJB | OPEN | BB/EJB | 0600 12-29-84 |
| | 57-1033 | UNCAPPED CLOSED | 27213 | BB/EJB | CAPPED CLOSED | BB/EJB | 0606 12-29-84 |
| | 57-1034 | UNCAPPED CLOSED | 27214 | BB/EJB | CAPPED CLOSED | BB/EJB | 0606 12-29-84 |

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# LLRT TAG ACCOUNTABILITY LOG

PENETRATION NO. X-25/201A P&ID M-57

| PENETRATION NAME/ VALVE UNDER TEST | VALVE NO./DESCRIPTION | TAGGED VALVE CONDITION | TAG NO. | HUNG BY/ VERIFIED BY | SUGGESTED RESTORED VALVE POSITION | VALVE RESTORED TAG RMVD BY/ VERIFIED BY | TIME/ DATE |
|---|---|---|---|---|---|---|---|
| | 57-1008 (TEST) | UNCAPPED AS REQ'D | 27215 | DB / EJB | CAPPED CLOSED | BB / EJB | 0601 12-29-84 |
| | 57-1009 | UNCAPPED CLOSED | 27216 | DB / EJB | CAPPED CLOSED | BB / EJB | 0606 12-29-84 |
| | ~~HV-57-122~~ | ~~OPEN~~ | | / | ~~LOCKED OPEN~~ | / | |
| | ~~HV-57-125~~ | ~~OPEN~~ | | / | ~~LOCKED OPEN~~ | / | |
| | ~~HV-57-123~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | ~~HV-57-124~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | ~~HV-57-121~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | ~~HV-57-131~~ | ~~CLOSED~~ | | / | ~~CLOSED~~ | / | |
| | | | | / | | / | |
| | | | | / | | / | |

ESG 12/28/84
EDC 12/28/84

3850016380 RPA/RSE/sp

# LOCAL LEAKAGE RATE TEST DATA SHEET

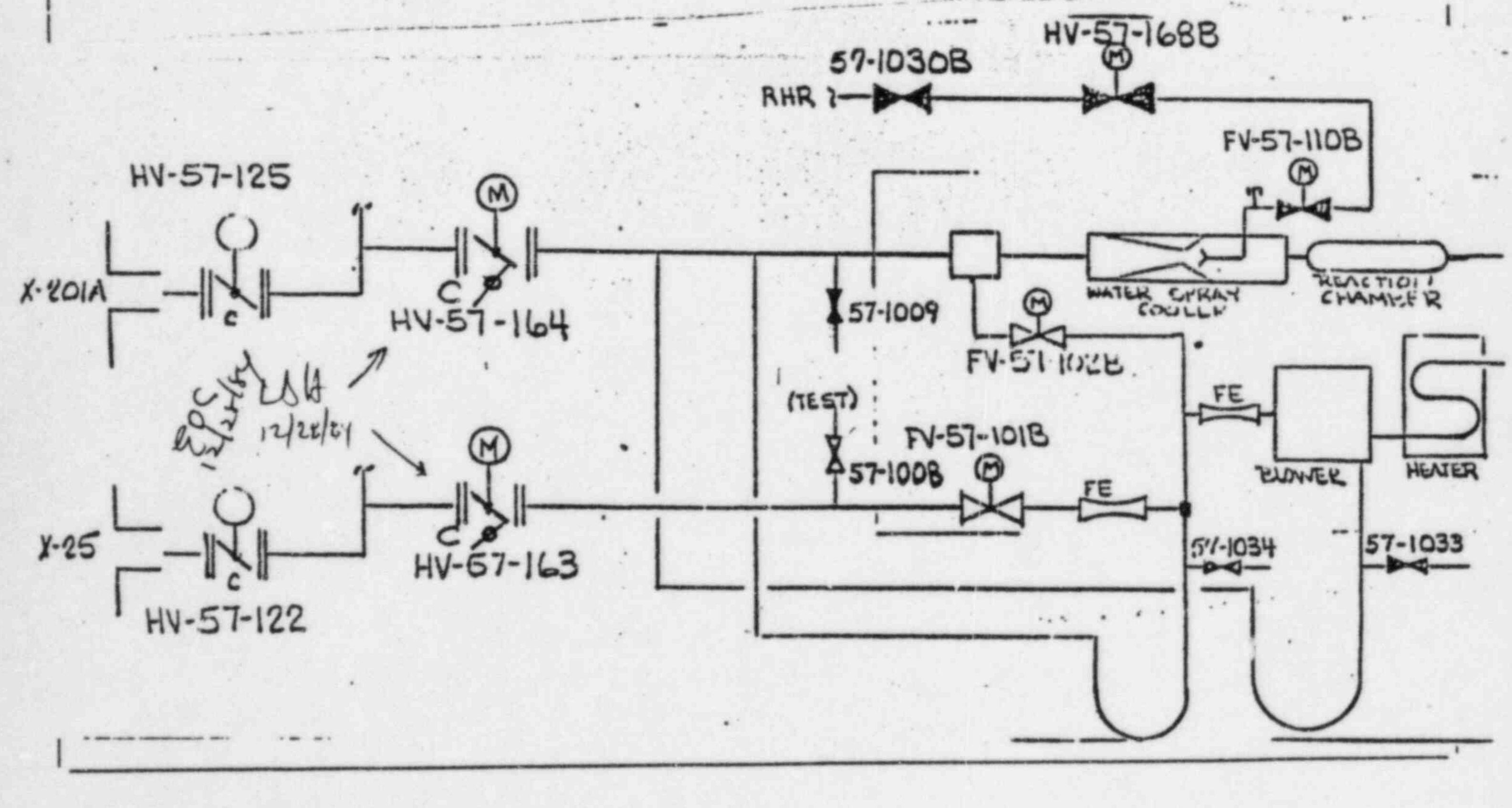
PENETRATION NO. HYDROGEN RECOMBINER

VALVE UNDER TEST "B" HYDROGEN RECOMBINER LOOP

TEST BOUNDARIES SEE SKETCH BELOW

TESTED BY *Beth Brown* DATE *12-29-84*

| TIME | PRESSURE (psig) | FLOW (scc/min) | LLRT Test Box No. *21-1106* | | Cal. Due Date *1-10-85* | |
|---|---|---|---|---|---|---|
| *0* | *46.3* | *71.4* | VOLUMETRICS LRM VALVE/SWITCH POSITIONS | | | |
| *5* | *46.3* | *75.2* | RANGE SEL (V-2) | TEST VALVE(V-3) | TEST LVL VALVE(V-4) | RANGE SEL SWITCH |
| *10* | *46.3* | *79.9* | | | | |
| *15* | *46.3* | *76.9* | *LOW* | *Flow* | *TEST* | *LOW* |
| | | | | | | |
| | | | ACCEPTANCE CRITERIA: No Off Scale Reading | | | |
| IMPOSED FLOW RATE= *Ø* sccm | | | TEST TAP VALVES: *57-1008* | | | |
| AVERAGE FLOW= *75.85* scc/min (ACTUAL) | | | TESTED PER PROCEDURE ST-1-058-702-1 | | LEAKAGE RATE = *1.7* scc/min | |



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## ADDITIONAL ACTION/TEST COMMENTS

Additional Action:

Additional Action required if other portions of test did not function properly or other discrepancies were noted during test.

1. MRF Submitted (MRF - Number)________________ ______

2. Other Action (Signature - Time/Date)________________ ______

TEST COMMENTS

If ANY entry is made on this page, sign bottom of cover sheet.

"B" POST LOCA RECOMBINER CONTAMINATED PIPING INSPECTION

DATA SHEET

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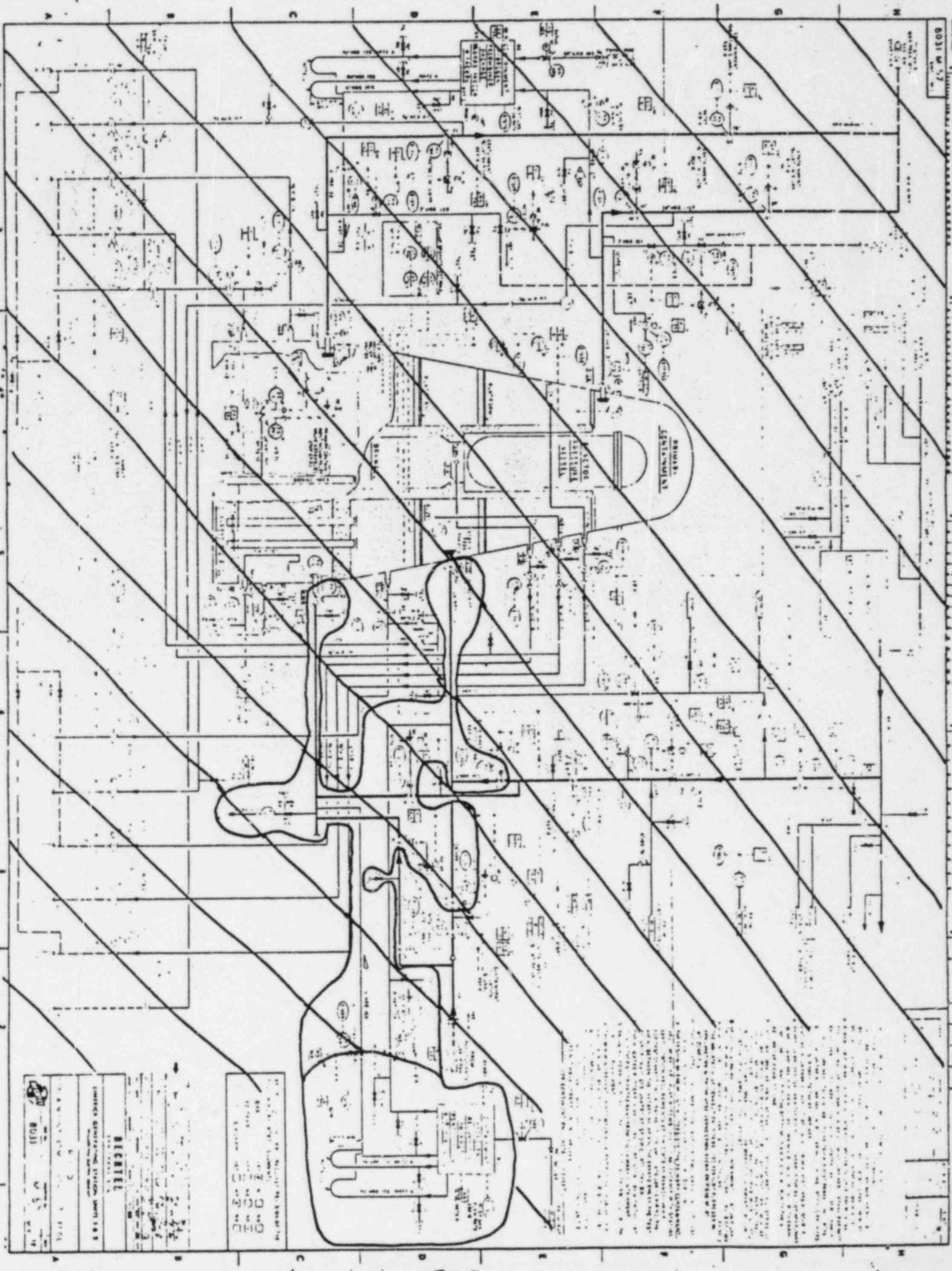
ATTACHMENT A

Inspector: Beth Brown

System Mode shut down for LLRT Date 12-29-84

| Component Number | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| | NO LEAKAGE EVIDENT | | | | |
| | NONE | | | | |



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LAH 12/28/84 EDC 12/28/84

Attachment 10

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
SURVEILLANCE TEST

ST-1-047-700-1 SCRAM DISCHARGE VOLUME CONTAMINATION PIPING INSPECTION

Test Freq.: 18 Months -OR- Initiating Events: 1. Reason______
Tech. Spec.: 6.8.4.a 2. MRF No.______
FSAR: 6.2.8.1
FSAR: 6.2.8.3

TEST RESULTS:

A. All Asterisked(*) Steps Completed SATISFACTORILY.

Performed By: (Sign/Date) J Fitzgerald 11/29/84

Performed By: (Sign/Date) N/A N/A

Informed Test Complete:(ACO or CO) (Sign/Date) R. Monaco 11/29/84
(Time) 0855

Reviewed By:(SSVN or STA) (Sign/Date) Gregg L. Callen 11-29-84

B. One or More Asterisked(*) Steps Test Results UNSATISFACTORY.

Performed By: (Sign/Date) ______ ______

Informed of Test Results: (CO or ACO)(Sign/Date) ______ ______
(Time) ______

Shift Supervision: (Sign/Date) ______ ______

Corrective Action: MRF No.: ______

Initiated By: (Sign/Date) ______ ______

IMMEDIATELY NOTIFY SENIOR PLANT STAFF MEMBER

Person Notified: (Name) ______

Date/Time Notified: (Date/Time) ______ ______

Notified By: (Sign) ______

ADDITIONAL ACTION/TEST COMMENTS:

If any entry is made in Additional Action/Test Comments Section, person making initial entry sign here

(Sign/Date) ______ ______

1.0 PURPOSE

To inspect, measure, and record any leakage from components associated with the CRD Scram Discharge Volume System while the system is pressurized.

2.0 REFERENCES

2.1 8031-M-47, Control Rod Drive Hydraulic - Part B

2.2 NUREG-0737

3.0 TEST EQUIPMENT

3.1 Graduated cylinder(s)

3.2 Liter bottle(s)

3.3 Funnels

3.4 Stopwatch

3.5 Inspection mirror with handle

4.0 PRECAUTIONS & LIMITATIONS

4.1 If a procedural step cannot be completed, make a comment in the Additional Action/Test Comments section of the Data Sheet.

4.2 Signoff steps marked "SO" in the left-hand margin of the body of the procedure require a signoff on the Data Sheet or Procedure Cover Sheet.

4.3 Leakage rates of greater than 5 drops per min (.25 cc/min) shall be quantified. Put "$\leq$.25 cc/min" in the space provided on the Data Sheet Attachment A for components with leak rates of 5 drops per min.

4.4 Data Sheet steps marked (*) are specific Tech. Spec. requirements which will fail the test if not completed satisfactorily.

4.5 Any component exhibiting excessive amounts of leakage shall be documented in the Additional Actions/Test Comments section on the Cover Sheet and the SSVN shall be informed.

## 5.0 PREREQUISITES

5.1 Request RWP and HP assistance when needed.

5.2 Coordinate with the operator running GP-10 so that the test duration can be extended to allow proper inspection of SDV system components.

5.3 Inspector is familiar with the SDV system layout and location.

5.4 Obtain copy of the previous inspection Data Sheet Attachment A.

5.5 The SDV System Piping is at pressure preferably during operational hydrostatic test GP-10.

## 6.0 PROCEDURE

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS PERFORMING THIS TEST TO ENSURE ALL BLANKS AND DATA SHEETS ARE CORRECTLY AND COMPLETELY FILLED IN.

6.1 Preparation

SO 6.1.1 Verify all prerequisites are satisfied.

6.1.2 Record appropriate information for each piece of measurement and test equipment used with a PECo number and verify the equipment is within it's calibration period.

6.2 Shift Permission to Test

SO 6.2.1 Obtain Shift Supervision's (SSVN's) permission to start test.

SO 6.2.2 Obtain Control Room Operator's permission to start test.

6.3 SDV System Contaminated Piping Inspection

ACTUAL LEAK RATE MEASUREMENT METHODS WILL BE LEFT TO THE DISCRETION OF THE INSPECTOR(S) INVOLVED. THE ONLY GUIDELINE BEING THAT ALL DATA WILL BE A MEASURED QUANTITY OF FLUID OVER TIME USING A STOPWATCH. DROPS PER MINUTE CAN BE USED AS A MEASUREMENT 20 DROPS = 1CC. ALL RECORDED DATA SHALL BE IN CUBIC CENTIMETERS PER MIN. (CC/MIN)

6.3.1 Record on Data Sheet Attachment A all components, within the boundaries of Attachment B, exhibiting leakage, their leak rate and a description of the location of the leak. Pay particular attention to system components identified as having measurable leakage in the last test.

6.3.2 From the leak rate data on Attachment A, calculate the total system leak rate and document the results on the Data Sheet Section 6.3.

6.4 Test Results Evaluation

SO 6.4.1 Compare the leakage limit in 8.1 to the total system leakage rate. If the limit is exceeded prepare a MRF to reduce the system leakage rate so that it is within the limit.

6.4.2 If any component's leakage rate has increased significantly since the last inspection prepare a MRF to repair the component.

6.4.3 If any component's leakage is a major portion of the overall system leakage limit prepare a MRF to its repair.

7.0 <u>RETURN TO NORMAL</u>

SO 7.1 Inform SSVN and ACO the test is complete.

## 8.0 ACCEPTANCE CRITERIA

8.1 The SDV system shall not exhibit a total leak rate of greater than (later).

AT TEST COMPLETION, ENSURE COVER SHEET IS CORRECTLY AND COMPLETELY FILLED IN.

SCRAM DISCHARGE VOLUME
CONTAMINATED PIPING INSPECTION

DATA SHEET (1 of 2)

ACTION REQUIRED | INITIALS

6.0 PROCEDURE

6.1 Preparation

6.1.1 All prerequisites satisfied — JPF

6.1.2 Test Equipment — JPF

| INSTRUMENT | MFR./MODEL | SER. NO. | CAL. DUE DATE |
|---|---|---|---|
| STOPWATCH | SPORT 1000 | 53-0020 | 8-27-85 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

6.2 Shift Permission to Test

6.2.1 SSVN permission obtained — JPF

6.2.2 ACO permission to test — CVK
ACO

11/29/84 / 0710
Date Time

6.3 Scram Discharge Volume Contaminated Piping Inspection

6.3.4 SDV system total leak rate:

0.8 cc/min JPF CC/MIN

0.000211 GAL/MIN — JPF
(1 cc/min = .000264 gal/min)

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SCRAM DISCHARGE VOLUME
CONTAMINATED PIPING INSPECTION

DATA SHEET (2 of 2)

ACTION REQUIRED — INITIALS

6.4 Test Results Evaluation

6.4.1 The total SDV system leakage rate is within Acceptable Limits — JPF (*)

7.0 RETURN TO NORMAL

7.1 SSVN and ACO informed of test completion. — JPF

IF ANY ENTRY IS MADE IN THIS SECTION, SIGN COVER SHEET IN APPROPRIATE SPACE.

ADDITIONAL ACTION/TEST COMMENTS ______________________________

Data Sheet

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Inspector: JG Fitzgerald

Ssystem Mode GP-10 Ops Hydro @ 985 psig    Date: 11/29/84

Sheet 1 of 1

| Component No. | Component Description | Comp. Mode (on/off) (open/shut) | Leak Rate | Corrective Action Date | Remarks |
|---|---|---|---|---|---|
| XV-47-1F011 | SDV Drain Valve | ~~Open~~ Off Shut | 0.8 cc/min | Adjust Packing | MERF Issued Equipment Trouble Tag # 2449 |

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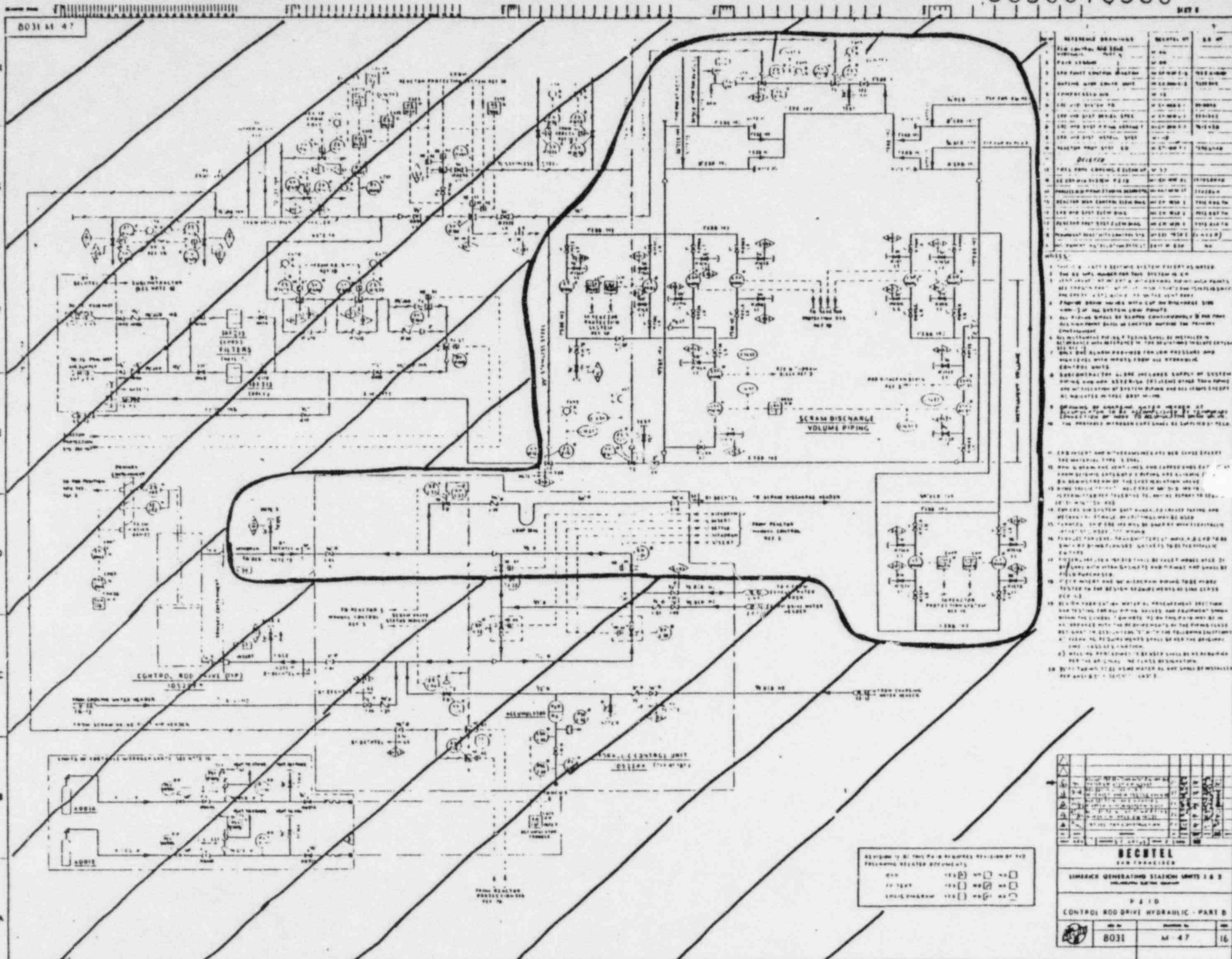

8031 M 47
SCRAM DISCHARGE
VOLUME PIPING
FILTERS
CONTROL ROD DRIVE (TYP)
ACCUMULATOR
BECHTEL
SAN FRANCISCO
LIMERICK GENERATING STATION UNITS 1 & 2
P & I D
CONTROL ROD DRIVE HYDRAULIC - PART B
8031
M-47
16