Docket File

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

October 26, 1992

Docket No. 50-410

LICENSEE: Niagara Mohawk Power Corporation

FACILITY: Nine Mile Point Nuclear Station Unit 2

SUBJECT: SUMMARY OF OCTOBER 22, 1992, MEETING TO DISCUSS FINAL RESOLUTION OF THE SECONDARY CONTAINMENT DRAWDOWN ISSUE (TAC NO. M84197)

A meeting was held in the NRC One White Flint North Office in Rockville, Maryland, with Niagara Mohawk Power Corporation (NMPC) and NRC staff representatives to discuss final resolution of the secondary containment drawdown issue. By letter dated June 1, 1992, NMPC provided the NRC staff with the analysis and design concepts for plant modifications required to support final resolution of the secondary containment drawdown issue. The NMPC letter requested a meeting with the NRC to discuss these analysis and design concepts, related technical specification (TS) changes, and the manner in which plant modifications would likely be implemented. The subject meeting was held in response to this NMPC request. Enclosure 1 is a list of meeting attendees. Enclosure 2 is a copy of the handout material provided by NMPC.

The NMPC representatives initially reviewed the history of the secondary containment drawdown issue at Unit 2. NMPC has imposed certain compensatory measures to ensure that the radiological consequences of a design basis Loss of Coolant Accident remain within 10 CFR Part 100 guideline values and consistent with General Design Criterion 19. These measures have included both modifications and the imposition of administrative controls to ensure that an adequate differential temperature is maintained between air in the secondary containment and the service water pump discharge. Deliberate heating of the reactor building has been required in the summer months in order to maintain an adequate differential temperature.

Subsequent discussions concerned modifications that NMPC plans to implement during Refueling Outage 3 (RO3) to obviate the need for the previously mentioned administrative controls. Specifically, NMPC has determined that the original Standby Gas Treatment System (SGTS) capacity needs to be increased by approximately 100 percent. NMPC plans to increase the exhaust capacity of each SGTS train from 4000 cfm to 8000 cfm and install new filter trains. Each train will be provided with a two-speed fan, with a high-speed capacity of 8000 cfm and a low-speed capacity of 4000 cfm. Under accident conditions both fans would start at high speed. One fan would subsequently trip when a negative differential pressure of 0.25 inch water gauge is reestablished in the secondary containment and the other fan would continue to run. The operating fan would shift from fast to slow speed when flow decreases to 3700 cfm. The new SGTS trains would be equipped with inlet variable vane dampers for flow rate control and would not have recirculation lines for the control of flow.

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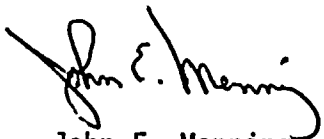
The current plant design utilizes a 14-inch bypass line around each SGTS train for emergency primary containment venting. Personnel must now manually remove expansion joints and install blind flanges to bypass a SGTS filtration unit in preparation for emergency primary containment venting. As part of the SGTS modification, the design for emergency venting will be revised to eliminate the need to perform these manual operations. The new design will utilize a remotely operated valve within a single line that bypasses both SGTS filter trains in place of the existing individual bypass lines. During the discussion of these design changes the NRC staff suggested that NMPC carefully evaluate the potential for leakage through this line that could bypass the filter trains during SGTS operation.

The remaining discussions concerned TS changes that NMPC plans to request prior to implementation of the SGTS modifications. Technical specification changes will clearly be required to accommodate the new SGTS design. NMPC will also request TS changes to facilitate installation of the new SGTS trains. NMPC has determined that the length of RO3 could be reduced by approximately 2 weeks if the core could be unloaded and reloaded with only one operable SGTS train. Limiting Condition for Operation (LCO) 3.6.5.3 of the current TS allows refueling operations to continue for 7 days if one only SGTS train is operable. NMPC estimates that core unload and reload will each take about 8 days. Consequently, NMPC plans to request a change to LCO 3.6.5.3 that is consistent NUREG-1434, "Standard Technical Specifications - General Electric Plants, BWR/6." Specifically, NMPC will request that the LCO be changed to allow refueling operations with only one operable SGTS train if the operable train is running. Refueling operations would be suspended if the operating train stops. During the discussion of these changes to the TS the NRC staff recommended that NMPC's safety evaluation address continuous SGTS operation with concurrent operation of the normal reactor building ventilation system.

The NMPC representatives indicated that the TS change requests would be submitted by December 31, 1992, and that they would request that related license amendments be issued by June 30, 1992. Although RO3 is currently scheduled to start in September 1993 NMPC would like to have the amendments issued sooner in case the outage start date is advanced. NMPC further stated that different effective dates will be requested for the TS change requests. Specifically, NMPC will request that the changes to facilitate installation be effective prior to the start of the refueling outage. NMPC will request that the TS changes to accommodate the new SGTS design be effective after core offload.

At the conclusion of the meeting the NRC staff noted that the discussions had been very useful in providing the staff with updated information on the SGTS and emergency primary containment venting modifications, related TS changes, and NMPC's current schedule for submittals.



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Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. List of Attendees
2. Licensee Handout Material

cc w/enclosures:
See next page

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ENCLOSURE 1

ATTENDANCE LIST

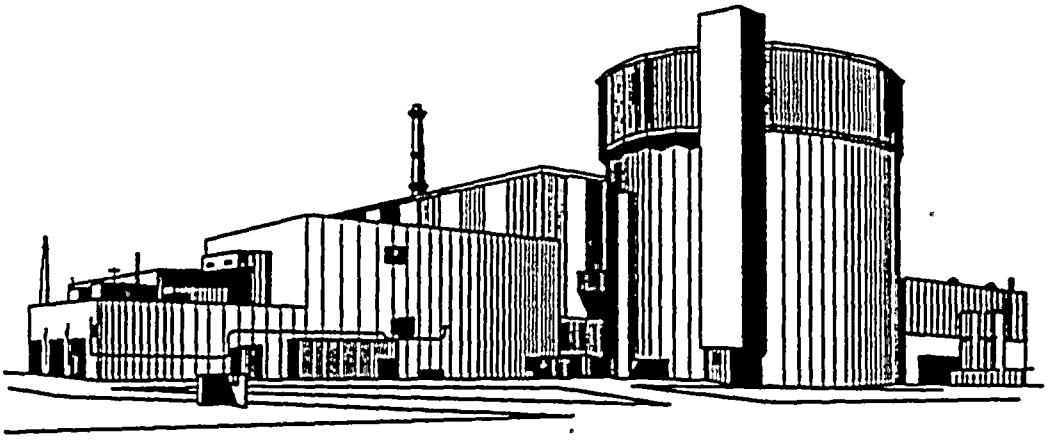
October 22, 1992, Meeting to Discuss Final Resolution of the Nine Mile Point Unit 2 Secondary Containment Drawdown Issue

Name	Position	Organization
Robert A. Capra	Project Director	NRC/NRR/PDI-1
John E. Menning	Project Manager	NRC/NRR/PDI-1
Mark D. Pratt	Electrical Engineer	NRC/NRR/SELB
Jack Hayes	Health Physicist	NRC/NRR/PRPB
Calvin Moon	Sr. Reactor Engineer	NRC/NRR/OTSB
Jack Kudrick	Section Chief	NRC/NRR/SCSB
Thomas D. Fay	Licensing Engineer	Niagara Mohawk
John T. Conway	Tech. Support Mgr.	Niagara Mohawk
Ken Korcz	Licensing Engineer	Niagara Mohawk
W. David Baker	Program Director	Niagara Mohawk
Ed Klein	Project Manager	Niagara Mohawk
Mark Wetterhahn	Attorney	Winston & Strawn
Tom O'Reilly	Mechanical Engineer	Halliburton-NUS
Ed Lind	Mechanical Engineer	Stone & Webster
Steve Tsombaris	Electrical Engineer	Stone & Webster
Mark Lombard	Vice President	MDM Engineering

ENCLOSURE 2

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 2



Secondary Containment Drawdown

October 22, 1992

PURPOSE

- DISCUSS SGTS DESIGN RESOLUTION FOR THE DRAWDOWN ISSUE
- DISCUSS CONSTRUCTION SCHEDULE
- DISCUSS PROPOSED TECHNICAL SPECIFICATION CHANGES
  - LONG-TERM OPERATION
  - INSTALLATION
- OBTAIN NRC INPUT WITH REGARD TO DESIGN, INSTALLATION, DRAWDOWN ANALYSIS, AND TECHNICAL SPECIFICATION CHANGES ASSOCIATED WITH THE NEW SGTS

AGENDA

BACKGROUND	**E. R. KLEIN**
PROBLEM RESOLUTION	**E. R. KLEIN**
CONSTRUCTION PLANS - SCHEDULE - SURVEILLANCE TESTING	**E. R. KLEIN**
PROPOSED TECHNICAL SPECIFICATION CHANGES - INSTALLATION - PERMANENT	**K. W. KORCZ**

OVERVIEW OF DRAWDOWN ISSUES

BACKGROUND:

- ORIGINAL ANALYSIS ASSUMED SECONDARY CONTAINMENT (S.C.) TEMPERATURE OF 104°F AT START OF LOCA EVENT
- DESIGN TEMPERATURE OF S.C. AT START OF LOCA EVENT IS 85°F
- THEREFORE, UNIT COOLERS WOULD HAVE A SMALL ΔT AT START OF LOCA EVENT
- AT PRESENT TIME, A MINIMUM DIFFERENTIAL TEMPERATURE OF APPROXIMATELY 22°F IS MAINTAINED BETWEEN S.C. AIR TEMPERATURE AND SERVICE WATER TEMPERATURE

OVERVIEW OF DRAWDOWN ISSUES

PERMANENT RESOLUTION:

- INCREASE EXHAUST CAPACITY OF THE SGTS FROM 4000 CFM TO 8000 CFM
- NEW FILTER TRAINS ARE ALSO REQUIRED
- SELECTED UNIT COOLERS ARE STILL REQUIRED TO MEET DRAWDOWN TIME (SEE TABLE 1)
- TWO-SPEED FANS ARE PROVIDED:

  HIGH SPEED CAPACITY IS 8000 CFM - LOW SPEED CAPACITY IS 4000 CFM
- BOTH FANS START AT HIGH SPEED
- LAG FAN TRIPS WHEN -0.25 IN W.G. IS ESTABLISHED IN S.C. - LEAD FAN CONTINUES TO RUN
- VARIABLE VANE DAMPER WILL GRADUALLY CLOSE (DECREASING FLOW RATE) AS NEGATIVE PRESSURE INCREASES IN S.C.
- ANALYSIS ASSUMES INLEAKAGE TO BE 2850 CFM AT ANY OUTSIDE TEMPERATURE (CONSERVATIVE ASSUMPTION)
- LEAD FAN TRIPS TO LOW SPEED WHEN 3700 CFM IS MEASURED AT FLOW ELEMENT

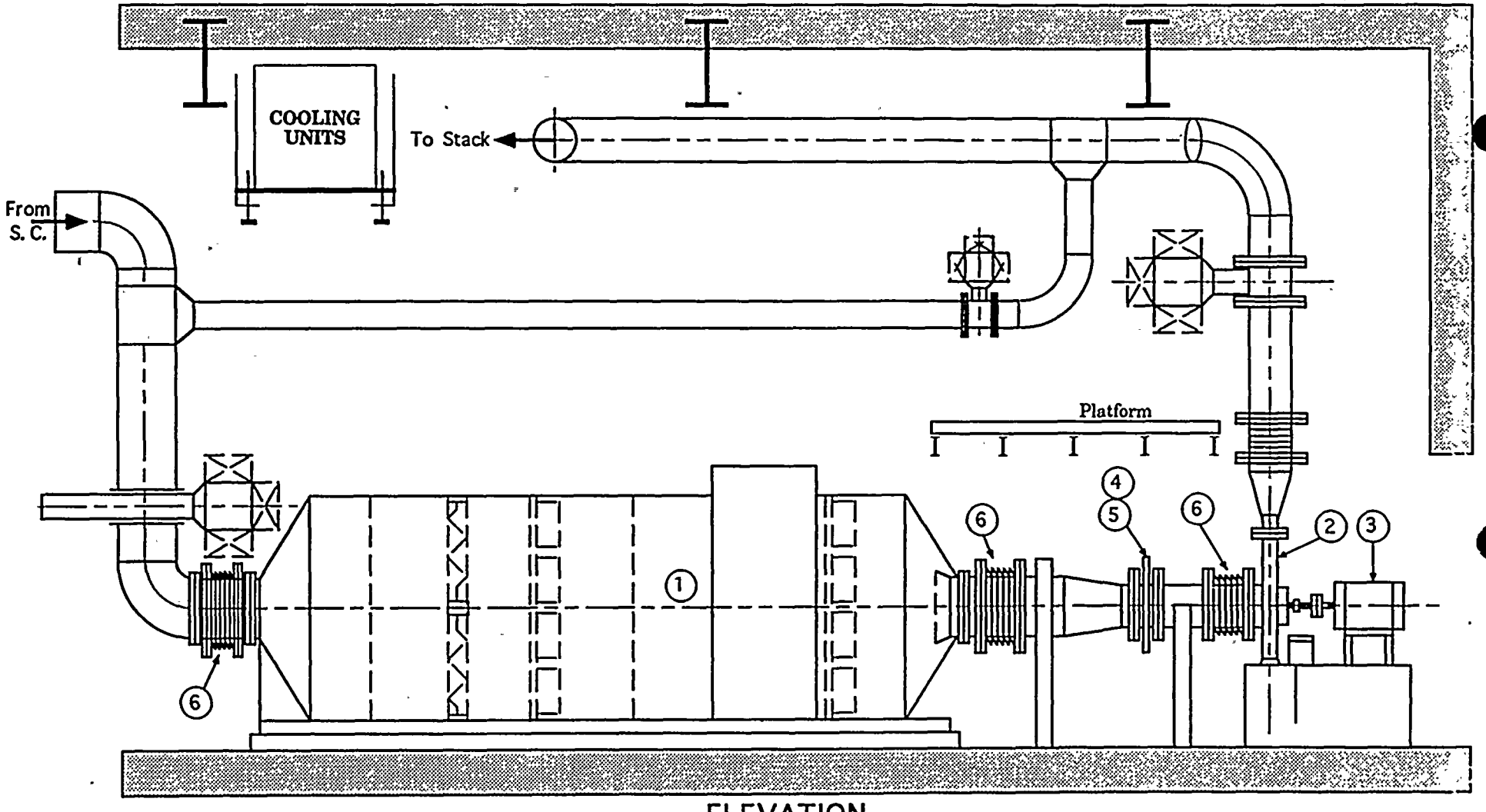
REACTOR BUILDING UNIT COOLERS

UNIT COOLER 2HVR*UC	LOCATION	Existing Design Division			New Design Division		
		I	II	III	I	II	III
401A	RHR Pump Room A	x			x		
401B	RHR Pump Room C		x			x	
401C	RHR Pump Room B		x			x	
401D	RHR Pump Room A	x					
401E	RHR Pump Room C		x				
401F	RHR Pump Room B		x				
402A	LPCS Pump Room	x			x		
402B	LPCS Pump Room	x					
403A	HPCS Pump Room			x			x
403B	HPCS Pump Room			x			
404A	General Area, El. 175'	x					
404B	General Area, El. 175'	x					
404C	General Area, El. 175'		x				
404D	General Area, El. 175'		x				
405–	RHR Hx Room A	x			x		
406–	RHR Hx Room B		x			x	
407A	General Area, El. 215'	x					
407B	General Area, El. 215'	x					
407C	General Area, El. 215'	x					
407D	General Area, El. 215'		x				
407E	General Area, El. 215'		x				
410A	General Area, El. 240'	x					
410B	General Area, El. 240'		x				
410C	General Area, El. 240'		x				
411A	General Area, El. 261'	x					
411B	General Area, El. 261'		x				
411C	General Area, El. 261'		x				
412A	RCIC Pump Room	x			x		
412B	RCIC Pump Room		x			x	
413A	Recirc. Unit Cooler	x			x		
413B	Recirc. Unit Cooler		x			x	
414A	General Area, El. 261'	x					
414B	General Area, El. 261'		x				
Total →		15	16	2	5	5	1

TABLE I

MODIFICATION

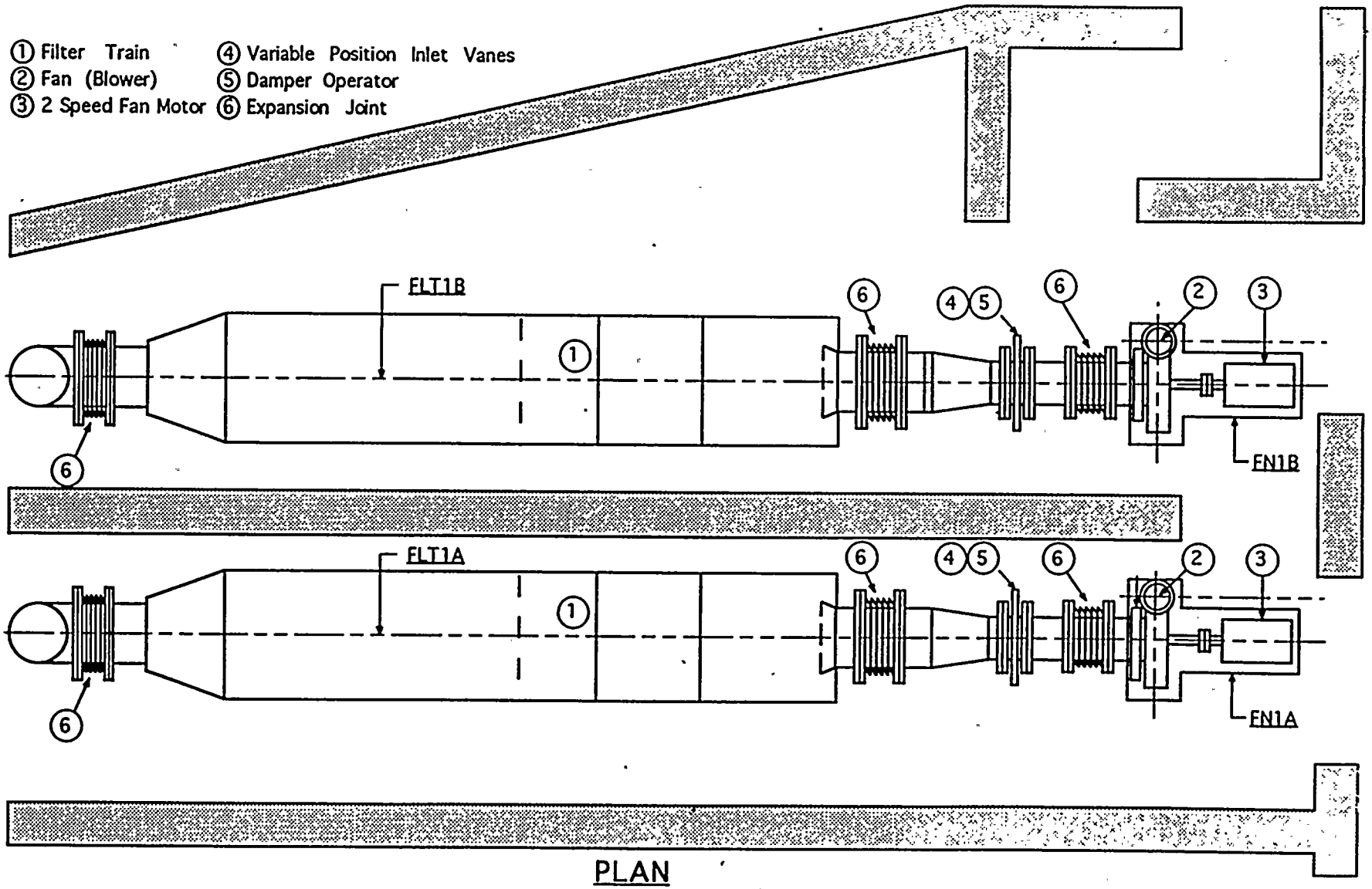
① Filter Train
② Fan (Blower)
③ 2 Speed Fan Motor
④ Variable Position Inlet Vanes
⑤ Damper Operator
⑥ Expansion Joint



ELEVATION

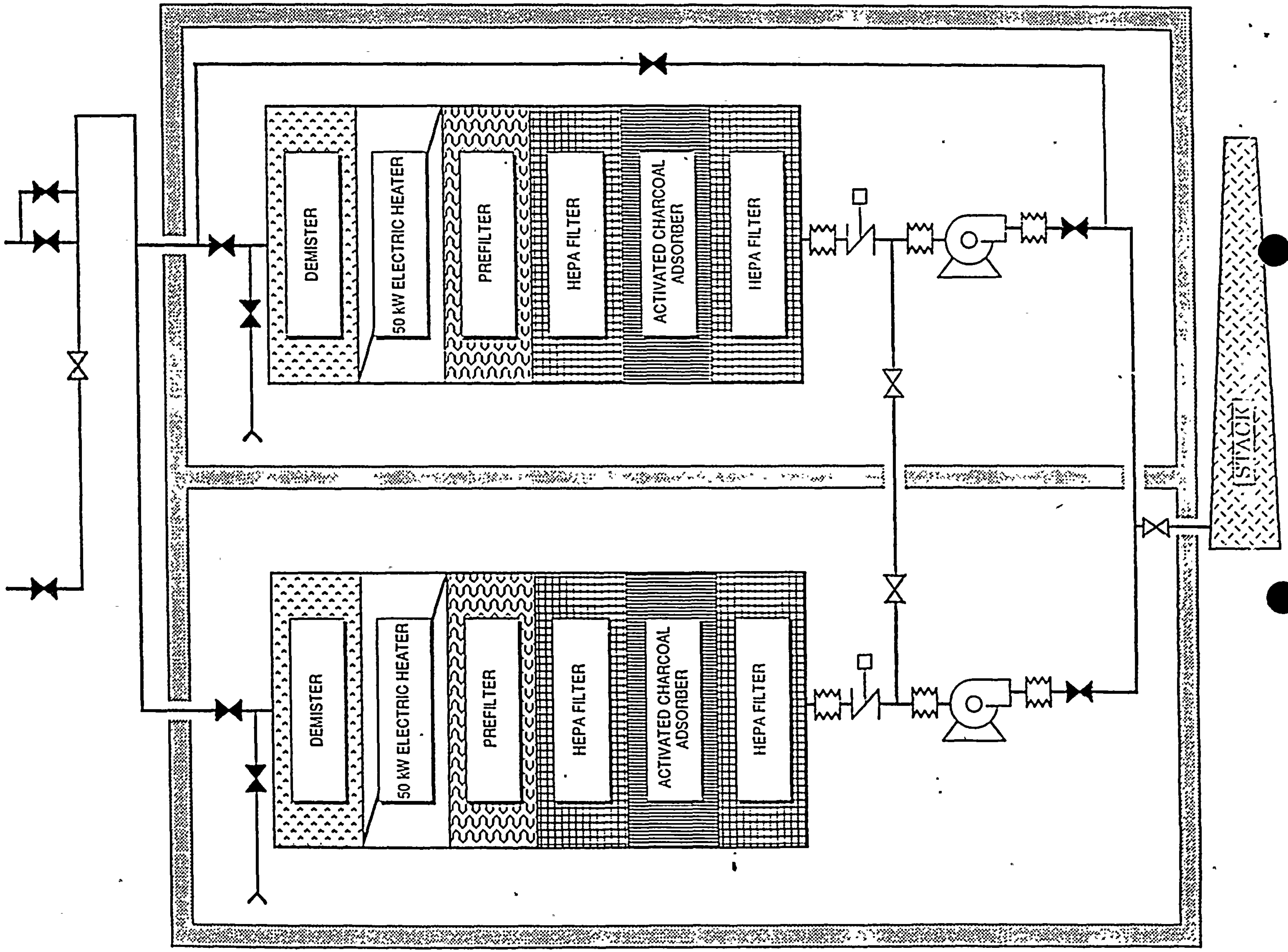
MODIFICATION

① Filter Train
② Fan (Blower)
③ 2 Speed Fan Motor
④ Variable Position Inlet Vanes
⑤ Damper Operator
⑥ Expansion Joint



PLAN

SGTS SCHEMATIC DIAGRAM



SURVEILLANCE TEST TO VERIFY FAN PERFORMANCE

- THE TIME TO ESTABLISH - 0.25 IN W.G. IN S.C. WITH VARYING INLEAKAGE IS CALCULATED

- A CURVE SHOWING DRAWDOWN TIME FOR VARIOUS CORRECTED INLEAKAGES IS DEVELOPED (SEE FIGURE 1)

- INLEAKAGE HAS TO BE DETERMINED DURING SURVEILLANCE TEST

- MEASURED INLEAKAGE MUST BE CORRECTED FOR AIR TEMPERATURE AND PRESSURE

- CORRECTION FACTORS F_1 AND F_2 ARE DETERMINED FOR PRESSURE AND TEMPERATURE

- CORRECTED INLEAKAGE IS:

  $Q_{CORRECTED} = Q_{MEASURED} \times F_1 \times F_2$

FIGURE 1

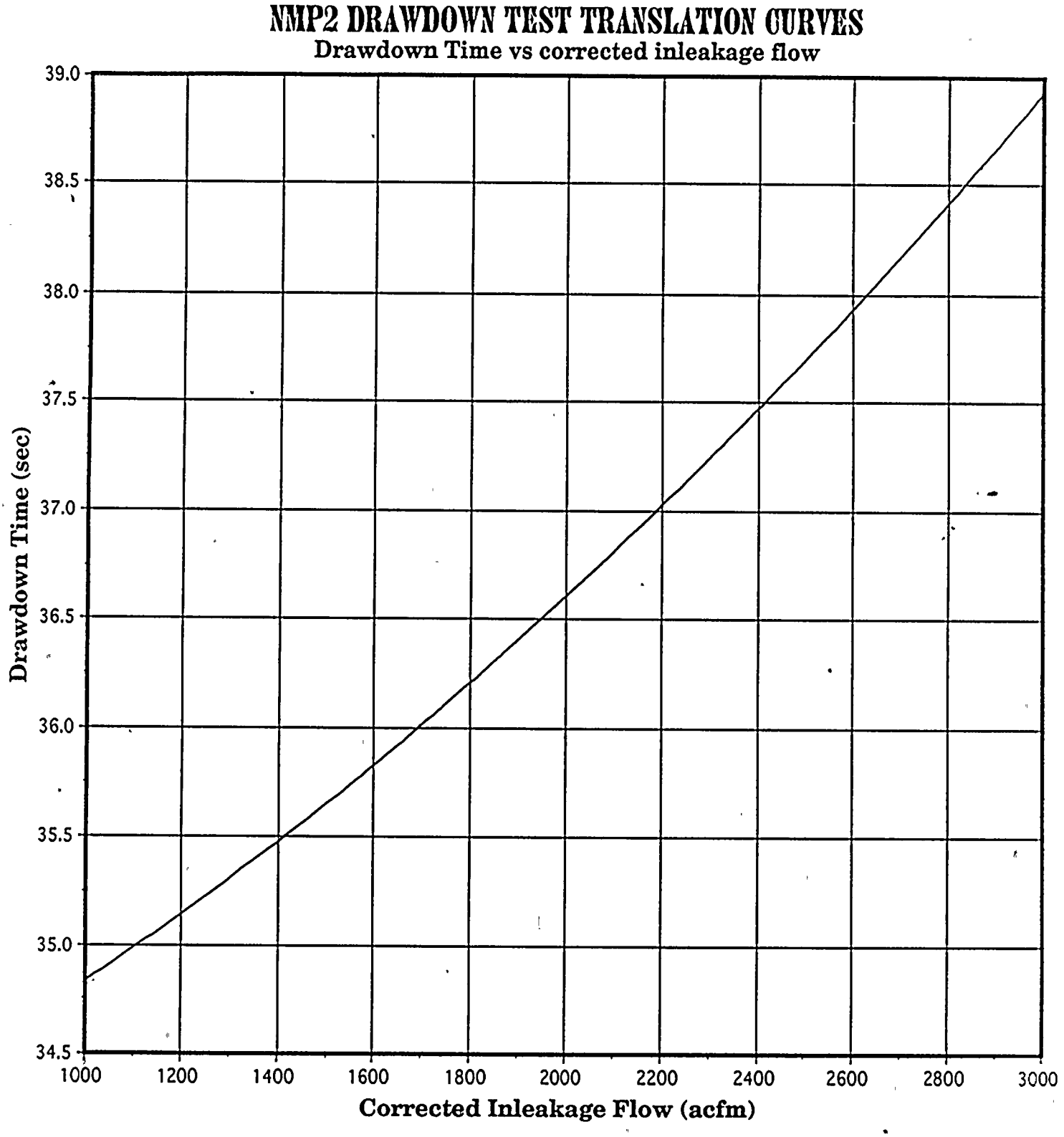

NMP2 DRAWDOWN TEST TRANSLATION CURVES
Drawdown Time vs corrected inleakage flow
Drawdown Time (sec)
39.0
38.5
38.0
37.5
37.0
36.5
36.0
35.5
35.0
34.5
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
Corrected Inleakage Flow (acfm)

FIGURE 2

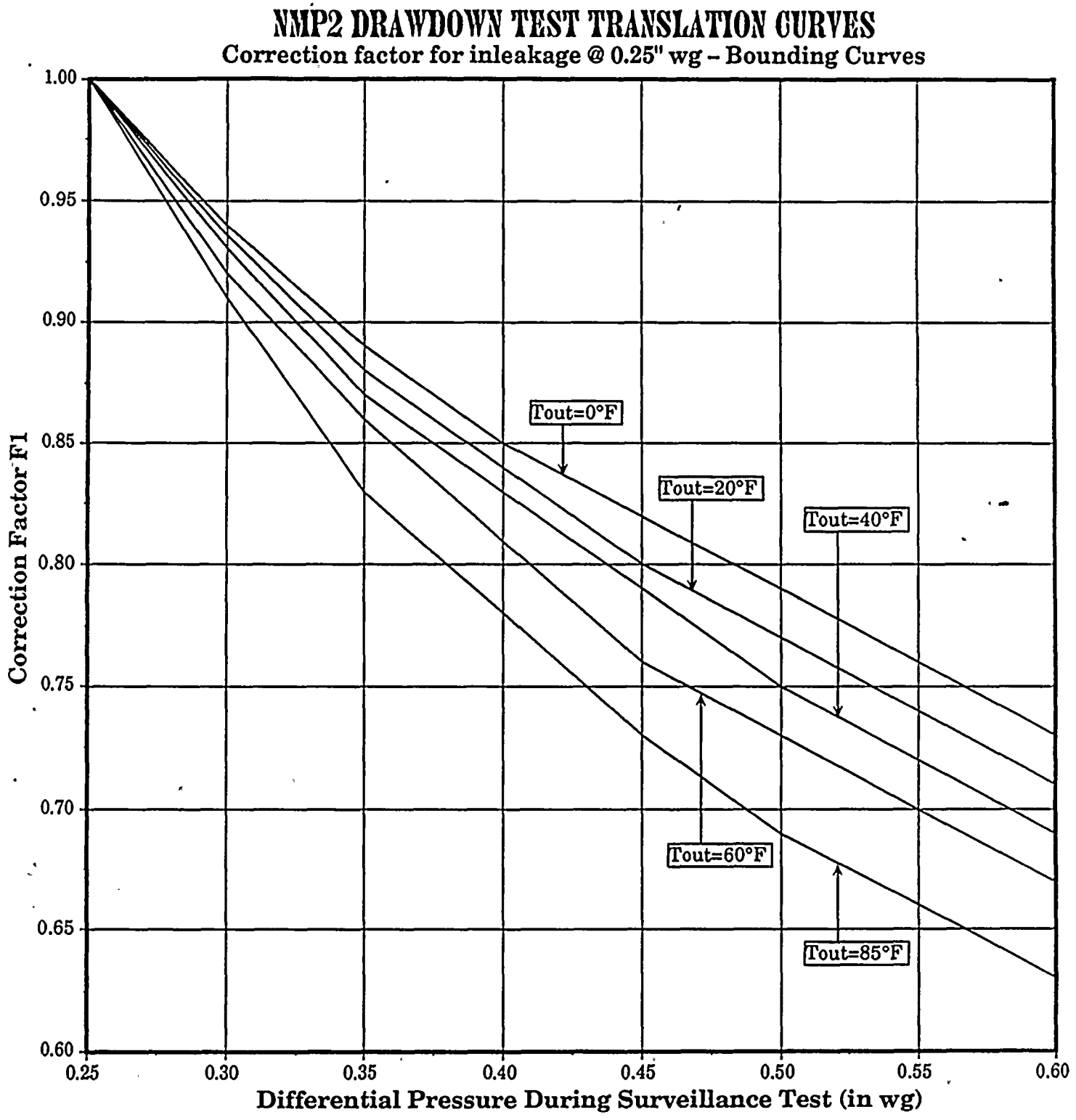

NMP2 DRAWDOWN TEST TRANSLATION CURVES
Correction factor for inleakage @ 0.25" wg – Bounding Curves
Correction Factor F1
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
Tout=0°F
Tout=20°F
Tout=40°F
Tout=60°F
Tout=85°F
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
Differential Pressure During Surveillance Test (in wg)

FIGURE 3

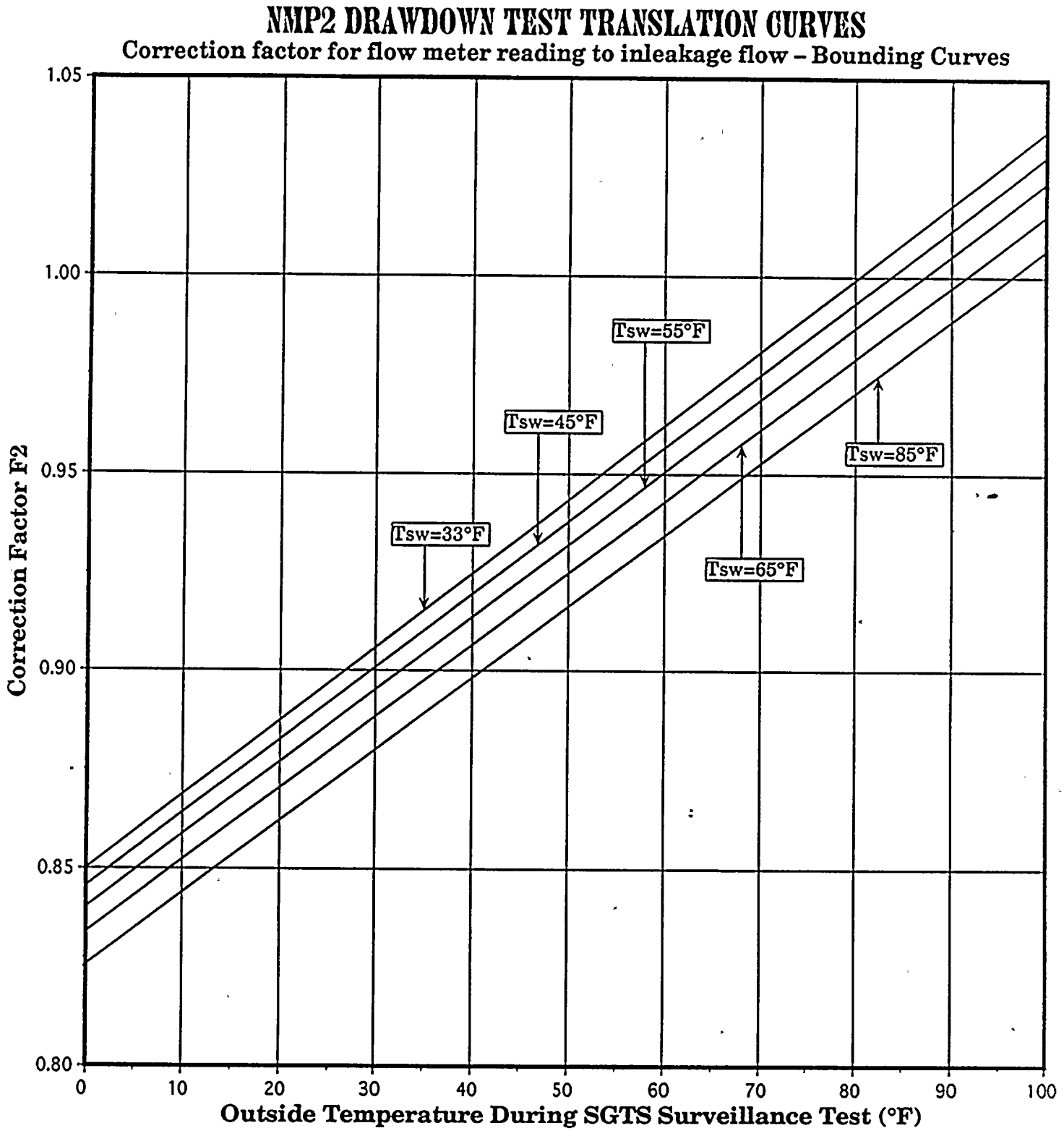
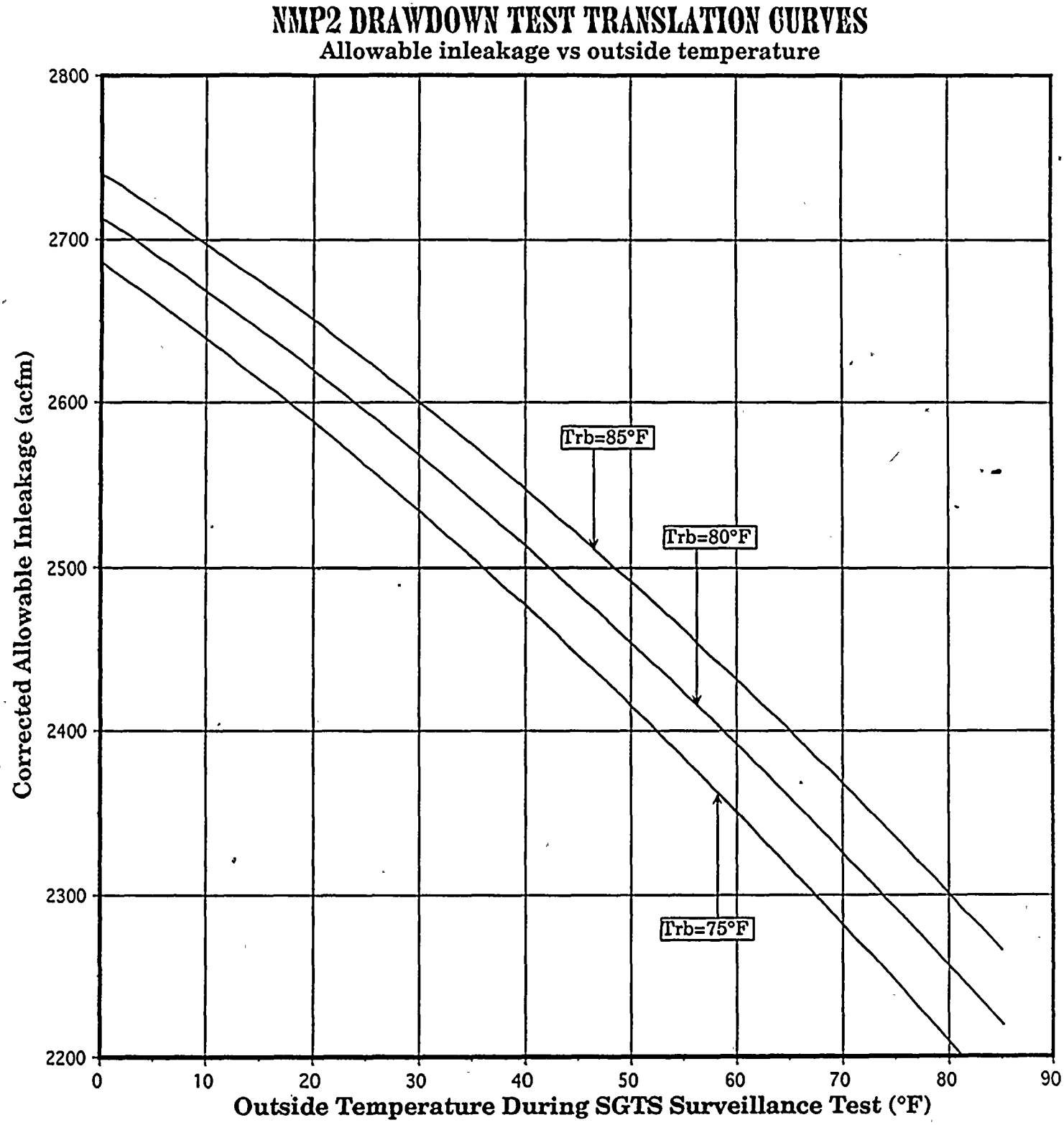
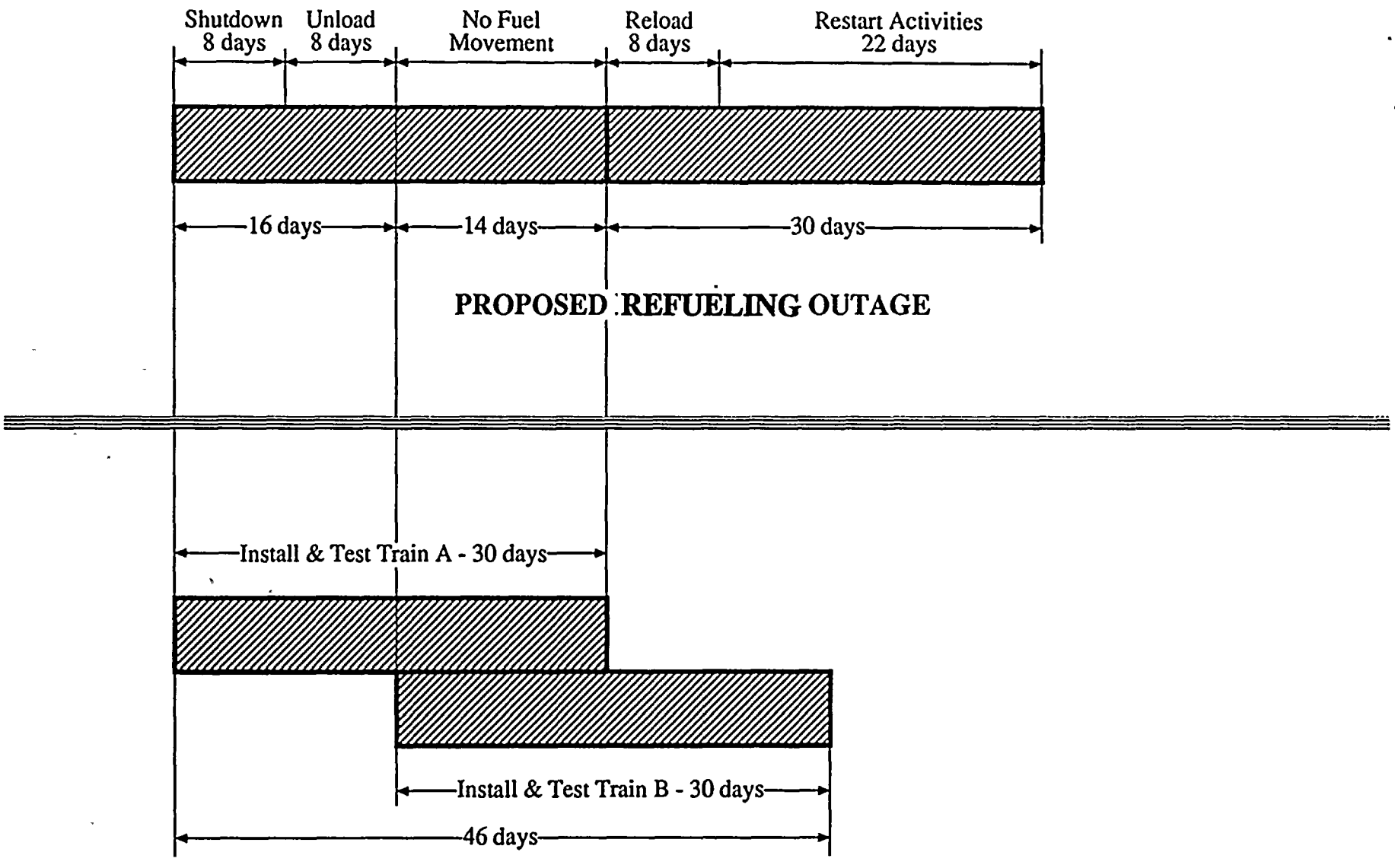

NMP2 DRAWDOWN TEST TRANSLATION CURVES
Correction factor for flow meter reading to inleakage flow – Bounding Curves
Correction Factor F2
1.05
1.00
0.95
0.90
0.85
0.80
Tsw=33°F
Tsw=45°F
Tsw=55°F
Tsw=65°F
Tsw=85°F
0
10
20
30
40
50
60
70
80
90
100
Outside Temperature During SGTS Surveillance Test (°F)

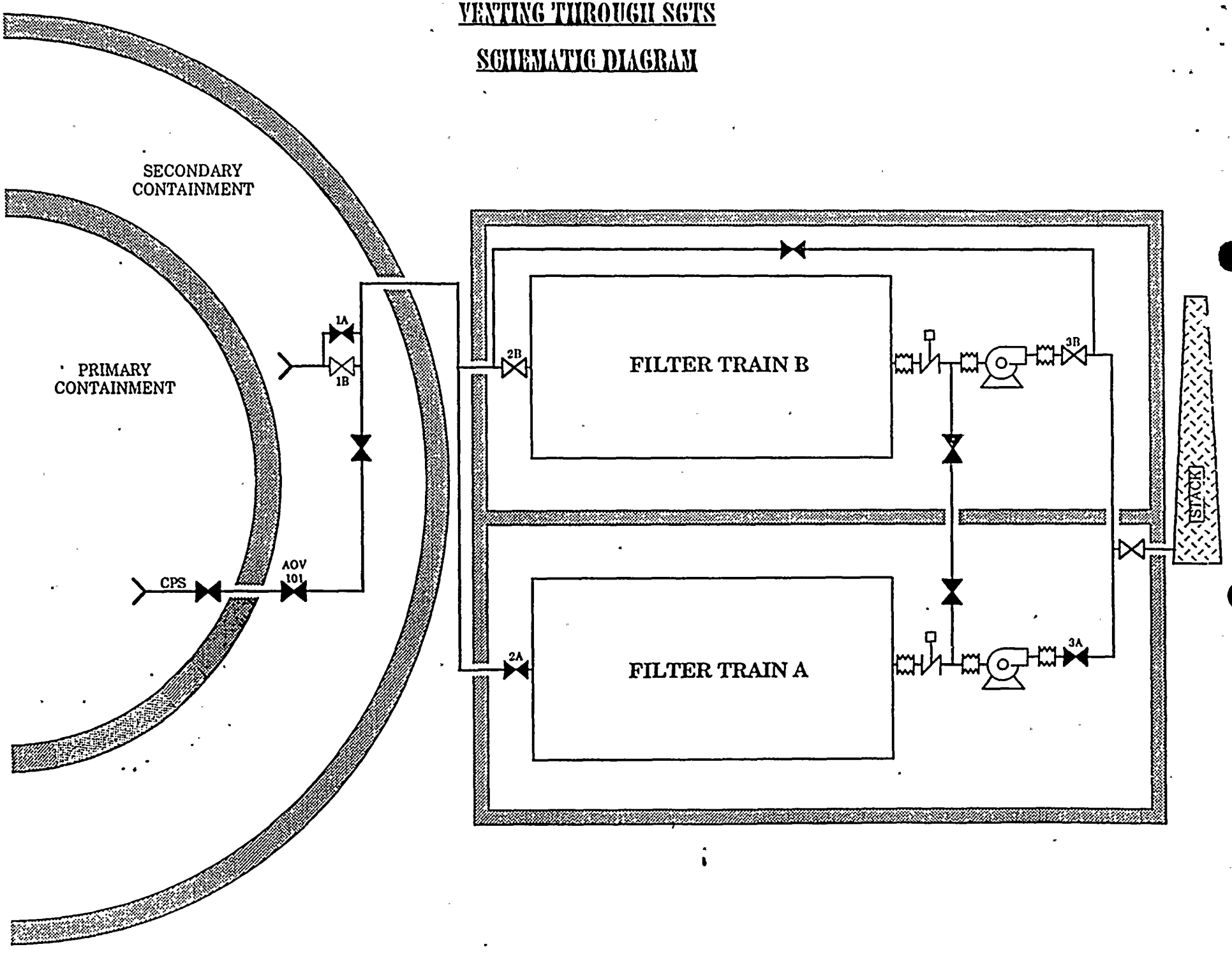
FIGURE 4


NMP2 DRAWDOWN TEST TRANSLATION CURVES
Allowable inleakage vs outside temperature
Corrected Allowable Inleakage (acfm)
2800
2700
2600
2500
2400
2300
2200
Trb=85°F
Trb=80°F
Trb=75°F
0
10
20
30
40
50
60
70
80
90
Outside Temperature During SGTS Surveillance Test (°F)


Shutdown
8 days
Unload
8 days
No Fuel
Movement
Reload
8 days
Restart Activities
22 days
16 days
14 days
30 days
PROPOSED REFUELING OUTAGE
Install & Test Train A - 30 days
Install & Test Train B - 30 days
46 days
INSTALLATION OF NEW SGTS

VENTING THROUGH SGTS

SCHEMATIC DIAGRAM



TECHNICAL SPECIFICATION CHANGES

PURPOSE:

- INCORPORATE EFFECT OF NEW SGTS DESIGN, SGTS OPERATION AND DRAWDOWN ANALYSIS ON SGTS AND SECONDARY CONTAINMENT INTEGRITY SURVEILLANCES

- ALLOW REFUELING ACTIVITIES CONCURRENT WITH INSTALLATION OF SGTS

TECHNICAL SPECIFICATION CHANGE TO FACILITATE INSTALLATION AND PROVIDE OPERATIONAL FLEXIBILITY

- NUREG-1434, IMPROVED STS FOR BWR'S, CONTAINS OPERATIONAL FLEXIBILITY FOR FUEL HANDLING OPERATIONS. NMPC INTENDS TO ADOPT THESE PROVISIONS
- CHANGE TO LCO 3.6.5.3, "SGTS"
  - ALLOWS REFUELING ACTIVITIES WITH 1 SGTS TRAIN INOPERABLE PROVIDED OTHER TRAIN IS RUNNING
  - RUNNING TRAIN CAN BE EITHER OLD SGTS DESIGN OR NEW SGTS DESIGN
  - IF RUNNING TRAIN STOPS, SUSPEND REFUELING ACTIVITIES

TECHNICAL SPECIFICATION CHANGES

AFFECTED BY NEW SGTS DESIGN, SGTS OPERATION AND DRAWDOWN ANALYSIS

- AFFECTED TECHNICAL SPECIFICATION SURVEILLANCES:
  - 4.6.5.1, SECONDARY CONTAINMENT INTEGRITY
  - 4.6.5.3, STANDBY GAS TREATMENT

SURVEILLANCE 4.6.5.1, SECONDARY CONTAINMENT INTEGRITY:

- 4.6.5.1.C.2, MAXIMUM SECONDARY CONTAINMENT INLEAKAGE
  - EXISTING ACCEPTANCE CRITERION
    - 3190 CFM
  - NEW ACCEPTANCE CRITERION
    - $\leq$ THE CALCULATED ALLOWABLE INLEAKAGE DETERMINED FROM OUTSIDE AND INSIDE AIR TEMPERATURE
    - NOT TO EXCEED 2850 CFM AT -20°F OUTSIDE AIR TEMPERATURE
    - 2850 CFM = 100% OF S.C. AIR VOLUME/DAY
- 4.6.5.1.C.1, DRAWDOWN TIME:
  - EXISTING ACCEPTANCE CRITERION
    - 120 SECONDS
  - NEW ACCEPTANCE CRITERION
    - $\leq$ THE CALCULATED ALLOWABLE TIME DETERMINED FROM THE SECONDARY CONTAINMENT CORRECTED SURVEILLANCE TEST INLEAKAGE VALUE, THE SECONDARY CONTAINMENT NET VOLUME AND A FAN CAPACITY OF $\geq$ 7500 CFM
    - NOT TO EXCEED 38.6 SECONDS AT 2850 CFM
- ASSOCIATED BASES CHANGES

SURVEILLANCE 4.6.5.3, SGTS:

- 4.6.5.3.b.1, SUBSYSTEM FLOW RATE ASSOCIATED WITH IN-PLACE PENETRATION AND BYPASS LEAKAGE TESTING

  - ACCEPTANCE CRITERION

    - EXISTING - 4000 CFM $\pm$ 10%
    - NEW - 8000 CFM $\pm$ 10%

- 4.6.5.3.b.3, SUBSYSTEM FLOW RATE WHEN TESTED IN ACCORDANCE WITH ANSI N510-1980

  - ACCEPTANCE CRITERION

    - EXISTING - 4000 CFM $\pm$ 10%
    - NEW - 8000 CFM $\pm$ 10% AND 4000 CFM $\pm$ 10%

- 4.6.5.3.d.1, MEASURING PRESSURE DROP ACROSS COMBINED HEPA FILTERS AND CHARCOAL ADSORBER BANKS WHILE OPERATING AT A SPECIFIED FLOW RATE

  - ACCEPTANCE CRITERION

    - EXISTING - LESS THAN 5.5 INCHES WATER GAUGE AT 4000 CFM $\pm$ 10%
    - NEW - LESS THAN 7.5 INCHES WATER GAUGE AT 8000 CFM $\pm$ 10%

- 4.6.5.3.d.4, POWER OUTPUT OF HEATERS WHEN TESTED IN ACCORDANCE WITH ANSI N510-1980

  - ACCEPTANCE CRITERION

    - EXISTING - 20.0 $\pm$ 2 KW
    - NEW - 50.0 $\pm$ 2.5 KW

SURVEILLANCE 4.6.5.3, SGTS (Cont'd):

- 4.6.5.3.e, REPERFORMING OF IN-PLACE PENETRATION AND BYPASS LEAKAGE TESTING AFTER COMPLETE OR PARTIAL REPLACEMENT OF HEPA FILTER BANK WITH A GIVEN SPECIFIED FLOW

  - ACCEPTANCE CRITERION

    - EXISTING - 4000 CFM $\pm$ 10%
    - NEW - 8000 CFM $\pm$ 10%

- 4.6.5.3.f, REPERFORMING OF IN-PLACE PENETRATION AND BYPASS LEAKAGE TESTING AFTER COMPLETE OR PARTIAL REPLACEMENT OF CHARCOAL ADSORBER BANK WITH A GIVEN SPECIFIED FLOW

  - ACCEPTANCE CRITERION

    - EXISTING - 4000 CFM $\pm$ 10%
    - NEW - 8000 CFM $\pm$ 10%

TENTATIVE PROPOSED NEW SURVEILLANCES

- 4.6.5.1.c.1, DRAWDOWN TIME (PARTIALLY NEW)
  - VERIFY EACH TRAIN STARTS AT HIGH SPEED
  - CALIBRATION OF 3700 CFM SETPOINT, OPERATING TRAIN DOWNSPEED SHIFT

- NEED FOR ABOVE SURVEILLANCES AND ANY ADDITIONAL SURVEILLANCES WILL BE RE-EVALUATED AFTER COMPLETION OF FAILURE MODES AND EFFECTS ANALYSIS (FMEA)

LICENSING SCHEDULE

- TECHNICAL SPECIFICATION SUBMITTALS BY 12/31/92
  - NEW SGTS DESIGN
  - FACILITATE INSTALLATION AND OPERATIONAL FLEXIBILITY
- REQUEST ISSUANCE OF LICENSE AMENDMENTS BY 6/30/93
- THIRD REFUELING OUTAGE COMMENCES SEPTEMBER 1993
- REQUEST DIFFERENT EFFECTIVE DATES FOR BOTH LICENSE AMENDMENTS
  - OPERATIONAL FLEXIBILITY LICENSE AMENDMENT EFFECTIVE PRIOR TO COMMENCEMENT OF REFUELING OUTAGE
  - NEW SGTS LICENSE AMENDMENT EFFECTIVE AFTER CORE OFFLOAD

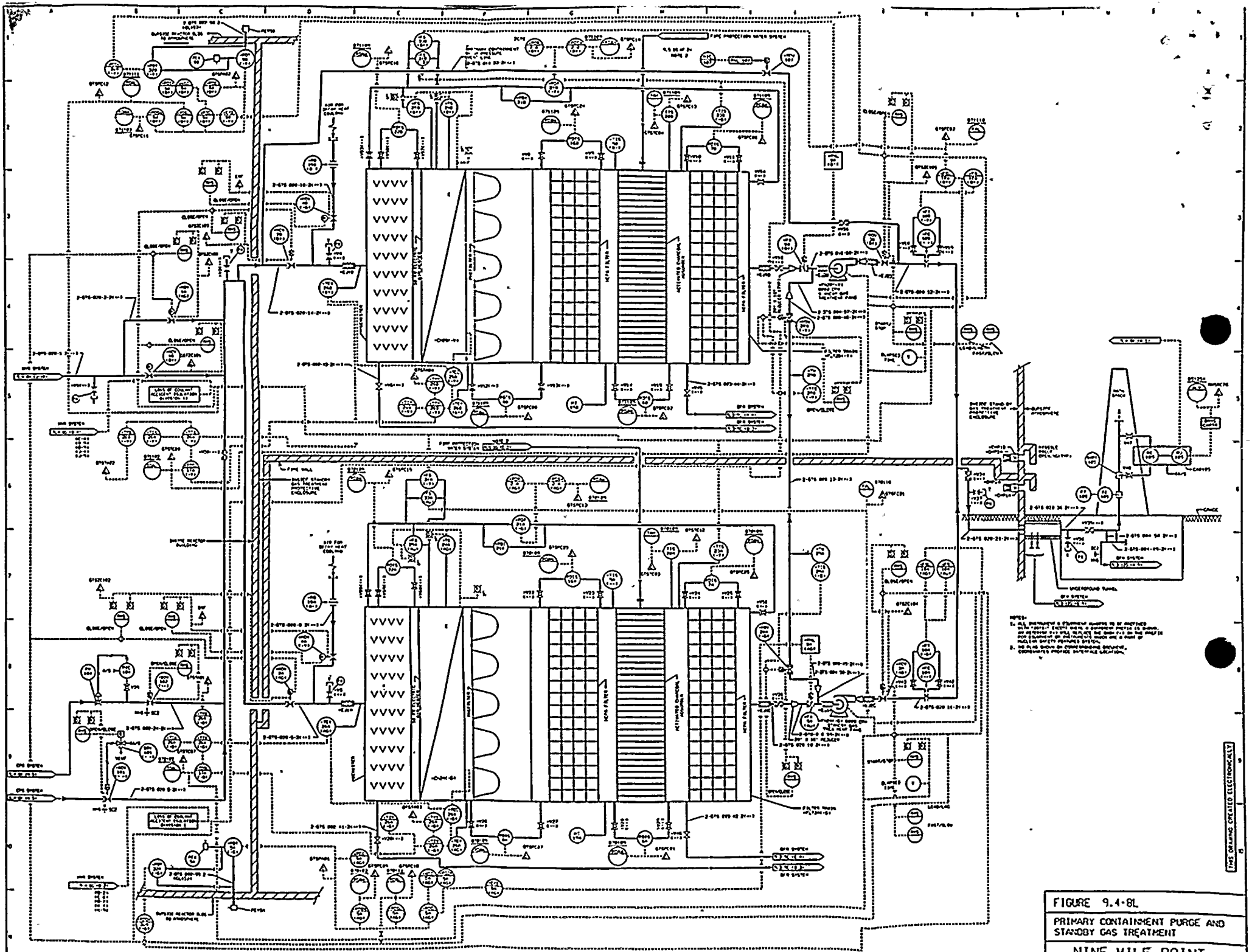


FIGURE 9.4-8L

PRIMARY CONTAINMENT PURGE AND STANDBY GAS TREATMENT

NINE MILE POINT
NUCLEAR STATION-UNIT 2

At the conclusion of the meeting the NRC staff noted that the discussions had been very useful in providing the staff with updated information on the SGTS and emergency primary containment venting modifications, related TS changes, and NMPC's current schedule for submittals.

Original signed by:

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Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. List of Attendees
2. Licensee Handout Material

cc w/enclosures:
See next page

Distribution

Docket File	OGC
NRC & Local PDRs	EJordan, MNBB 3701
PDI-1 Reading	JHayes, 10/D/4
TMurley/FMiraglia, 12/G/18	JKudrick, 8/D/1
JPartlow, 12/G/18	CMoon, 11/E/22
SVarga	MPratt, 7/E/4
JCalvo	ACRS (10)
RACapra	VMcCree, 17/G/21
JMenning	CCowgill
CVogan	

PDI-1:LA	PDI-1:PM	PDI-1:D			
CVogan cv	JMenning:smm	RACapra RC			
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