NINE MILE POINT UNIT 2

PLANT SPECIFIC

EMERGENCY PROCEDURE GUIDELINE

REV. 0*

BWR 5

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* Subject to Verification

TABLE I
ABBREVIATIONS

ADS	-	Automatic Depressurization System
APRM	-	Average Power Range Monitor
ARM	-	Area Radiation Monitor
CRD	-	Control Rod Drive
DRMS	-	Digital Radiation Monitoring System
ECCS	-	Emergency Core Cooling System
HCU	-	Hydraulic Control Unit
HPCS	-	High Pressure Core Spray
HVAC	-	Heating, Ventilating and Air Conditioning
LCO	-	Limiting Condition for Operation
LOCA	-	Loss of Coolant Accident
LPCI	-	Low Pressure Coolant Injection (mode of RHR)
LPCS	-	Low Pressure Core Spray
MSIV	-	Main Steamline Isolation Valves
NDTT	-	Nil-Ductility Transition Temperature
NPSH	-	Net Positive Suction Head
RCIC	-	Reactor Core Isolation Cooling
RHR	-	Residual Heat Removal
RPS	-	Reactor Protection System
RPV	-	Reactor Pressure Vessel
RSCS	-	Rod Sequence Control System
RWCU	-	Reactor Water Cleanup
SBGT	-	Standby Gas Treatment
SLC	-	Standby Liquid Control
SORV	-	Stuck Open Relief Valve
SRV	-	Safety Relief Valve

OPERATOR PRECAUTIONS

GENERAL

This section lists "Cautions" which are generally applicable at all times.

CAUTION #1

Monitor the general state of the plant. If an entry condition for an Emergency Operation Procedure occurs, enter that procedure. When it is determined that an emergency no longer exists, enter normal operating procedures.

CAUTION #2

Monitor RPV water level and pressure and primary containment temperatures and pressure from multiple indications.

CAUTION #3

If a safety function initiates automatically, assume a true initiating event has occurred unless otherwise confirmed by at least two independent indications.

CAUTION #4

Whenever RHR is in the LPCI mode, inject through the heat exchangers as soon as possible.

OPERATOR PRECAUTIONS (Cont.)

CAUTION #5

Suppression pool temperatue is determined by calculated process computer point. Drywell temperature is determined by calculated process computer point. If the process computer is unavailable the highest available indication of Drywell or Suppression Pool temperature is assumed to be the average temperature.

CAUTION #6

Whenever Drywell temperature exceeds the temperature in the table and the instrument reads below the indicated level in the table, the actual RPV water level may be anywhere below the elevation of the lower instrument tap.

Temperature (*)	Indicated Level	Instrument	
180°F	238 in.	Shutdown Range Level	147 to 547 in.
193°F	250 in.	Upset Range	147 to 327 in.
549°F	Downscale	Wide Range Level	-5 to 207 in.
549°F	Downscale	Narrow Range Level	147 to 207 in.
549°F	Downscale	Fuel Zone Level	-154 to 36 in.

CAUTION #7

Continuously monitor operating RHR, LPCS and HPCS pumps for signs of cavitation when suppression pool level is less than 16 feet and temperature exceeds 212°F.

Continously monitor RCIC pump for signs of cavitation when suppression pool temperature exceeds 170°F.

Throttling system flow is one means of lowering required NPSh.

OPERATOR PRECAUTIONS (Cont.)

CAUTION #8

If signals of high suppression pool water level or low condensate storage tank water level occur, confirm automatic transfer of or manually transfer HPCS and RCIC suction from the condensate storage tank to the suppression pool.

SPECIFIC

This section lists "Cautions" which are applicable at one or more specific points within the guidelines. Where a "Caution" is applicable, it is identified with the symbol / # /.

CAUTION #9

Do not secure or place an ECCS in MANUAL mode unless, by at least two independent indicatons; (1) misoperation in AUTOMATIC mode is confirmed, or (2) adequate core cooling is assured. If an ECCS is placed in MANUAL mode, it will not initiate automatically. Make frequent checks of the initiating or controlling parameter. When manual operation is no longer required, restore the system to AUTOMATIC/STANDBY mode if possible.

CAUTION #10

If a high drywell pressure ECCS initiation signal 1.00 psig occurs or exists while depressurizing, prevent injection from those LPCS and LPCI pumps not required to assure adequate core cooling prior to reaching their maximum injection pressures. When the high drywell pressure ECCS initiation signal clears, restore LPCS and LPCI to AUTOMATIC/STANDBY mode.

OPERATOR PRECAUTIONS (Cont.)

CAUTION #11

Do not throttle the RCIC system below 2200 rpm.

CAUTION #12

Cooldown rates above 100°F/hr may be required to accomplish this step.

CAUTION #13

Do not depressurize the RPV below 50 psig unless motor driven pumps sufficient to maintain RPV water level are running and available for injection.

CAUTION #14

Open SRVs in the following sequence if possible: PSV-126, 133, 123, 124 136, 131, 122, 120, 132, 125, 121, 135, 126, 130, 127, 129, 137, 134.

CAUTION #15

Bypassing low RPV water level MSIV isolation interlocks may be required to accomplish this step.

CAUTION #16

Cooldown rates above 100°F/hr may be required to conserve RPV water inventory, protect primary containment integrity, or limit radioactive release to the environment.

OPERATOR PRECAUTIONS (Cont.)

CAUTION #17

If continuous LPCI operation is required to assure adequate core cooling, do not divert all RHR pumps from LPCI mode.

CAUTION #18

Confirm automatic trip or manually trip SLC pumps at "Zero" level in the SLC tank.

CAUTION #19

Defeating RSCS interlocks may be required to accomplish this step.

CAUTION #20

Elevated suppression chamber pressure may trip the RCIC turbine on high pressure.

CAUTION #21

Defeating isolation interlocks may be required to accomplish this step.

CAUTION #22

Bypassing high drywell pressure and low RPV water level secondary containment HVAC isolation interlocks may be required to accomplish this step.

OPERATOR PRECAUTIONS (Cont.)

CAUTION #23

A rapid increase in injection into the RPV may induce a large power excursion and result in substantial core damage.

CAUTION #24

Large reactor power oscillations may be observed while executing this step.

RPV CONTROL GUIDELINE

PURPOSE

The purpose of this guideline is to:

- o Maintain adequate core cooling,
- o Shut down the reactor, and
- o Cool down the RPV to cold shutdown conditions 100°F < RPV Water Temp. < 200°F.

ENTRY CONDITIONS

The entry conditions for this guideline are any of the following:

- o RPV water level below 159.3 in.
- o RPV pressure above 1037 psig
- o Drywell pressure above 1.68
- o A condition which requires MSIV isolation
- o A condition which requires reactor scram, and reactor power above 4% or cannot be determined.

OPERATOR ACTIONS

RC-1 If reactor scram has not initiated, initiate reactor scram.

Irrespective of the entry condition, execute (Steps RC/L, RC/P, and C/Q) concurrently.

RC/L Monitor and control RPV water level.

RC/L-1 Confirm initiaton of any of the following:

- o Isolation
- o ECCS

Initiate any of these which should have initiated but did not.

OPERATOR ACTIONS (Cont)

If while executing the following steps:

- o Boron Injection is required, enter (procedure developed from CONTINGENCY #7).
- o RPV water level cannot be determined, RPV FLOODING IS REQUIRED; enter (procedure developed from CONTINGENCY #6).
- o RPV flooding is required, enter (procedure developed from CONTINGENCY #6).

RC/L-2 Restore and maintain RPV water level between 159.3 in. and 202.3 in. with one or more of the following systems:

#8
#9
#10

- o Condensate/feedwater system 1205-0 psig.
- o CRD system 1205-0 psig.
- o RCIC system 1130-50 psig. #11
- o HPCS system 1160-0 psig.
- o LPCS system 289-0 psig.
- o LPCI system 280-0 psig.

If RPV water level cannot be restored and maintained above 159.3 in., maintain RPV water level above -14 in.

OPERATOR ACTIONS (Cont)

If RPV water level can be maintained above -14 in. and the ADS timers have initiated, prevent automatic RPV depressurization by resetting the ADS timers.

If RPV water level cannot be maintained above -14 in. , enter (procedure developed from CONTINGENCY #1).

If Alternate Shutdown Cooling is required, enter (procedure developed from CONTINGENCY #5).

RC/L-3 Proceed to cold shutdown in accordance with N2-OP-101.

RC/P Monitor and control RPV pressure.

If while executing the following steps:

- o Emergency RPV Depressurization is anticipated, rapidly depressurize the RPV with the main turbine bypass valves. #12
- o Emergency RPV Depressurization or RPV Flooding is required and less than 7 SRVs are open, enter (procedure developed from CONTINGENCY #2).
- o RPV Flooding is required and at least 7 SRVs are open, enter (procedure developed from CONTINGENCY #6).

RC/P-1 If any SRV is cycling, manually open SRVs until RPV pressure drops to 940 psig.

OPERATOR ACTIONS (Cont)

If while executing the following steps:

- Suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit, maintain RPV pressure below the Limit. [#7 #12 #13]

See Figure 9

- Suppression pool water level cannot be maintained below the Suppression Pool Load Limit, maintain RPV pressure below the limit. [#12 #13]

See Figure 2

- Steam Cooling is required, enter (procedure developed from CONTINGENCY #3).

OPERATOR ACTIONS (Cont)

If while executing the following steps:

- o Boron Injection is required, and
- o The main condenser is available, and
- o There has been no indication of gross fuel failure or steam line break,

open MSIVs to re-establish the main condenser as a heat sink. #15

RC/P-2 Control RPV pressure below 1076 psig with the main turbine bypass valves. #13

RPV pressure control may be augmented by one or more of the following systems:

- o SRVs only when suppression pool water level is above 6 ft. If the continuous SRV pneumatic supply is or becomes unavailable, depressurize with sustained SRV opening. #14 #11
- o RCIC
- o RWCU (recirculation mode) if no boron has been injected into the RPV.
- o Main steam line drains
- o RWCU (blowdown mode) if no boron has been injected into the RPV. Refer to sampling procedures prior to initiating blowdown.

If while executing the following steps the reactor is not shutdown, return to (Step RC/P-2).

OPERATOR ACTIONS (Cont)

RC/P-3 When either:

- o All control rods are inserted beyond position 00, or
- o 608.5 pounds of boron have been injected into the RPV, or
- o The reactor is shutdown and no boron has been injected into the RPV,

depressurize the RPV and maintain cooldown rate below 100°F/hr. #13, #16

RC/P-4 When the RHR shutdown cooling interlocks clear, initiate the shutdown cooling mode of RHR. #17

If the RHR shutdown cooling mode cannot be established and further cooldown is required, continue to cool down using one or more of the systems used for depressurization.

If RPV cooldown is required but cannot be accomplished and all control rods are inserted beyond position 00, ALTERNATE SHUTDOWN COOLING IS REQUIRED;

enter (procedure developed from CONTINGENCY #5).

RC/P-5 Proceed to cold shutdown in accordance with N2-OP-101.

RC/Q Monitor and control reactor power.

If while executing the following steps:

- o All control rods are inserted beyond position 00, terminate boron injection and enter (scram procedure).
- o The reactor is shutdown and no boron has been injected into the RPV, enter (scram procedure).

OPERATOR ACTIONS (Cont)

RC/Q-1 Confirm or place the reactor mode switch in SHUTDOWN.

RC/Q-2 If the main turbine-generator is on-line and the MSIVs are open, confirm or initiate recirculation flow runback to minimum.

RC/Q-3 If reactor power is above 4% or cannot be determined, trip the recirculation pumps.

Execute (Steps RC/Q-4 and RC/Q-5) concurrently.

RC/Q-4 If the reactor cannot be shutdown before suppression pool temperature reaches 111°F, BORON INJECTION IS REQUIRED; inject boron into the RPV with SLC and prevent automatic initiation of ADS. #18

If boron cannot be injected with SLC, inject boron into the RPV by on or more of the following alternate methods:

- o CRD
- o HPCS
- o RWCU
- o Feedwater
- o RCIC
- o Hydro Pump

RC/Q-4.1 If boron is not being injected into the RPV by RWCU, confirm automatic isolation of or manually isolate RWCU.

RC/Q-4.2 Continue to inject boron until 608.5 pounds of boron have been injected into the RPV.

RC/Q-4.3 Enter (scram procedure).

OPERATOR ACTIONS (Cont)

RC/Q-5 Insert control rods as follows:

RC/Q-5.1 If any scram valve is not open:

- Remove Fuses: C71-F18A (P609)
  C71-F18E (P609)
  C71-F18C (P609)
  C71-F18G (P609)
  C71-F18B (P611)
  C71-F18F (P611)
  C71-F18D (P611)
  C71-F18H (P611)
- Close C12-F095
  Close C12-F088
  Remove RDS-PI133
  Open C12-F088

When control rods are not moving inward:

- Replace fuses: C71-F18A (P609)
  C71-F18E (P609)
  C71-F18C (P609)
  C71-F18G (P609)
  C71-F18B (P611)
  C71-F18F (P611)
  C71-F18D (P611)
  C71-F18H (P611)
- Close C12-F088
  Replace RDS-PI133
  Open C12-F088
  Open C12-F095

OPERATOR ACTIONS (Cont)

RC/Q-5.2 Reset the reactor scram.

If the reactor scram cannot be reset:

1. Start all CRD pumps.

   If no CRD pump can be started, continue in this procedure at (Step RC/Q-5.6.1).

2. Close C12-F034. #19

3. Rapidly insert control rods manually until the reactor scram can be reset.

4. Reset the reactor scram.

5. Open C12-F034.

RC/Q-5.3 If the scram discharge volume vent and drain valves are open, initiate a manual reactor scram.

1. If control rods moved inward, return to (Step RC/Q-5.2).

2. Reset the reactor scram.

   If the reactor scram cannot be reset, continue in this procedure at (Step RC/Q-5.5.1).

3. Open the scram discharge volume vent and drain valves.

RC/Q-5.4 Individually open the scram test switches for control rods not inserted beyond position 00.

When a control rod is not moving inward, close its scram test switches.

RC/Q-5.5 Reset the reactor scram.

If the reactor scram cannot be reset:

1. Start all CRD pumps.

   If no CRD pump can be started, continue in this procedure at (Step RC/Q-5.6.1).

2. Close C12-F034, HCU accumulator charging water header valve.

OPERATOR ACTIONS (Cont)

RC/Q-5.6 Rapidly insert control rods manually until all control rods manually until all control rods are inserted beyond position 00. #15

If any control rod cannot be inserted beyond position 00:

1. Individually direct the effluent from C12-F102 to a contained radwaste drain and open C12-F012 for each control rod not inserted beyond position 00.
2. When a control rod is not moving inward, close its C12-F102 CRD withdraw line vent valve.

PRIMARY CONTAINMENT CONTROL GUIDELINE

PURPOSE

The purpose of this guideline is to:

- o Maintain primary containment integrity, and
- o Protect equipment in the primary containment.

ENTRY CONDITIONS

The entry cnditions for this guideline are any of the following:

- o Suppression pool temperature above 95°F.
- o Drywell temperature above 135°F.
- o Suppression pool water level above 25'.
- o Suppression pool water level below 23'6".
- o Drywell pressure above 1.68 psig.

OPERATOR ACTIONS

> Irrespective of the entry condition, execute (Steps SP/1, DW/T, PC/P, and SP/L) concurrently.

SP/T Monitor and control suppression pool temperature.

SP/T-1 Close all SORVs.

If any SORV cannot be closed, scram the reactor.

SP/T-2 When suppression pool temperature exceeds 95°F, operate available suppression pool cooling. #17

SP/T-3 Before suppression pool temperature reaches 111°F, scram the reactor.

OPERATOR ACTIONS (Cont.)

SP/T-4 If suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit, maintain RPV pressure below the Limit. #7 #12 #13

See Figure 9

If suppression pool temperature and RPV pressure cannot be restored and maintained below the Heat Capacity Temperature Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED: enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

DW/T Monitor and control drywell temperature.

DW/T-1 When drywell temperature exceeds 135°F, operate available drywell cooling. #6

Execute (Steps DW/T-2 and DW/T-3) concurrently.

OPERATOR ACTIONS (Cont.)

DW/T-2 If drywell temperature (near the cold reference leg instrument vertical runs) reaches the RPV Saturation Temperature, RPV FLOODING IS REQUIRED; enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

See Figure 6

OPERATOR ACTIONS (Cont.)

DW/T-3 Before drywell temperature reaches 340°F but only if suppression chamber temperature and drywell pressure are below the Drywell Spray Initiation Pressure Limit, shutdown recirculation pumps and drywell cooling fans and initiate drywell sprays restricting flow rate to less than 268 gpm. #17

See Figure 4

If drywell temperature cannot be maintained below 340°F, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

OPERATOR ACTIONS (Cont.)

PC/P Monitor and control primary containment pressure.

PC/P-1 Operate SBGT as required, only when the temperature in the space being evaluated is below 212°F.
Use OP-61A.

#20

PC/P-2 Before suppression chamber pressure reaches 17.22 psig and suppression pool water level is below 55 ft., initiate suppression pool sprays.

#7
#17

PC/P-3 If suppression chamber pressure exceeds 17.22 but only if suppression chamber temperature and drywell pressure are below the Drywell Spray Initiation Pressure Limit, shut down recirculation pumps and drywell cooling fans and initiate drywell spray restricting flow rate to less than 260 gpm.

#17

See Figure 4

OPERATOR ACTIONS (Cont.)

PC/P-4 If suppression chamber pressure cannot be maintained below the Pressure Suppression Pressure, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

See Figure 1

OPERATOR ACTIONS (Cont.)

PC/P-5 If suppression chamber pressure cannot be maintained below the Primary Containment Design Pressure. RPV FLOODING IS REQUIRED.

See Figure 5

PC/P-6 If suppression chamber pressure cannot be maintained below the Primary Containment Pressure Limit, then irrespective of whether adequate core cooling is assured:

See Figure 7

OPERATOR ACTIONS (Cont.)

- o If suppression pool water level is below 55 ft, initiate suppression pool sprays.
- o If suppression chamber temperature and drywell pressure are below the Drywell Spray Initiation Pressure Limit, shutdown recirculation pumps and drywell cooling fans and initiate drywell sprays restricting flow rate to less than 26b gpm.

See Figure 4

PC/P-7 If suppresion chamber pressure exceeds the Primary Containment Pressure Limit, vent the Primary Containment in accordance with OP-61A to reduce and maintain pressure below the Primary Containment Pressure Limit. #21

See Figure 7

OPERATOR ACTIONS (Cont.)

SP/L Monitor and control suppression pool water level.

SP/L-1 Maintain suppression pool water level between 23ft 6in. and 25ft. Refer to sampling procedure prior to discharging water. #7, #8

If suppression pool water level cannot be maintained above 23ft 6in execute (Step SP/L-2).

If suppression pool water level cannot be maintained below 25ft, execute (Step SP/L-3).

SP/L-2 SUPPRESSION POOL WATER LEVEL BELOW 23ft 6in.

Maintain suppression pool water level above the Heat Capacity Level Limit.

See Figure 8

If suppression pool water level cannot be maintained above the Heat Capacity Level Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

SP/L-3 SUPPRESSION POOL WATER LEVEL ABOVE 25ft .

Execute [Steps SP/L-3.1 and SP/L-3.2] concurrently.

SP/L-3.1 Maintain suppression pool water level below the Suppression Pool Load Limit.

See Figure 2

OPERATOR ACTIONS (Cont.)

If suppression pool water level cannot be maintained below the Suppression Pool Load Limit, maintain RPV pressure below the Limit. #12 #13

If suppression pool water level and RPV pressure cannot be maintained below the Suppression Pool Load Limit but only if adequate core cooling is assured, terminate injection into the RPV from sources external to the primary containment except from boron injection systems and CRD.

If suppression pool water level and RPV pressure cannot be restored and maintained below the Suppression Pool Load Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

SP/L-3.2 Before suppression pool water level reaches 122ft 9in. but only if adequate core cooling is assured, terminate injection into the RPV from sources external to the primary containment except from boron injection systems and CRD.

SP/L-3.3 When Primary Containment water level reaches 122ft 9in., terminate injection into the RPV from sources external to the Primary Containment irrespective of whether adequate core cooling is assured.

SECONDARY CONTAINMENT CONTROL GUIDELINE

PURPOSE

The purpose of this guideline is to:

- o Protect equipment in the secondary containment,
- o Limit radioactivity release to the secondary containment, and either:
- o Maintain secondary containment integrity, or
- o Limit radioactivity release from the secondary containment.

ENTRY CONDITIONS

The entry conditions for this guideline are any of the following Seconuary Containment conditions:

- o Differential pressure at or above 0 in. of water
- o An area temperature above the maximum normal operating temperature
- o A HVAC cooler differential temperature above the maximum normal operating differential temperature
- o A HVAC exhaust radiation level above the maximum normal operating radiation level
- o An area radiation level above the maximum normal operating radiation level
- o A floor drain sump water level above the maximum normal operating water level
- o An area water level above the maximum normal operating water level

OPERATOR ACTIONS

If while executing the following steps Secondary Containment HVAC exhaust radiation level exceeds Secondary Containment HVAC isolation setpoint:

- o Confirm or manually initiate isolation of Secondary Containment HVAC, and
- o Confirm initiation of or manually initiate SBGT.

If while executing the following steps:

- o Secondary Containment HVAC isolates, and
- o Secondary Containment HVAC exhaust radiation level is below Secondary Containment HVAC isolation setpoint,

restart Secondary Containment HVAC. #22

Irrespective of the entry condition, execute (Steps SC/T, SC/R, and SC/L) concurrently.

SC/T Monitor and control Secondary Containment temperatures.

SC/T-1 Operate available area coolers.

SC/T-2 If Secondary Containment HVAC exhaust radiation level is below Secondary Containment HVAC isolation setpoint, operate available Secondary Containment HVAC.

SC/T-3 If any area temperature exceeds its maximum normal operating temperature[1], isolate all systems that are discharging into the area except systems required to shut down the reactor, assure adequate core cooling, or suppress a working fire.

NOTE[1]: Tables will be added during EOP development.

OPERATOR ACTIONS

SC/T-4 If a primary system is discharging into an area, then before any area temperature reaches its maximum safe operating temperature[1], enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

SC/T-5 If a primary system is discharging into an area and an area temperature exceeds its maximum safe operating temperature[1] in more than one area, EMERGENCY DEPRESSURIZATION IS REQUIRED.

SC/R Monitor and control Secondary Containmemt radiation levels.

SC/R-1 If any area radiation level exceeds its maximum normal operating radiation level[1], isolate all systems that are discharging into the area except systems required to shut down the reactor, assure adequate core cooling, or suppress a working fire.

SC/R-2 If a primary system is discharging into an area, then before any area radiation level reaches its maximum safe operating radiation level[1] enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

SC/R-3 If a primary system is discharging into an area and an area radiation level exceeds its maximum safe operating radiation level[1] in more than one area, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

NOTE[1]: Tables will be added during EOP development.

OPERATOR ACTIONS

SC/L Monitor and control Secondary Containment water levels.

SC/L-1 If any floor drain sump or area water level is above its maximum normal operating water level[1] operate available sump pumps to restore and maintain it below its maximum normal operating water level.

If any floor drain sump or area water level cannot be restored and maintained below its maximum normal operating water level[1] isolate all systems that are discharging water into the sump or area except systems required to shut down the reactor, assure adequate core cooling, or suppress a working fire.

SC/L-2 If a primary system is discharging into an area, then before any floor drain sump or area water level reaches its maximum safe operating water level[1] enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

SC/L-3 If a primary system is discharging into an area and a floor drain sump or area water level exceeds its maximum safe operating water level[1] in more than one area, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

NOTE[1]: Tables will be added during E.O.P. development.

RADIOACTIVITY RELEASE CONTROL GUIDELINE

PURPOSE

The purpose of this guideline it to limit radioactivity release into areas outside the Primary and Secondary Containments.

ENTRY CONDITIONS

The entry condition for this guideline is:

- o Offsite radioactivity release rate above release rate which requires an Alert.

OPERATOR ACTIONS

RR-1 Isolate all primary systems that are discharging into areas outside the Primary and Secondary Containments except systems required to assure adequate core cooling or shut down the reactor.

RR-2 If offsite radioactivity release rate approaches or exceeds release rate which requires a General Emergency and a primary system is discharging into an area outside the Primary and Secondary Containments, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter (procedure developed from the RPV Control Guideline) at (Step RC-1) and execute it concurrently with this procedure.

CONTINGENCY #1

LEVEL RESTORATION

If while executing the following steps:

- o Boron Injection is required, enter (procedure developed from CONTINGENCY #7).
- o RPV water level cannot be determined, RPV FLOODING IS REQUIRED; enter (procedure developed from CONTINGENCY #6).
- o RPV Flooding is required, enter (procedure developed from CONTINGENCY #6).

C1-1 Line up for injection and start pumps in 2 or more of the following injection subsystems:

- o Condensate
- o HPCS
- o LPCI-A
- o LPCI-B
- o LPCI-C
- o LPCS

CONTINGENCY #1 (Cont)

If less than 2 of the injection subsystems can be lined up, commence lining up as many of the following alternate injection subsystems as possible:

- o Service Water to RHR Crosstie
- o Fire system
- o ECCS keep-full systems
- o SLC (test tank)
- o SLC (boron tank)

C1-2 Monitor RPV pressure and water level. Continue in this procedure at the step indicated in the following table.

RPV LEVEL	RPV PRESSURE REGION: HIGH (495 psig)	RPV PRESSURE REGION: INTERMEDIATE (495 psig to 50 psig)	RPV PRESSURE REGION: LOW (50 psig)
INCREASING	C1-3	C1-4	C1-5
DECREASING	C1-6		C1-7

If while executing the following steps:

- o The RPV water level trend reverses or RPV pressure changes region, return to (Step C1-2).
- o RPV water level drops below 17.8in., prevent automatic initiation of ADS.

CONTINGENCY #1 (Cont)

C1-3 RPV WATER LEVEL INCREASING, RPV PRESSURE HIGH

Enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

C1-4 RPV WATER LEVEL INCREASING, RPV PRESSURE INTERMEDIATE

If HPCI and RCIC are not available and RPV pressure is increasing, EMEGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV pressure is decreasing, enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

If RCIC is not available and RPV pressure is not increasing, enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

Otherwise, when RPV water level reaches 159.3 in, enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

C1-5 RPV WATER LEVEL INCREASING, RPV PRESSURE LOW

If RPV pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV pressure is decreasing, enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

Otherwise, enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

C1-6 RPV WATER LEVEL DECREASING, RPV PRESSURE HIGH OR INTERMEDIATE

If RCIC is not operating, restart RCIC.

If no injection subsystem is lined up for injection with at least one pump running, start pumps in alternate injection subsystems which are lined up for injection.

CONTINGENCY #1 (Cont)

When RPV water level drops to -14in.

- o If no system, injecton subsystem or alternate injection subsystm is lined up with at least one pump running, STEAM COOLING IS REQUIRED. When any system, injection subsystem or alternate injection subsystem is lined up with at least one pump running, return to (Step C1- 2).
- o Otherwise, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV water level is increasing or RPV pressure drops below 50 psig, return to (Step C1- 2).

C1- 7 RPV WATER LEVEL DECREASING, RPV PRESSURE LOW

If no HPCS or LPCS subsystem is operating, start pumps in alternate injection subsystems which are lined up for injection.

If RPV pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

When RPV water level drops to -14" fuel zone,enter (procedure developed from contingency #4).

Alternate Format for Steps C1-3 through C1-8

C1-2 MONITOR RPV PRESSURE AND WATER LEVEL. CONTNUE IN THIS PROCEDURE AT THE STEP INDICATED IN THE FOLLOWING TABLE:

	RPV PRESSURE REGION		
	HIGH	INTERMEDIATE	LOW
RPV Water Level Rising	C1-3 ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L)	C1-4 IF RCIC ARE NOT AVAILABLE AND RPV PRESSURE IS INCREASING, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV PRESSURE IS DECREASING, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP IF RCIC ARE NOT AVAILABLE AND RPV PRESSURE IS NOT INCREASING, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L). OTHERWISE, WHEN RPV WATER LEVEL REACHED 159.3 in., ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L).	C1-5 IF RPV PRESSURE IS INCREASING, EMEGE RPV DEPRESSURIZATION IS REQUIRED, WI RPV PRESSURE IS DECREASING, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L). OTHERWISE, ENTER (PROCEDURE DEVELOPE FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L).
RPV Water Level Lowering	C1-6 IF RCIC IS NOT OPERATING, RESTART RCIC. IF NO INJECTION SUBSYSTEM IS LINED UP FOR INJECTION WITH AT LEAST ONE PUMP RUNNING, START PUMPS IN ALTERNATE INJECTION SUBSYSTEMS WHICH ARE LINED UP FOR INJECTION. WHEN RPV WATER LEVEL DROPS TO -14in: o IF NO SYSTEM, INJECTION SUBSYSTEM OR ALTERNATE INJECTION SUBSYSTEM IS LINED UP WITH AT LEAST ONE PUMP RUNNING, STEAM COOLING IS REQUIRED. WHEN ANY SYSTEM, INJECTION SUBSYSTEM OR ALTERNATE INJECTION SUBSYSTEM IS LINED UP WITH AT LEAST ONE PUMP RUNNING, RETURN TO STEP C1-3). o OTHERWISE, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED, WHEN RPV WATER LEVEL IS INCREASING OR RPV PRESSURE DROPS BELOW 50 PSIG, RETURN TO STEP C1-3.		C1-7 (IF NO HPCS OR LPCS SUBSYSTEM IS OPERATING,) START PUMPS IN ALTERNATE INJECTION SUBSYSTEMS WHICH ARE LINED UP FOR INJECTION. IF RPV PRESSURE IS INCREASING, EMERG RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV WATER LEVEL DROPS TO -14 in ENTER (PROCEDURE DEVELOPED FROM CONTINGENCY #4).

IF WHILE EXECUTING THE FOLLOWING STEPS THE RPV WATER LEVEL TREND REVERSES OR RPV PRESSURE CHANGES REGION, RETURN TO (STEP C1

CONTINGENCY #2

EMERGENCY RPV DEPRESSURIZATION

C2-1 When either:

- o Boron Injection is required and all injection into the RPV except from boron injection systems and CRD has been terminated and prevented, or #12, #13
- o Boron Injection is not required,

C2-1.1 If suppression pool water level is above 6ft.:

- o Open all ADS valves.
- o If any ADS valve cannot be opened, open other SRVs until 7 valves are open.

C2-1.2 If less than 3 SRVs are open and RPV pressure is at least 50 psig above suppression chamber pressure, #21 rapidly depressurize the RPV using one or more of the following systems (use in order which will minimize radioactive release to the environment):

- o Main condenser
- o RHR (steam condensing mode)
- o Main steam line drains
- o RCIC steam line
- o Head vent

If RPV Flooding is required, enter (procedure developed from CONTINGENCY #6).

C2-2 Enter (procedure developed from the RPV Control Guideline) at (Step RC/P4).

CONTINGENCY #3

STEAM COOLING

C3-1

If while executing the following steps Emergency RPV Depressurization is required or any system, injection subsystem, or alternate injection subsystem is lined up for injection with at least one pump running, enter (procedure developed from CONTINGENCY #2).

When RPV water level drops to -67.5 fuel zone or if RPV water level cannot be determined, open one SRV.

When RPV pressure drops below 700 psig, enter (procedure developed from CONTINGENCY #2).

CONTINGENCY #4

CORE COOLING WITHOUT LEVEL RESTORATION

C4-1 Open all ADS valves. #12

If any ADS valve cannot be opened, open other SRVs until 7 valves are open.

C4-2 Operate HPCS and LPCS subsystems with suction from the suppression pool.

When at least one core spray subsystem is operating with suction from the suppression pool and RPV pressure is below 289 psig, terminate injection into the RPV from sources external to the Primary Containment.

C4-3 When RPV water level is restored to -14 in. enter (procedure developed from the RPV Control Guideline) at (Step RC/L).

CONTINGENCY #5

ALTERNATE SHUTDOWN COOLING

C5-1 Initiate suppression pool cooling.

C5-2 Close the RPV head vents, MSIVs, main steam line drain valves, and RCIC isolation valves.

C5-3 Place the control switch for one SRV in the open position.

C5-4 Slowly raise RPV water level to establish a flow path through the open SRV back to the suppression pool.

C5-5 Start one LPCS or LPCI pump with suction from the suppression pool.

C5-6 Slowly increase LPCS or LPCI injection into the RPV to the maximum.

C5-6.1 If RPV pressure does not stabilize at least 161 psig above suppression chamber pressure, start another LPCS or LPCI pump.

C5-6.2 If RPV pressure does not stabilize below 230 psig, open another SRV.

C5-6.3 If the cooldown rate exceeds 100°F/hr, reduce LPCS or LPCI injection into the RPV until the cooldown rate decreases below 100°F/hr.

C5-7 Control suppression pool temperature to maintain RPV water temperature above 70°F.

C5-8 Proceed to cold shutdown in accordance with N2-OP-101.

CONTINGENCY #6

RPV FLOODING

C6-1 If at least 3 SRVs can be opened or if HPCS or motor driven feedwater pumps are available for injection, close the MSIVs, main steam line drain valves, RCIC and RHR steam condensing isolation valves.

C6-2 If any control rod is not inserted beyond position 00.

C6-2.1 Terminate and prevent all injection into the RPV except from boron injection systems and CRD until RPV pressure is below the Minimum Alternate RPV Flooding Pressure.

Number of open SRVs	Minimum Alternate RPV Flooding Pressure (psig)
7 or more	160
6	185
5	230
4	285
3	400
2	590

If less than 3 SRVs can be opened, continue in this procedure.

If while executing the following step, RPV water level can be determined and RPV Flooding is not required, enter (procedure developed from CONTINGENCY #7) and (procedure developed from the RPV Control Guideline) at (Step RC/P-4) and execute these procedures concurrently.

C6-2.2 Commence and slowly increase injection into the RPV with the following systems until at least 2 SRVs are open and RPV pressure is above the Minimum Alternate RPV Flooding Pressure: #23

- o Motor driven feedwater pumps
- o Condensate booster pumps
- o Condensate pumps
- o CRD

If at least 2 SRVs are not open or RPV pressure cannot be increased to above the Minimum Alternate RPV Flooding Pressure, commence and slowly increase injection into the RPV with the following systems until at least 2 SRVs are open and RPV pressure is above the Minimum Alternate RPV Flooding Pressure:

- o HPCS
- o LPCS
- o LPCI/RHR
- o Service water to RHR crosstie
- o Fire System
- o ECCS keep-full systems

C6-2.3 Maintain at least 2 SRVs open and RPV pressure above the Minimum Alternate RPV Flooding Pressure by throttling injection.

C6-2.4 When:

- o All control rods are inserted beyond position 00 or,
- o The reactor is shutdown and no boron has been injected into the RPV,

continue in this procedure.

CONTINGENCY #6 (Cont.)

C6-3 If RPV water level cannot be determined:

C6-3.1 Commence and increase injection into the RPV with the following systems until at least 3 SRVs are open and RPV pressure is not decreasing and is at least 80 psig above suppression chamber pressure.

- o HPCS
- o Motor driven feedwater pumps
- o LPCS
- o LPCI
- o Condensate booster pumps
- o Condensate pumps
- o CRD
- o Service water to RHR crosstie
- o Fire System
- o ECCS keep-full systems
- o SLC (test tank)
- o SLC (boron tank)

C6-3.2 Maintain at least 3 SRVs open and RPV pressure at least 80 psig above suppression chamber pressure by throttling injection.

C6-4 If RPV water level can be determined, commence and increase injection into the RPV with the following systems until RPV water level is increasing:

- HPCS
- Motor driven feedwater pumps
- LPCS
- LPCI
- Condensate pumps
- Condensate booster pumps
- CRD
- RHR service water crosstie
- Fire System
- ECCS keep-full systems
- SLC (test tank)
- SLC (boron tank)

C6-5 If RPV water level cannot be determined:

C6.5.1 Fill all RPV water level instrumentation reference columns.

C6-5.2 Continue injecting water into the RPV until drywell temperature is below 212°F and RPV water level instrumentation is available.

If while executing the following steps, RPV water level can be determined, continue in this procedure at (Step C6-6).

C6-5.3 If it can be determined that the RPV is filled or if RPV pressure is at least 80 psig above suppression chamber pressure, terminate all injection into the RPV and reduce RPV water level.

CONTINGENCY #6 (Cont.)

C6-5.4 If RPV water level indication is not restored within the Maximum Core Uncovery Time Limit after commencing termination of injection into the RPV, return to (Step C6-3).

See Figure 10

C6-6 When suppression chamber pressure can be maintained below the Primary Containment Design Pressure, enter (procedure developed from the RPV Control Guideline) at (Steps RC/L and RC/P-4) and execute these steps concurrently.

See Figure 5

CONTINGENCY #7

LEVEL/POWER CONTROL

If while executing the following steps RPV Flooding is required or RPV water level cannot be determined, control injection into the RPV to maintain reactor power above 8% but as low as practicable. However, if reactor power cannot be determined or maintained above 8%, RPV FLOODING IS REQUIRED; enter (procedure developed from CONTINGENCY #6).

C7-1 If:

- o Reactor power is above 4% or cannot be determined, and
- o Suppression pool temperature is above 111°F, and
- o Either an SRV is open or opens or drywell pressure is above 1.68 psig,

lower RPV water level by terminating and preventing all injection into the RPV except from boron injection systems and CRD until either: #24

- o Reactor power drops below 4%, or
- o RPV water level reaches -14 in., or
- o All SRVs remain closed and drywell pressure remains below 1.68 psig.

If while executing the following steps Emergency RPV Depressurization is required, continue in this procedure at (Step C7-2.1).

If while executing the following step:

- Reactor power is above 4% or cannot be determined, and
- RPV water level is above -14 in., and
- Suppression pool temperature is above 111°F, and
- Either an SRV is open or opens or drywell pressure is above 1.68 psig

return to (Step C7-1).

C7-2 Maintain RPV water level either: #9, #10, #8, #23,

- If RPV water level was deliberately lowered in (Step C7-1), at the level to which it was lowered, or
- If RPV water level was not deliberately lowered in (Step C7-1), between 159.3 in. and 202.3 in.,

with the following systems:

- Condensate/feedwater system 1205-0 psig
- CRD system 1205-0 psig
- RCIC system 1130-0 psig #11

If RPV water level cannot be so maintained, maintain RPV water level above -14 in.

CONTINGENCY #7 (Cont.)

If RPV water level cannot be maintained above -14 in., EMERGENCY RPV DEPRESSURIZATION IS REQUIRED:

C7-2.1 Terminate and prevent all injection into the RPV except from boron injection systems and CRD until RPV pressure is below the Minimum Alternate RPV Flooding Pressure.

Number of open SRVs	Minimum Alternate RPV Flooding Pressure (psig)
7 or more	160
6	185
5	230
4	285
3	400
2	590

If less than 2 SRVs can be opened, continue in this procedure.

CONTINGENCY #7 (Cont.)

C7-2.2 Commence and slowly increase injection into the RPV with the following systems to restore and maintain RPV water level above -14 in.: #23

- o Condensate/feedwater system
- o CRD
- o RCIC

If RPV water level cannot be restored and maintained above -14 in., commence and slowly increase injection into the RPV with the following systems to restore and maintain RPV water level above -14 in.:

- o HPCS
- o LPCS
- o LPCI
- o Fire System
- o ECCS keep-full systems
- o Service water to RHR crosstie

If while executing the following step reactor power commences and continues to increase, return to (Step C7-1).

C7-3 When 362.5 pounds of boron have been injected or all control rods are inserted beyond position 00, restore and maintain RPV water level between 159.3 in. and 202.3. in.

CONTINGENCY #7 (Cont.)

If RPV water level cannot be restored and maintained above 159.3 in., maintain RPV water level above -14 in.

If RPV water level cannot be maintained above -14 in., EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; return to (Step C7-2.1).

If Alternate Shutdown Cooling is required, enter (procedure developed from CONTINGENCY #5).

C7-4 Proceed to cold shutdown in accordance with N2-OP-101.

Figures

Figure 1 Pressure Suppression Pressure
Figure 2 Suppression Pool Load Limit
Figure 3 Drywell Spray Initiation Pressure Limit (RB1 Cont. ΔP)
Figure 4 Drywell Spray Initiation Pressure Limit (WW/DW ΔP)
Figure 5 Primary Containment Design Pressure
Figure 6 RPV Saturation Pressure 1 Temperature
Figure 7 Primary Containment Pressure Limit
Figure 8 Heat Capacity Level Limit
Figure 9 Heat Capacity Temperature Limit
Figure 10 Maximum Core Uncovery Time

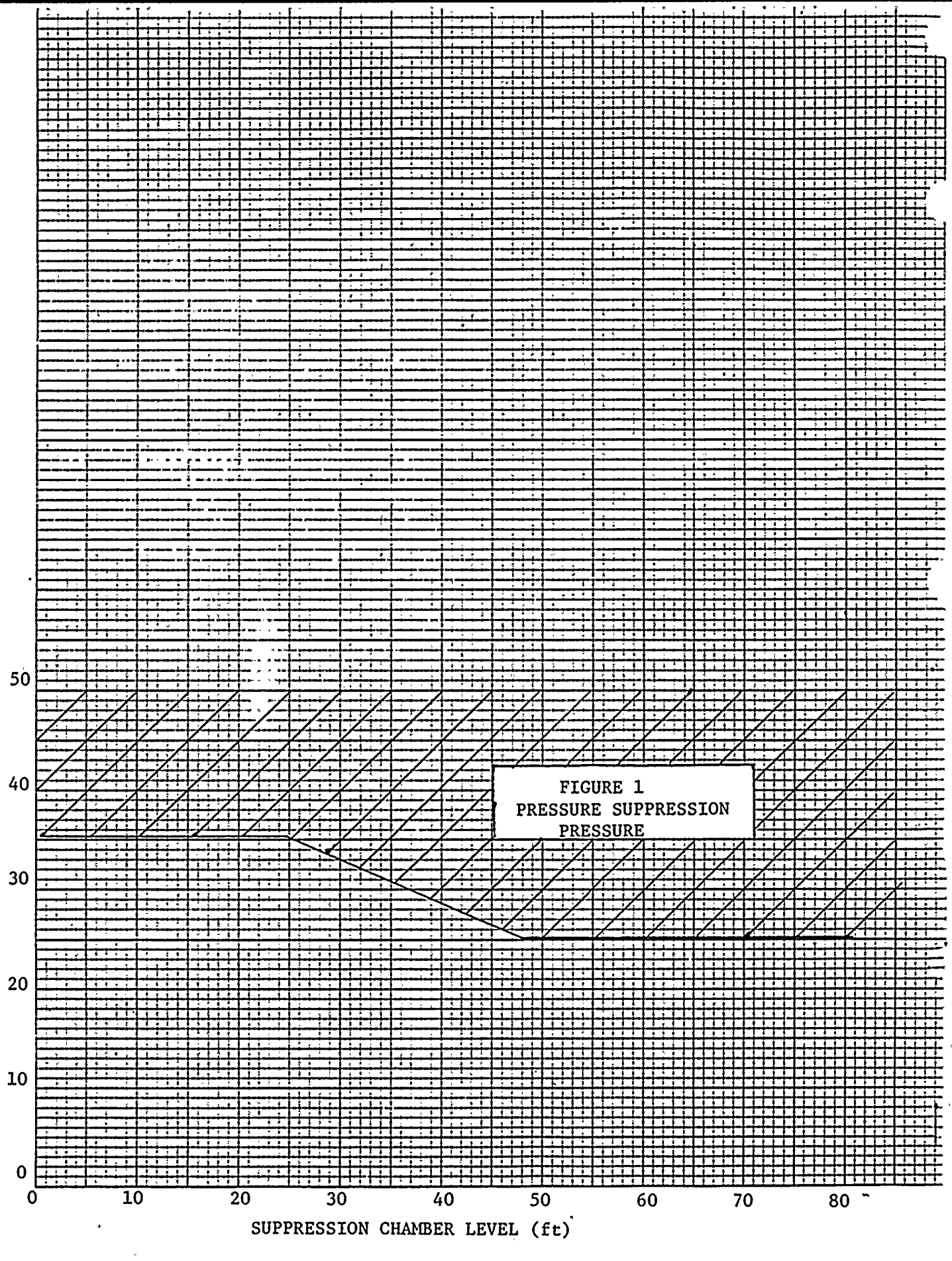


FIGURE 1
PRESSURE SUPPRESSION
PRESSURE

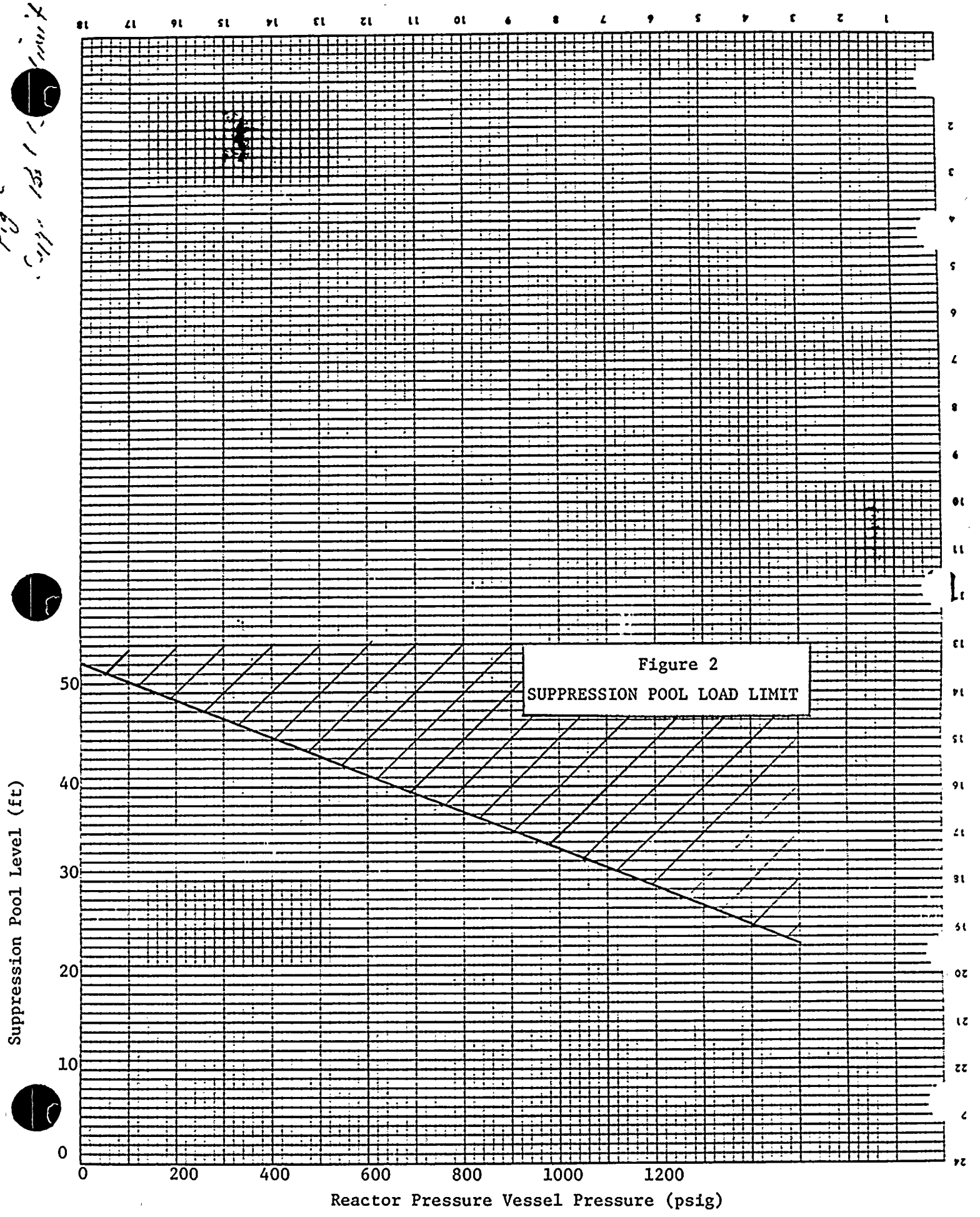


Figure 2

SUPPRESSION POOL LOAD LIMIT

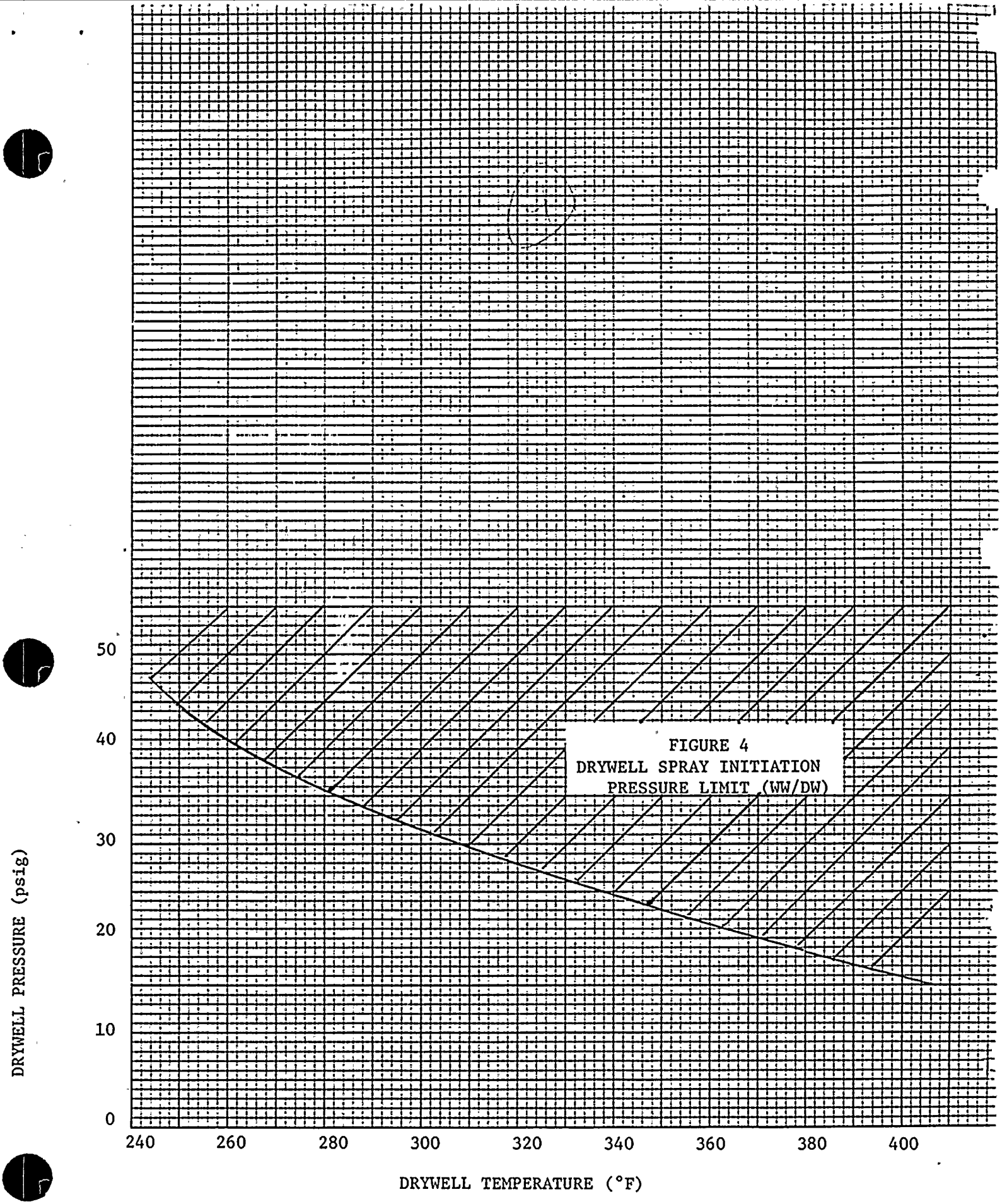
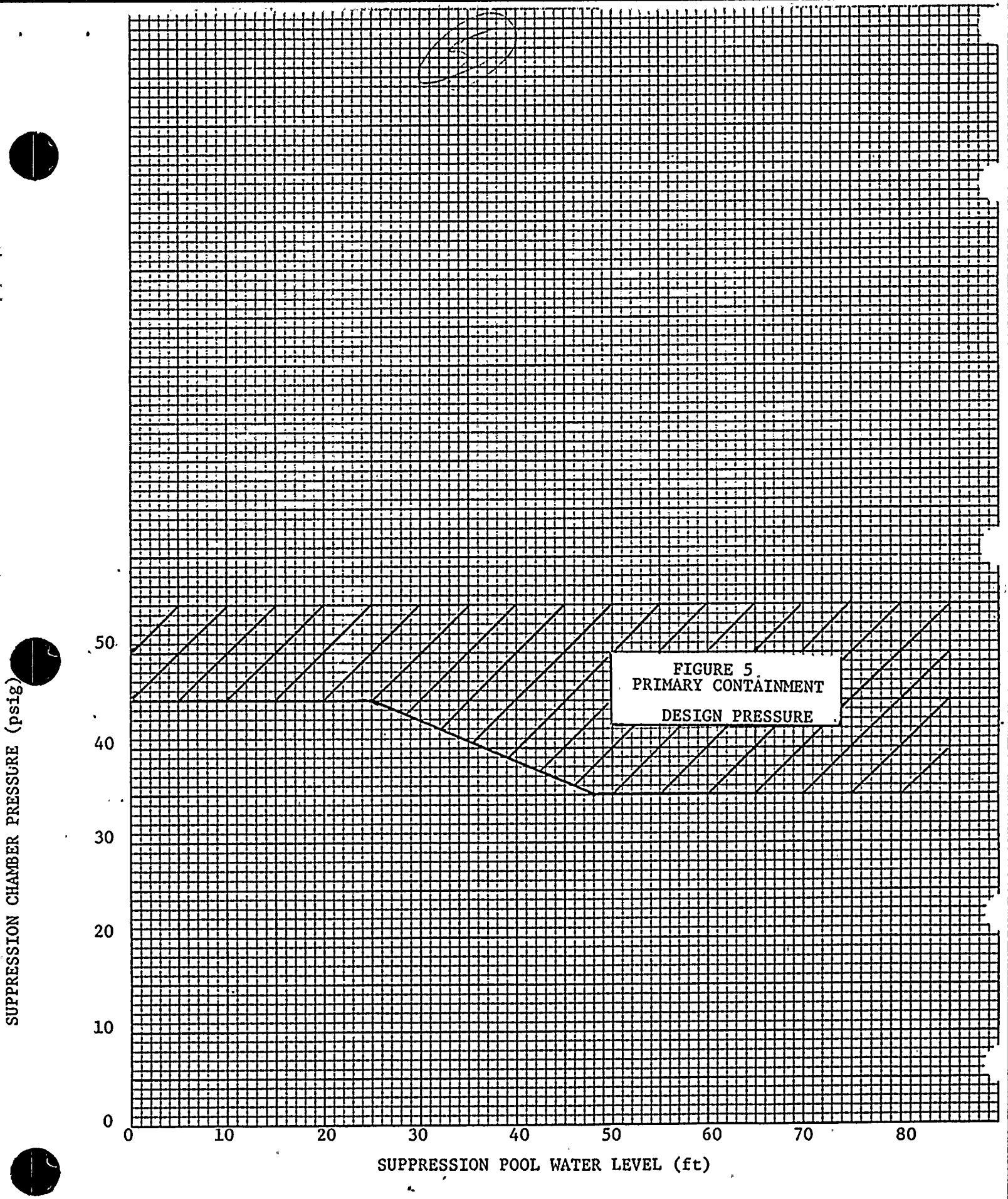


FIGURE 4
DRYWELL SPRAY INITIATION
PRESSURE LIMIT (WW/DW)


SUPPRESSION CHAMBER PRESSURE (psig)
0
10
20
30
40
50
0
10
20
30
40
50
60
70
80
SUPPRESSION POOL WATER LEVEL (ft)
FIGURE 5
PRIMARY CONTAINMENT
DESIGN PRESSURE

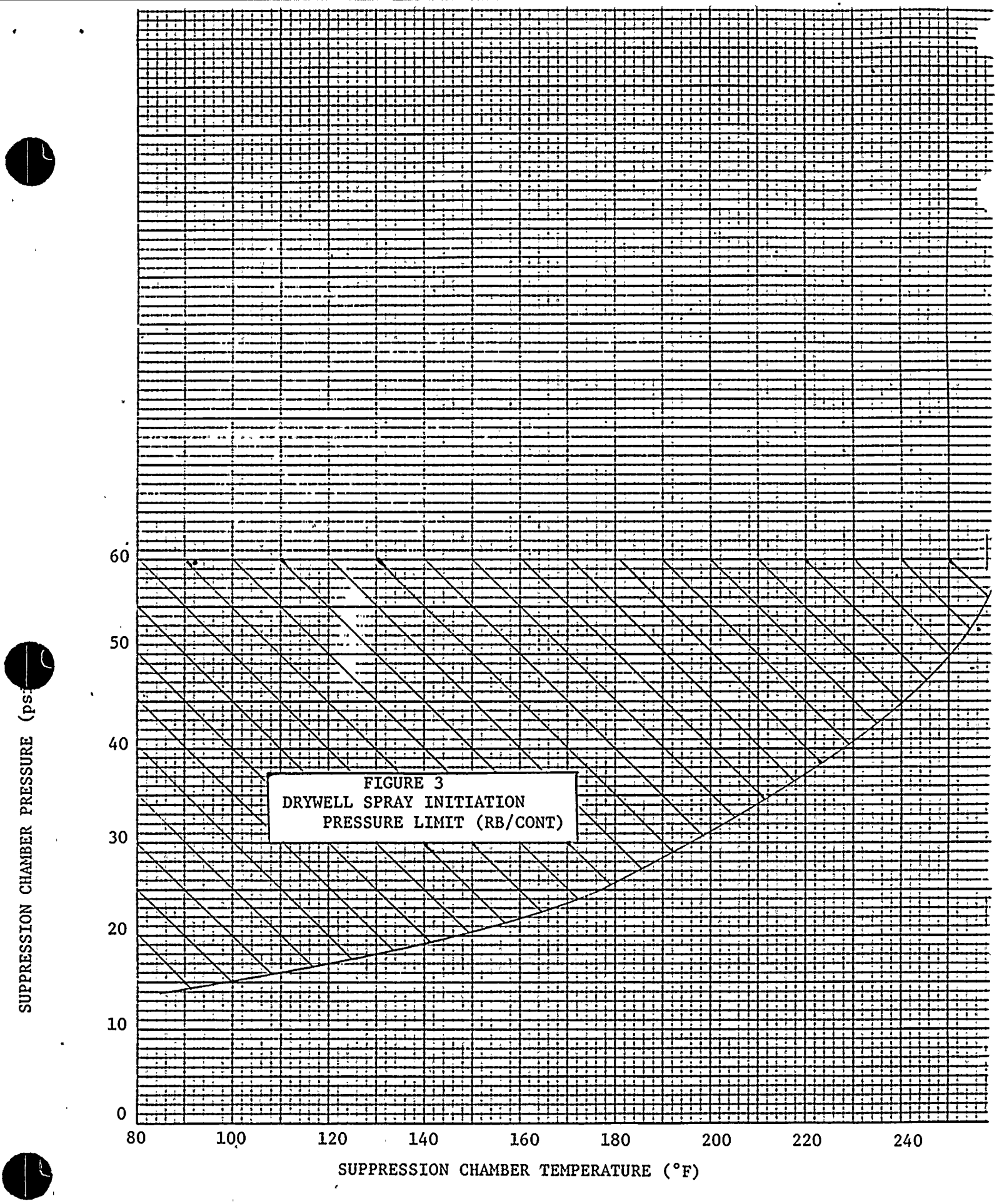


FIGURE 3
DRYWELL SPRAY INITIATION
PRESSURE LIMIT (RB/CONT)

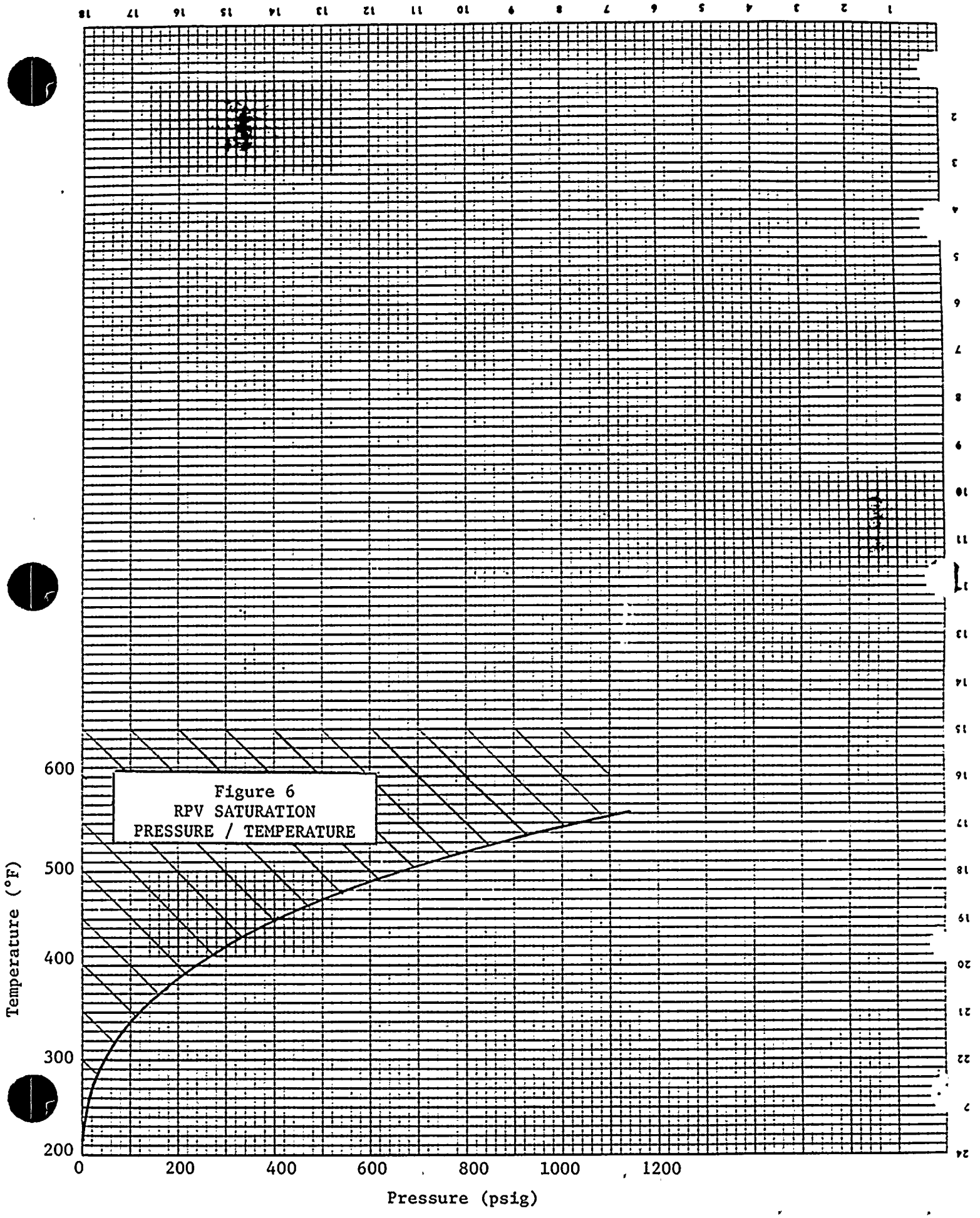


Figure 6
RPV SATURATION
PRESSURE / TEMPERATURE

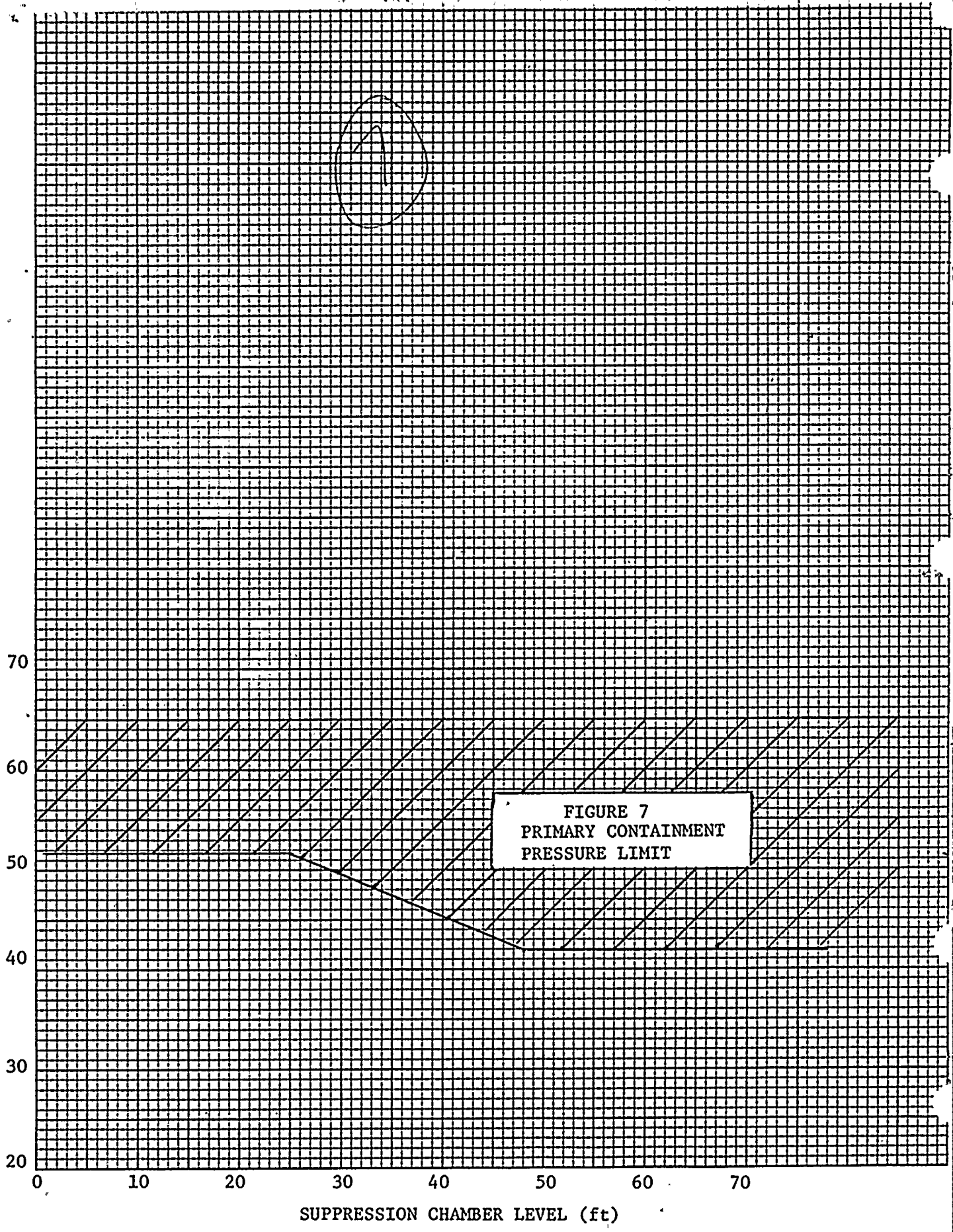


FIGURE 7
PRIMARY CONTAINMENT
PRESSURE LIMIT

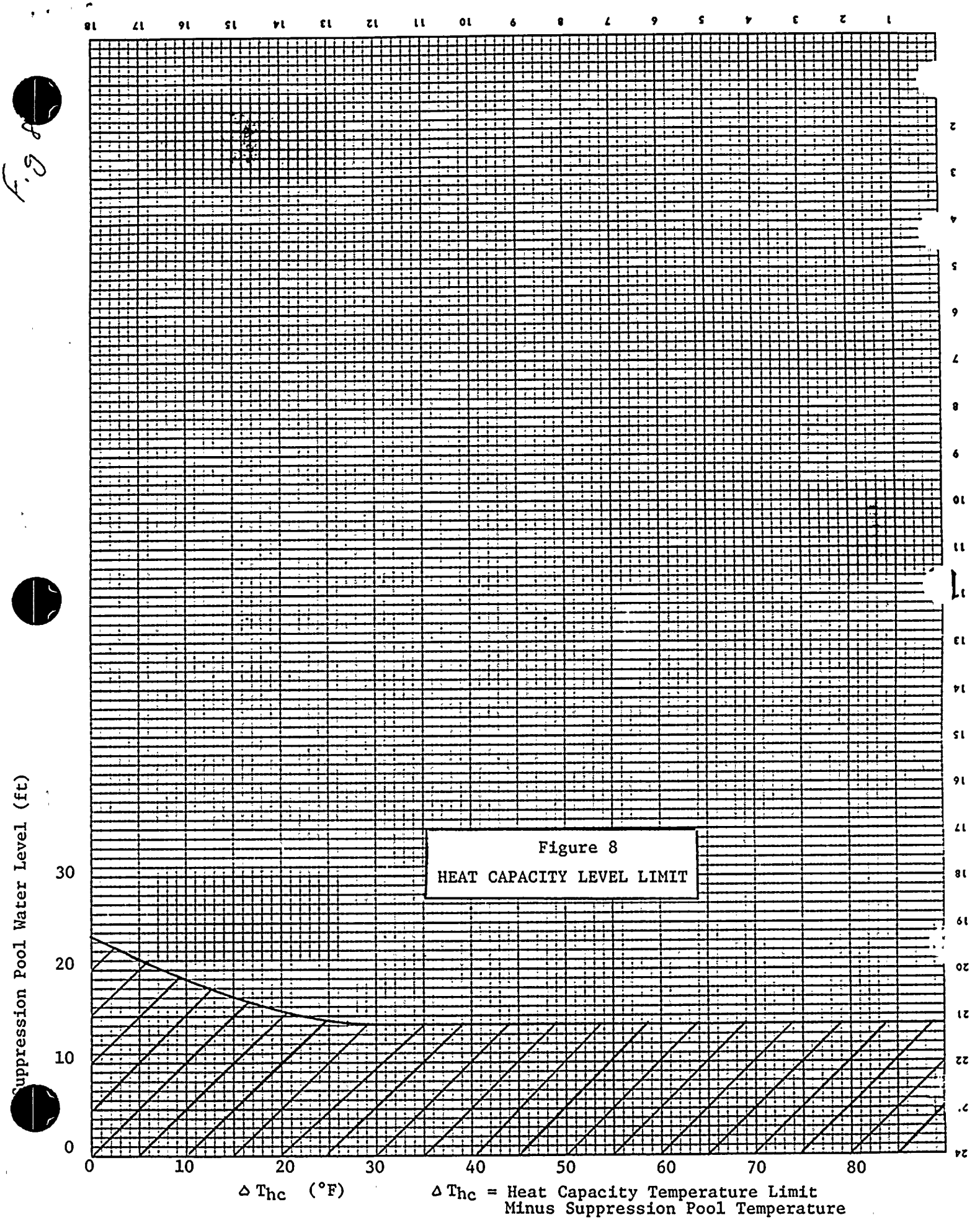


Figure 8
HEAT CAPACITY LEVEL LIMIT

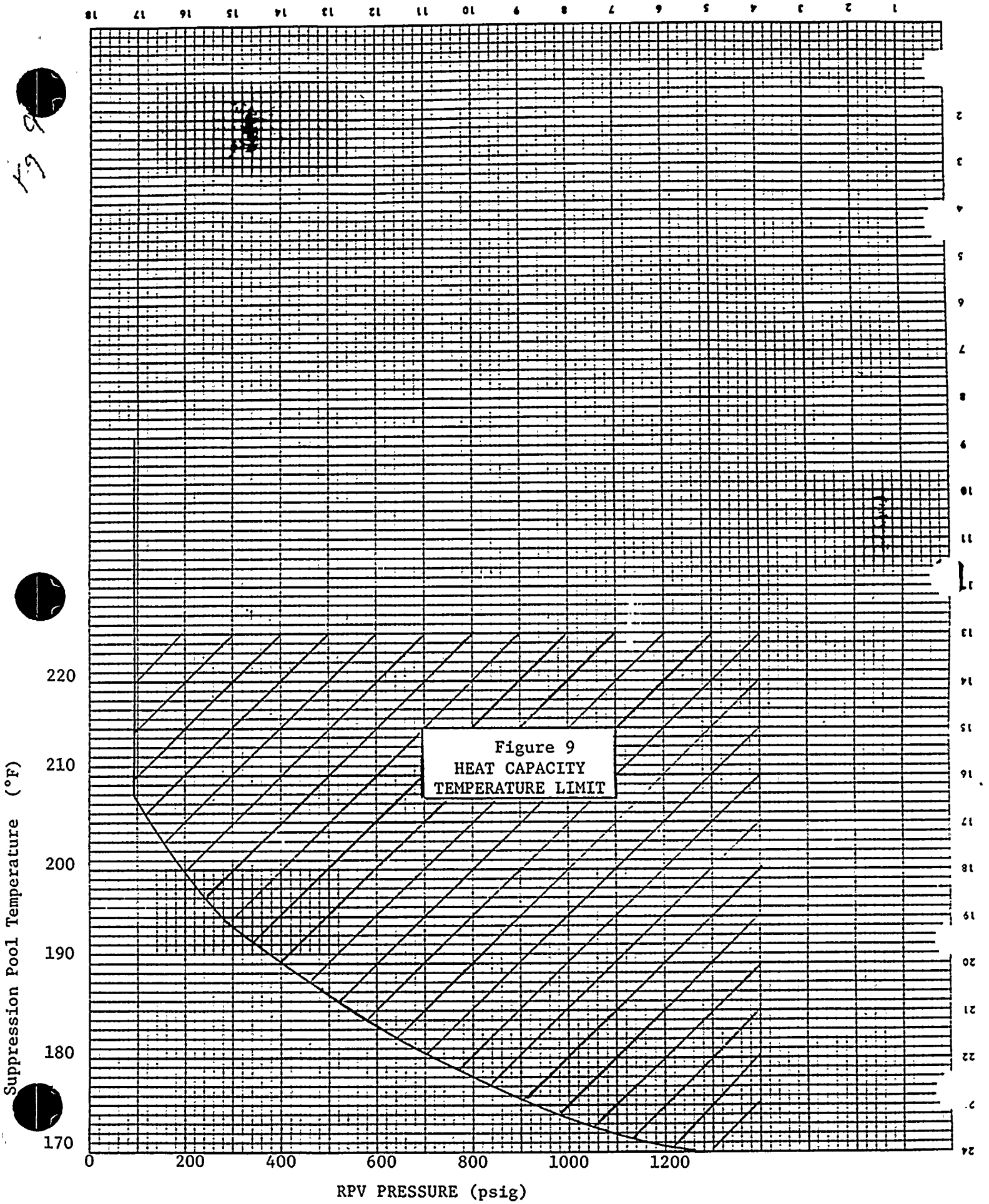
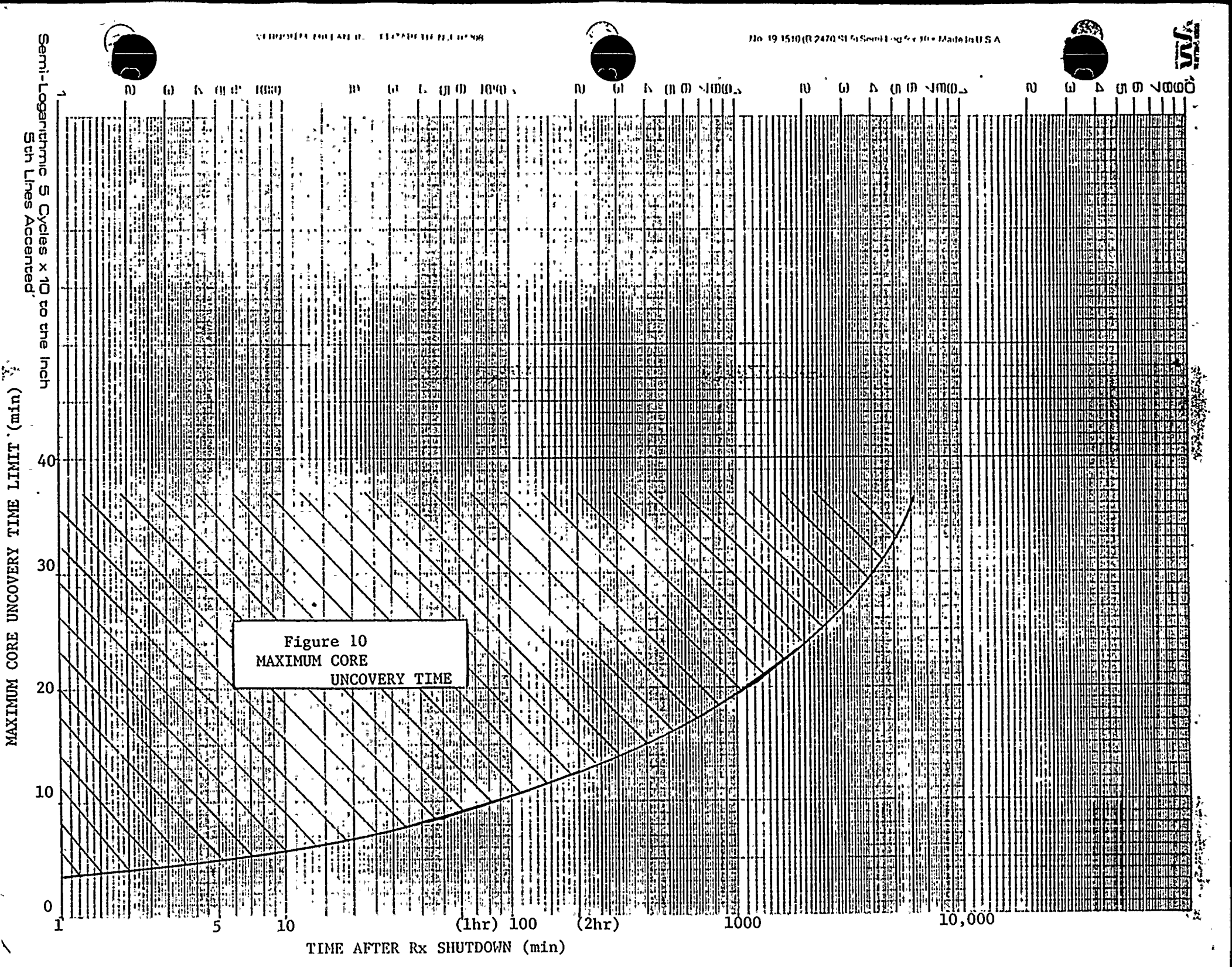


Figure 9
HEAT CAPACITY
TEMPERATURE LIMIT


Semi-Logarithmic 5 Cycles x 10 to the Inch
5th Lines Accented
MAXIMUM CORE UNCOVERY TIME LIMIT (min)
0
10
20
30
40
1
5
10
(1hr)
100
(2hr)
1000
10,000
TIME AFTER Rx SHUTDOWN (min)
Figure 10
MAXIMUM CORE
UNCOVERY TIME

NINE MILE POINT UNIT 2 NUCLEAR STATION
EMERGENCY OPERATING PROCEDURES
PROCEDURE NO. N2-EOP-1
EMERGENCY OPERATING PROCEDURE DEVELOPMENT

Summary of Pages

Revision

NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE
USED AFTER
SUBJECT TO PERIODIC REVIEW

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1.0 Introduction

1.1 Purpose

The purpose of this procedure is to provide guidance for the development of Emergency Operating Procedures for Nine Mile Point Unit 2.

1.2 Scope

This procedure applies to the initial development of EOPs and revisions. This process involves development of a Plant Specific Technical Guideline and Emergency Operating Procedures.

2.0 References

2.1 Nine Mile Point Unit 2 FSAR

2.2 Emergency Operating Procedures Implementation Guideline (INPO 82-016, Rev. 1)

2.3 Response t Supplement 1 to NUREG 9737, Item 7.2b, page 15

3.0 Definitions

3.1 Emergency Procedure Guideline (EPG)

This is a generic document, developed by the BWR Owners Group (BWROG), on which the Plant Specific Technical Guideline is based.

3.2 Plant Specific Technical Guideline (PSTG)

This is the document on which the Emergency Operating Procedures is based. It is developed by incorporating plant specific information into the EPG.

3.3 Emergency Operating Procedures

This document provides operation actions necessary to mitigate the consequences of transients and accidents.

3.4 Nine Mile Point Unit 2 EOP Writers Guide

This document provides instructions to the EOP Writers concerning format and content of the Emergency Operating Procedures.

3.5 Verification

This is the evaluation performed to verify technical accuracy of the PSTG, and the technical accuracy and written correctness of the EOPs.

3.6 Validation

This is the process which provides assurance that the EOPs can be used successfully in emergency situations.

4.0 Responsibilities

4.1 Station Superintendent

The Station Superintendent shall have the overall responsibility for development of EOPs.

4.2 Operations Supervisor

The Operations Supervisor shall assign the responsibility of EOP development to EOP Writers.

4.3 EOP Writers

EOP Writers shall develop Emergency Operating Procedures in accordance with this procedure.

5.0 Plant Specific Technical Guideline (PSTG)

A PSTG will be developed by the EOP Writers using the latest revision of the General Electric Boiling Water Reactor Owners Group Emergency Procedure Guideline for which a Safety Evaluation Report (SER) has been issued by the NRC. The EOP writers will obtain and review the following plant specific technical information (EOP source documents) as required to develop the PSTG:

1. EPGS; with Appendices A, B and C,
2. Nine Mile Point Unit 2 FSAR,
3. Operating Procedures,
4. Technical Specification,
5. Plant-specific drawings which form the date base for testing and operation of the plant,
6. Engineering approved vendor documents.

The EOP writers will review the EPG step-by-step, adding specific information where required, and making deletions where required. Additions and deletions will be documented, along with justifications, on an EPG Change Form (EOP-FORM1).

The EPG-PSTG, applicable EPG Change Forms and calculation procedures shall be considered the PSTG package.

6.0 Emergency Operating Procedures

The EOP writers will follow the PSTG step-by-step and, using the Nine Mile Point Unit 2 EOP Writer's Guide (N2-EOP-4), develop a set of Emergency Operating Procedures. Differences between the PSTG steps and EOP steps will be documented, with justification, on Step Documentation forms (EOP-FORM 2). All Step Documentation forms will be submitted with the EOPs for verification.

Additions to Operating Procedures will be made as required to assure adequate support of the EOPs.

The EOPs shall be verified in accordance with the EOP Verification Procedure (N2-EOP-2).

The EOPs shall be validated in accordance with the EOP Validation Procedure (N2-EOP-3).

7.0 EOP Training Guide

Concurrent with the development of the Plant-Specific Guideline and EOPs, a Training Guide will be developed. The Training Guide will contain the following:

- GE BWR Owner's Group Generic Emergency Procedure Guideline.
- The Plant-Specific Technical Guideline (including Addition/Deletion Forms).
- The Step Documentation forms.
- The EOPs.
- A step-by-step breakdown of the technical bases for the EOP decisions and operator actions.
- The calculational procedures and references for data used in developing EOPs.

Using the Training Guide, the Training Department, assisted by the EOP Writing Team where required, can develop lesson plans for the Training Program.

8.0 Documentation

The following will provide documentation of the EOP development process:

1. Generic EPG,
2. PSTG package,
3. PSTG Verification Package (see EOP Verification Procedure),
4. EOP Verification Package (see EOP Verification Procedure),
5. Step Documentation forms,
6. EOP Validation Package (see EOP Validation procedure).

The above shall be maintained as part of the Permanent Plant file.

EPG CHANGE FORM EOP-FORM 1

GENERIC
EPG STEP:

DESCRIPTION OF CHANGE:

JUSTIFICATION:

EOP WRITER:_____ DATE:_____

STEP DOCUMENTATION

EOP-FORM 2
EOP No.____Rev. No.____

EOP STEP:

NMP II
PSTG STEP:

JUSTIFICATION OF DIFFERENCES:

EOP WRITER:_____DATE:_____

NINE MILE POINT UNIT 2 NUCLEAR STATION
EMERGENCY OPERATING PROCEDURES
PROCEDURE NO. N2-EOP-2
EMERGENCY OPERATING PROCEDURE VERIFICATION

Summary of Pages

Revision _____

NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE
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1.0 Introduction

1.1 Purpose

The purpose of this procedure is to provide guidance for the process of verification of the Plant Specific Technical Guideline (PSTG) and the Emergency Operating Procedures (EOPs) at Nine Mile Point Unit 2.

1.2 Scope

This procedure will describe and direct the verification process. The verification process is meant to ensure the technical accuracy of the Plant Specific Technical Guideline and the EOPs, and the correct implementation of the Writer's Guide in the EOPs. This procedure applies to the initial PSTG and EOPs, and revisions.

2.0 References

2.1 Emergency Operating Procedure Verification Guideline (INPO 8-3-004)

2.2 Nine Mile Point Unit 2 EOP Writer's Guide

2.3 Nine Mile Point Unit 2 FSAR

3.0 Definitions

3.1 Emergency Procedure Guideline (EPG)

This is a generic document, developed by the BWR Owners Group, on which the Plant Specific Technical Guideline is based.

3.2 Plant Specific Technical Guideline (PSTG)

This is the document on which the Emergency Operating Procedures is based. It is developed by incorporating plant specific into the EPG.

3.3 Emergency Operating Procedures

This document provides operator actions necessary to mitigate the consequences of transients and accidents.

3.4 Nine Mile Point Unit 2 EOP Writer's Guide

This document provides instructions to the EOP Writers concerning format and content of the Emergency Operating Procedures.

3.5 Verification

This is the evaluation performed to technical accuracy of the PSTG, and the technical accuracy and written correctness of the EOPs.

4.0 Responsibilities

4.1 Station Superintendent

The Station Superintendent shall have the overall responsibility for the development of EOPs. He shall assign the responsibility for EOP verification.

4.2 Operations Supervisor

The Operations Supervisor shall determine the requirement for, and scope of, verification and approve verification resolutions. He shall assign the responsibility of EOP writing.

4.3 EOP Writers

EOP Writers shall normally be members of the plant operating department designated by the Operations Supervisor. Writers shall have the responsibility of resolving any discrepancies disclosed during the verification process.

5.0 Plant Specific Technical Guideline Verification

5.1 Verification Requirements

The Plant Specific Technical Guideline will be verified using the following criteria:

1. Generic Emergency Procedure Guidelines have been properly implemented.
2. Plant specific numbers are correct.
3. Calculational procedures are correct.

5.2 Verification Process

Steps, cautions and notes will be verified using the criteria listed in Section 5.1. A PSTG Verification Form will be prepared each time a verification is performed in order to document the process. EOP-FORM 3 is the PSTG Verification Form. The following information will be included:

1. PSTG revision being verified.
2. The applicable Generic Emergency Procedure Guideline revision number
3. Start date
4. Scope of verification (specific steps or "all")
5. Source documents used
6. Name of person(s) performing verification
7. A list of discrepancies including step, caution or calculation number, and discrepancy sheet number
8. Discrepancy Form numbers applicable (entered upon approval of resolutions)
9. Signature of approval of verification process
10. Date of approval.

Part I of a PSTG Discrepancy Form (EOP-FORM 4) will be completed by the person performing the verification for each discrepancy. The following information will be included:

1. Discrepancy Form number
2. Step/caution/calculation number
3. Description of discrepancy
4. Signature of the person who identified the discrepancy
5. Date.

The Discrepancy Form number will consist of two parts. The first part will be the revision number of the PSTG being reviewed. The second number will be the sequential number assigned to the discrepancy. For example, the first discrepancy of the revision "0" PSTG would be numbered: Number 0 - 1 .

The person performing the evaluation will be provided with the applicable revision of the Generic Emergency Procedure Guideline, EPG Change Forms, the PSTG and calculational procedures (PSTG Package). The person performing the verification shall independently review any source documents required to verify the technical accuracy of the PSTG.

All PSTG Discrepancy Forms will be attached to the PSTG Verification Form. This will be the PSTG Verification Package.

When the review process is complete, the Verification Package (Verification Form and Discrepancy sheets) and PSTG Package will be returned to the Operations Supervisor for resolution.

5.3 Resolution

When the PSTG Package and Verification Package are returned to the Operations Supervisor, he will assign the responsibility of resolution. Assigned personnel are EOP Writers (see Section 3.3). The EOP Writers will resolve each discrepancy and complete Part II of each Discrepancy Form, entering the following information:

1. Description of resolution
2. Signature
3. Date.

5.4 Review/Approval

The completed Verification Package will then be returned to the Operations Supervisor for review and approval. The Operations Supervisor, after reviewing the Verification Package, will return it to the EOP Writers if a resolution is found to be unsatisfactory, or approve it by completing in the Verification Form with the applicable discrepancy sheet numbers, signature and date.

6.0 Emergency Operating Procedure Verification

6.1 Verification Requirements

The EOPs shall be verified using the following criteria:

1. The PSTG has been properly implemented.
2. The EOPs have been written in accordance with the EOP Writer's Guide.
3. The information required in the EOPs is available to the operator in the control room.
4. The parameter values required by the EOPs are consistent with the available control room indications.
5. The controls and indications required to perform tasks called for in the EOPs are available to the control room operator.
6. The nomenclature used in the EOPs is consistent with that used in the control room and plant.
7. The language and level of information is compatible with the qualifications, training and experience of a licensed operator.
8. Differences between the PSTG and the EOP are properly justified (Step Documentation Forms).

6.2 Verification Process

Each step, caution, graph and note will be verified using the criteria listed in Section 6.1. As many EOP Verification Forms (EOP-FORM 5) as required will be completed for each EOP verified to document the process. The following information will be included:

1. EOP number
2. PSTG revision number
3. EOP revision number
4. Start date
5. Scope of verification (specific steps or "all")
6. Name of person(s) performing verification and initials
7. A list of all steps verified with either initials indicating acceptance, or a Discrepancy Form number indicating a discrepancy.
8. Sheet number (if more than one form is required)
9. Discrepancy Form numbers - entered upon approval of resolutions
10. Signature of approval of the verification process
11. Date of approval.

Notes, cautions and graphs will be verified as part of the step to which they apply.

Part I of an EOP Verification Discrepancy Form (EOP-FORM 6) will be completed by the person performing the verification for each step not in compliance with the Section 6.1 criteria. The following information will be included:

1. EOP being verified
2. Discrepancy Form number
3. The EOP step number

4. A description of the discrepancy
5. Signature of the person identifying the discrepancy
6. Date.

The Discrepancy Form number will consist of two parts. The first is the revision number of the EOP being verified. The second is the sequential number assigned to the discrepancy. For example, the first discrepancy in revision "0" of EOP-RL would be number: Number 0 - 1 .

The persons assigned the responsibility of EOP verification will be provided with the following material:

1. The EOP(s) to be verified
2. The PSTG
3. The EOP Writer's Guide
4. Step Documentation forms.

The person(s) responsible for the verification will review these documents, any other source material required and the control room to assure that the Section 6.1 criteria is met for each EOP step.

All EOP Verification Discrepancy Forms will be attached to the EOP Verification Form, this will be the EOP Verification Package.

Upon completion of the review by the person(s) responsible for verification, the Verification Package, PSTG and Step Documentation Forms will be returned to the Operations Supervisor.

6.3 Resolution

When the Verification Package is returned to the Operations Supervisor, he will assign the responsibility of resolution. Assigned personnel are EOP Writers (see Section 3.3). The EOP Writers will resolve each discrepancy and complete Part II of the Discrepancy Forms, entering the following information:

1. A description of the resolution
2. Signature
3. Date.

6.4 Review/Approval

The completed EOP Verification Package is returned to the Operations Supervisor for review and approval. The Operations Supervisor, after reviewing the package, will return it to the EOP Writers if a resolution is found to be unsatisfactory, or approve it by completing the Verification Form. Completion of the form requires entering the applicable Discrepancy Sheet numbers, signature and date.

7.0 Documentation

The PSTG Verification Package and the EOP Verification Package provide documentation of the verification process.

Plant Specific Technical Guideline
VERIFICATION FORM

EOP-FORM 3

PSTG Rev. No.:_____ Scope of Verification:_____

EPG Rev. No.:_____ Person(s) Performing Verification:_____

Start Date:_____ _____

Source Documents:

PSTG: Step, Caution, Calculation#	Discrepancy Form #	PSTG: Step, Caution, Calculation#	Discrepancy Form #	PSTG: Step, Caution, Calculation#	Discrepancy Form #

Discrepancy Form No.:_____to_____ Resolved satisfactorily:_____

Signature of Operations Supervisor:_____ Date:_____

PSTG EOP-FORM 4

DISCREPANCY FORM
Number:_____

Part I to be completed by persone performing verification)

PSTG Step/Caution/Calculation Number:_____

Description of Discrepancy:

Signature:_____ Date:_____

Part II: (to be completed by EOP Writer)

Description of Resolution:

Signature:_____ Date:_____

EOP VERIFICATION FORM EOP-FORM 5

EOP _____ Rev._____

PSTG Rev. No.:_____ Scope of Verification:_____

Start Date:_____ Person(s) Performing Verification:_____ / _____
Name Initials

_____ / _____
Name Initials

_____ / _____
Name Initials

Sheet No.:_____

Step No.	Sect. 6.1 Criteria Met (Initials)	Discrepancy Number	Step No.	Sect. 6.1 Criteria Met (Initials)	Discrepancy Number	Step No.	Sect. 6.1 Criteria Met (Initials)	Discrepancy Number

Discrepancy Form No.:_____ to_____ Resolved satisfactorily:_____

Signature of Operations Supervisor:_____ Date:_____

EOP VERIFICATION DISCREPANCY FORM — EOP-FORM 6

Part I (to be completed by person performing the verification)

EOP Step Number:_____

Description of Discrepancy:

Signature:_____ Date:_____

Part II: (to be completed by EOP Writer)

Description of Resolution:

EOP Writer:

Signature:_____ Date:_____

NINE MILE POINT UNIT 2 NUCLEAR STATION
EMERGENCY OPERATING PROCEDURES
PROCEDURE NO. N2-EOP-3
EMERGENCY OPERATING PROCEDURE VALIDATION

Summary of Pages

Revision

NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE
USED AFTER
SUBJECT TO PERIODIC REVIEW

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1.0 Introduction

1.1 Purpose

The purpose of this procedure is to provide guidance for the process of validation of the Emergency Operating Procedures at Nine Mile Point Unit 2.

1.2 Scope

This procedure will describe and direct the validation process. Validation provides assurance that the Emergency Operating Procedures are accurate, sound and usable. This procedure applies to the initial Emergency Procedures and revisions.

2.0 References

2.1 Emergency Operating Procedures Validation Guideline (INPO 83-006)

2.2 Nine Mile Point Unit 2 FSAR

3.0 Definitions

3.1 Emergency Operating Procedure (EOP)

A plant procedure which provides the operator actions necessary to mitigate the consequences of transients and accidents.

3.2 Validation

A process which ensures that EOPs can be used succesfully in emergency situations.

3.3 Support Procedures

Procedures (other EOPs, Operating Procedures) required to supplement the use of an EOP.

3.4 Scenario

An event or sequency of events developed to test an EOP, or a specific section of an EOP.

3.5 Table-Top Validation

A discussion method of checking EOPs using specific criteria.

3.6 Walk-Through Validation

A simulated response to a scenario done in the plant control room.

3.7 Simulator Validation

A response to a real time simulated scenario done on a plant reference simulator.

4.0 Responsibility

4.1 Station Superintendent

The Station Superintendent shall have the overall responsibility for the development of Emergency Operating procedures.

4.2 Operations Supervisor

The Operations Supervisor shall determine the requirement for, the scope of, and method (or methods) of, validation, and approve validation resolutions.

He shall assign the responsibility of EOP writing. He shall assign the responsibility of validation.

4.3 Reviewers

Persons performing the validation shall be referred to as reviewers. They shall complete the process as directed by this procedure.

4.4 EOP Writers

EOP writers shall normally be members of the plant operation department designated by the operations supervisor. EOP writers shall have the responsibility of resolution of discrepancies disclosed during the validation process.

5.0 Emergency Operating Procedure Validation

5.1 Validation Requirements

The Emergency Operating Procedures will be validated using specific criteria. The applicability of the criteria is dependent on the method. Each validation method will use the acceptance criteria as presented in Table 1. The validation methods are:

1. Table-Top,
2. Walk-through,
3. Simulator.

5.2 Validation Process

The validation process will be initiated by the operations supervisor (see Section 4.2). He will complete Part I of the

Validation form (EOP-FORM 7). The following information will be included:

1. EOP Title,
2. EOP Number,
3. EOP Revision,
4. Scope of Validation (specific steps or "All),
5. Method(s) to be used,
6. Names of reviewer(s),
7. Signature of the operations supervisor,
8. Date.

An EOP Assessment Form (EOP-FORM 8) shall be filled out by a reviewer for each method of assessment utilized. The following information will be included:

1. EOP Number,
2. EOP Title,
3. EOP Revision,
4. Assessment method,
5. Name of reviewer(s),
6. Date,
7. Names of Operations personnel involved,
8. Position held by operator, license held by operator (enter "None" if not licensed),
9. Check-off for completion of step-by-step discussion (Table-Top method only),
10. Description of scenario(s) (a brief description of scenario(s) used to test the procedure).

Part I of a Verification Discrepancy Form (EOP-FORM 9) shall be filled out by the reviewer for each discrepancy disclosed during assessment. The following information will be included:

1. Assessment method,
2. Discrepancy number (a sequential number will be assigned to each discrepancy disclosed during a specific method of assessment),
3. EOP Number,
4. EOP Revision,
5. Description of discrepancy (the description should include sufficient detail to properly define problem, and suggested resolution(s) resulting from discussion with Operations personnel),
6. Signature of Reviewer,
7. Date.

Validation Discrepancy Forms should be attached to the applicable EOP Assessment Form.

The reviewer or reviewers will be responsible for the preparation and assessment phases of the validation. The preparation and assessment for each method is described in the following sections.

5.2.1 Table-Top Method

Preparation for the table-top method for validation involves the following:

1. Selection of operating personnel to participate (minimum of 3, SRO or RO),
2. Obtaining copies of the EOP to be validated,
3. Obtaining any support procedures which might be required during discussion,
4. Reviewing EOP and acceptance criteria with Operations personnel.

An EOP Assessment Form shall be completed by the reviewer.

The assessment should involve a step-by-step discussion of the procedure, talk-through of possible scenarios involving use of the procedures, and documentation of discrepancies. Possible resolution of discrepancies should be discussed.

The step-by-step discussion should involve identification of the operator tasks required for each step. The discussion of possible scenarios may be done during or after the step-by-step discussion. The reviewer may specify equipment failures as required to test the procedures. Discussion of possible discrepancies should involve causes and resolutions. All discrepancies should be documented on a Verification Discrepancy Form.

5.2.2 Walk-Through Method

Preparation for the walk-through method of validation involves the following:

1. Selection of operating personnel to participate. The number and qualifications of people used to staff the control room should be consistent with the staffing in an actual situation. Others can be involved for comment and discussion.
2. Obtaining copies of the EOP to be validated.
3. Assuring availability of support procedures in the control room
4. Reviewing the EOP and acceptance criteria with the operations personnel.
5. Preparation of scenario(s) to be used for assessment of procedures.
6. Arranging use of the control room with the operations supervisor.

An EOP Assessment Form should be completed.

The walk-through should involve a simulated response to symptoms or conditions specified in the scenario. The walk-through can be interupted for discussion of tasks and possible discrepancies; however, an attempt should be made to maintain the continuity of the exercise.

At the conclusion of each scenario exercise, discrepancies should be identified, discussed and documented on a Validation Discrepancy Form (EOP-FORM 6).

The number of different scenarios required is that necessary to test procedure being verified, branches from the procedure and references to other procedures.

5.2.3 Simulator Method

Preparation for the simulator method includes the following:

1. Selection of operations personnel to participate. The number and qualifications of people used to staff the simulator should be consistent with the staffing in an actual situation. Others can be involved for comment and discussion.
2. Obtaining copies of the EOP to be verified.
3. Obtaining any support procedures required.
4. Reviewing the EOP and acceptance criteria with the operations personnel.
5. Preparation of scenario(s) to be used for assessment of procedures.
6. Reserving simulator time with the Nine Mile Point Training Department.

An EOP Assessment Form should be completed by the reviewer.

The simulator assessment should involve real time response to the scenario(s) developed to validate the EOP. The reviewer should present initial plant conditions to the operations personnel prior to each exercise.

The exercise (response to a simulated incident) should run without interuption until completion, or as long as required to complete the assessment. Notes can be taken by the reviewer and non-participating operations personnel concerning possible procedure discrepancies. At the conclusion of each exercise, the possible discrepancies should be discussed. Discussion should include possible causes and resolutions, and differences between the simulator and plant equipment which would affect the response. Discrepancies should be documented on a Validation Discrepancy Form.

The number and type of scenarios is dependent on the procedure being validated, and should be sufficient to test the EOP, branches to other procedures and references to other procedures.

5.3 Resolution

Upon completion of the required assessments, Part II of the EOP Validation Form shall be completed by a reviewer. The EOP Assessment Form/Validation Discrepancy Form group(s) should be attached to the EOP Validation Form. This shall be the EOP Validation Package. The Validation Package is then returned to the operations supervisor.

The operations supervisor will assign the responsibility of resolution to EOP writers. The EOP writers will resolve all discrepancies and complete Part II of each Validation Discrepancy Form. The following

information shall be included:

1. Description of the resolution,
2. Signature,
3. Date.

When resolutions are completed, the EOP Validation Package is returned to the operations supervisor for review and approval. After reviewing the package, the operations supervisor will return the Validation Package to the EOP writers if any resolution is unsatisfactory, or complete Part III of the EOP Validation Form (with his signature and date) denoting approval of the Validation process.

6. Documentation

The EOP Validation package shall provide documentation of the Validation process.

TABLE 1

EVALUATION CRITERIA

Legend:

x - applicable to the validation method

o - not applicable to the validation method

T-T - table-top validation method

W-T - walk-through validation method

S - simulator validation method

T-T	W-T	S	
x	x	x	1. There is sufficient information to perform the specified actions.
x	x	x	2. The labeling, abbreviations, and locations as provided in the EOP are sufficient to enable the operator to find the needed equipment.
x	x	x	3. The EOP is not missing information needed to manage the emergency condition.
x	x	x	4. The contingency actions are sufficient to address the symptoms.
x	x	x	5. The titles and number are sufficiently descriptive to enable the operation to find referenced and branched procedures.
x	x	x	6. The EOP is easy to interpret and follow.
x	x	x	7. The figures and tables are easy to read with accuracy.

T-T	W-T	S	
x	x	x	8. The values on figures and charts can be easily determined.
x	x	x	9. Caution and note statements are readily understandable.
x	x	x	10. The actions specified in the procedure can be performed in the designated sequence.
x	x	x	11. All systems or components which could be utilized for given symptoms are used.
o	x	x	12. The information from the plant instrumentation can be obtained, as specified by the EOP.
o	o	x	13. The plant symptoms specified by the EOP are adequate to enable the operator to select the applicable EOP.
o	o	x	14. The EOP entry conditions are appropriate for the plant parameters displayed to the operator.
o	o	x	16. The plant responses agree with the EOP basis.
o	x	x	17. The instrument readings and tolerances stated in the EOP are consistent with the instrument values displayed on the instruments.
o	x	o	18. The instrument readings and tolerances specified by the EOP for remotely located instruments are accurate.
o	x	x	19. If time intervals are specified, the procedure action steps can be performed on the plant within or at the designated time intervals.
o	x	x	20. The procedure action steps can be performed by the operation shift.
o	x	x	21. The operating shift can follow the designated action step sequences.

T-T	W-T	S	
x	x	x	22. Procedure branches can be entered at the correct point.
x	x	x	23. EOP exit points are specified adequately.
x	x	x	24. Adequate support procedures are available.

EOP VALIDATION FORM

EOP-FORM 7

Part I (to be completed by Operations Supervisor)

EOP Title: _____

EOP Number: _____ EOP Revision: _____

Scope of Validation: _____

Validation Method(s): _____

Reviewer(s): _____ _____

_____ _____

Signature: _____ Date: _____

Part II (to be completed by reviewer)

Table-Top Validation Assessment complete -

Number of discrepancies: _____ Signature: _____ Date: _____

Walk-Through Validation Assessment complete -

Number of discrepancies: _____ Signature: _____ Date: _____

Simulator Validation Assessment complete -

Number of discrepancies: _____ Signature: _____ Date: _____

Part III (to be completed by Operations Supervisor)

This validation package has been reviewed. All discrepancies have been resolved satisfactorily.

Signature: _____ Date: _____

EOP ASSESSMENT FORM EOP-FORM 8

EOP-Number:_____ EOP Title:_____

EOP Revision:_____ Assessment Method:_____ Date:_____

Reviewer(s):_____ _____

Operations Personnel:

Name	Position	License
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Step-by-Step discussion completed: ____ (Check if done, Table-Top Method only)

Description of Scenario(s):

VALIDATION DISCREPANCY FORM

EOP-FORM 9

Part I (to be completed by reviewer)

Assessment Method:_____ Discrepancy No._____

EOP Number:_____ EOP Revision:_____

Description of Discrepancy:

Signature:_____ Date:_____

Part II (to be completed by EOP writer)

Description of Resolution:

Signature:_____ Date:_____