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SUBJECT: Forwards revised FSAR pages to support Tech Specs 3.6.1.8 & 3.11.2.8, requiring drywell & suppression chamber purge & vent valves to remain sealed, closed or inerting & deinerting restricted. Changes will be incorporated in Amend 26.

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March 5, 1986
(NMP2L 0648)

Ms. Elinor G. Adensam, Director
BWR Project Directorate No. 3
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Washington, DC 20555

Dear Ms. Adensam:

Re: Nine Mile Point Unit 2
Docket No. 50-410

Enclosure 1 provides revised Final Safety Analysis Report pages for Nine Mile Point Unit 2. These pages are provided to support the Unit 2 Technical Specifications Sections 3.6.1.8 and 3.11.2.8. Specifically, the Standard Technical Specifications would require the drywell and suppression chamber purge and vent valves to remain sealed closed or restrict inerting and deinerting and require two trains of SGTS to be operable. The enclosed pages provide support for modifying the Technical Specifications, as shown on the Enclosure 2.

These changes will be incorporated in Amendment 26.

Very truly yours,

C. V. Mangan

C. V. Mangan
Senior Vice President

NLR:ja
1387G
Enclosures

xc: R. A. Gramm, NRC Resident Inspector
Project File (2)

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
Niagara Mohawk Power Corporation)
(Nine Mile Point Unit 2))

Docket No. 50-410

AFFIDAVIT

C. V. Mangan, being duly sworn, states that he is Senior Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C. V. Mangan

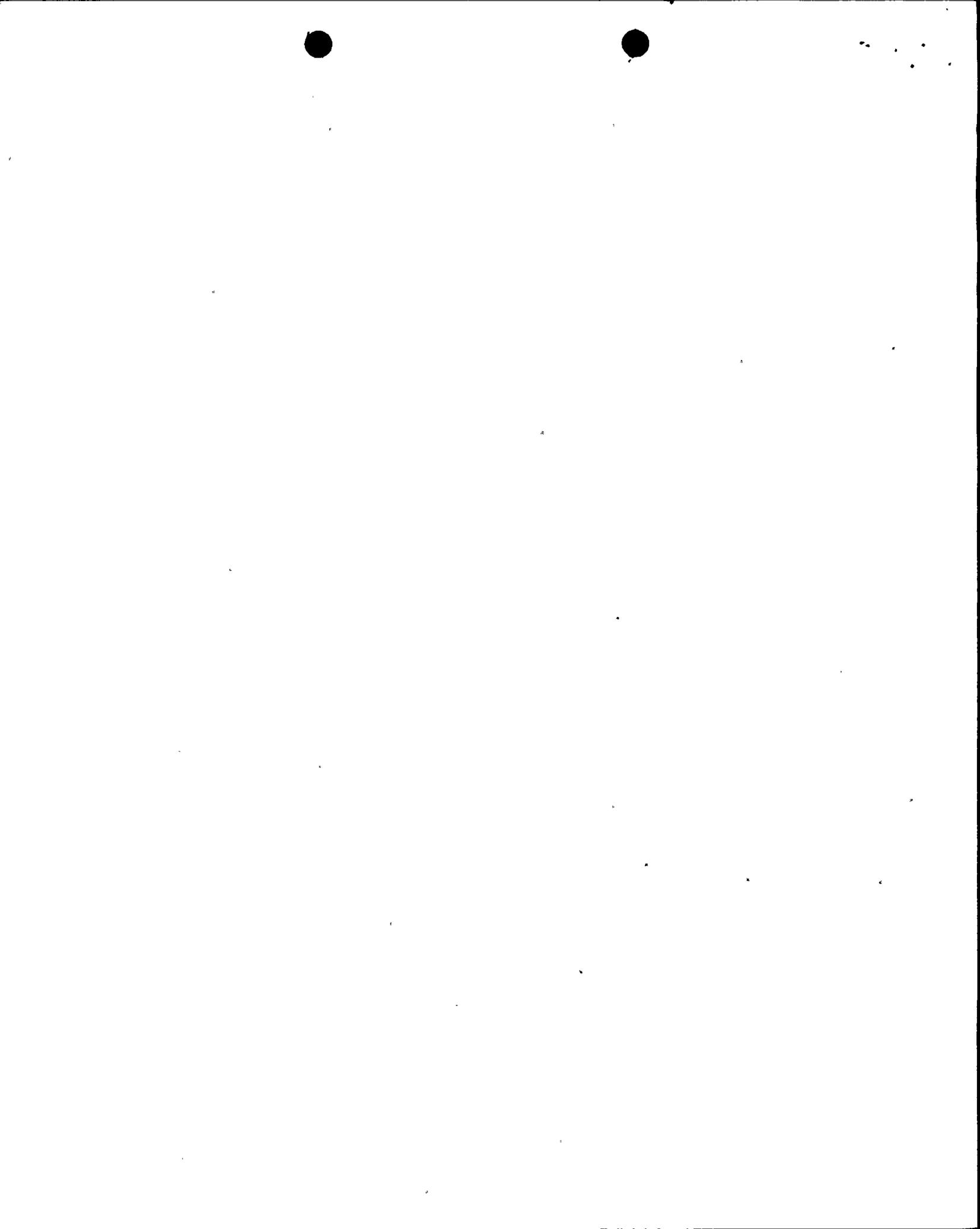
Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 5th day of March, 1986.

Janis M. Macro
Notary Public in and for
Onondaga County, New York

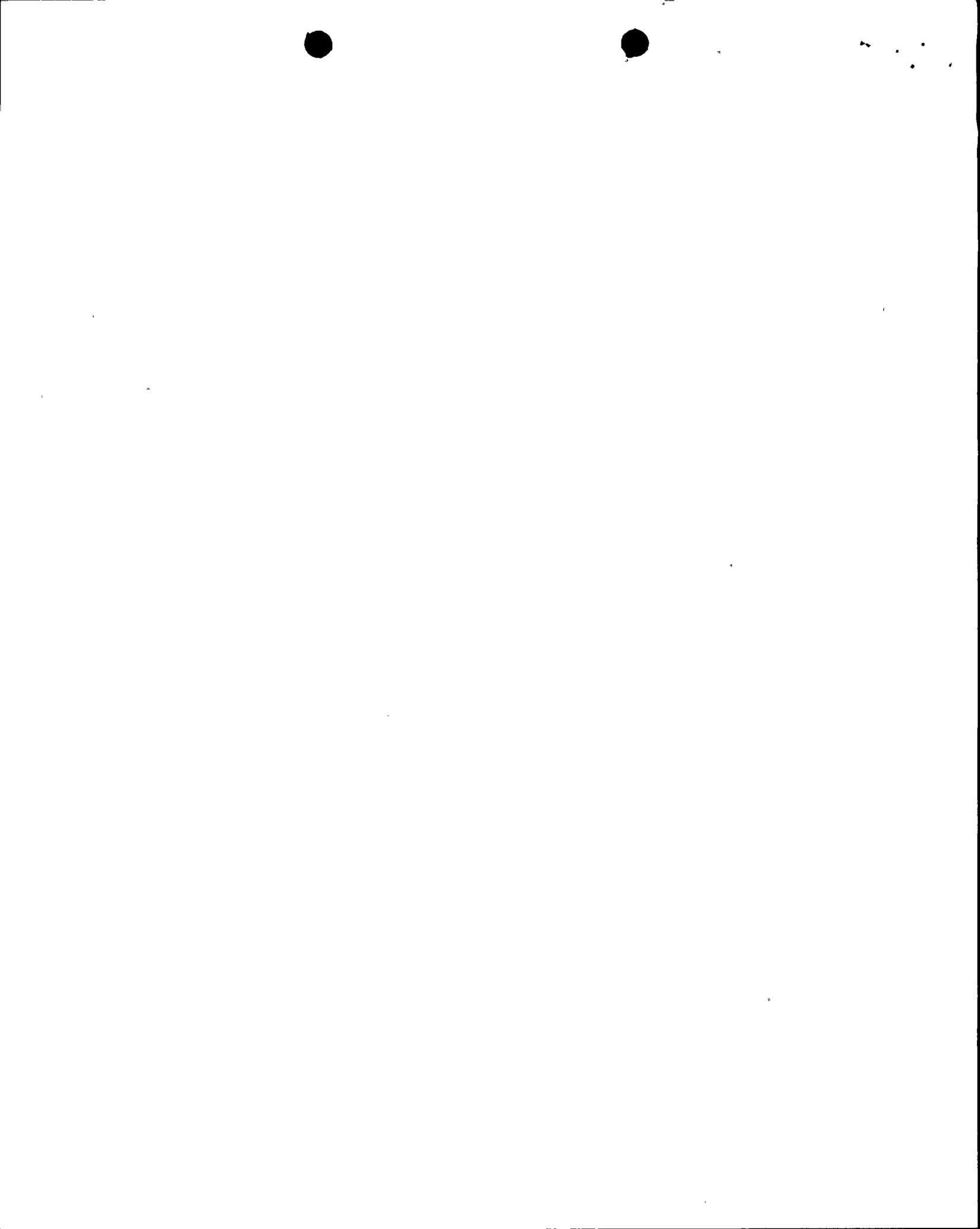
My Commission expires:

JANIS M. MACRO

Notary Public in the State of New York
Qualified in Onondaga County No. 4784555
My Commission Expires March 30, 1987.



Enclosure 1



would be insignificant. Suppression pool makeup during normal plant conditions is from the condensate water storage tank.

The elevations of the ECCS pump suction centerlines and the suppression pool minimum drawdown level are 195'-0" and 197'-8", respectively.

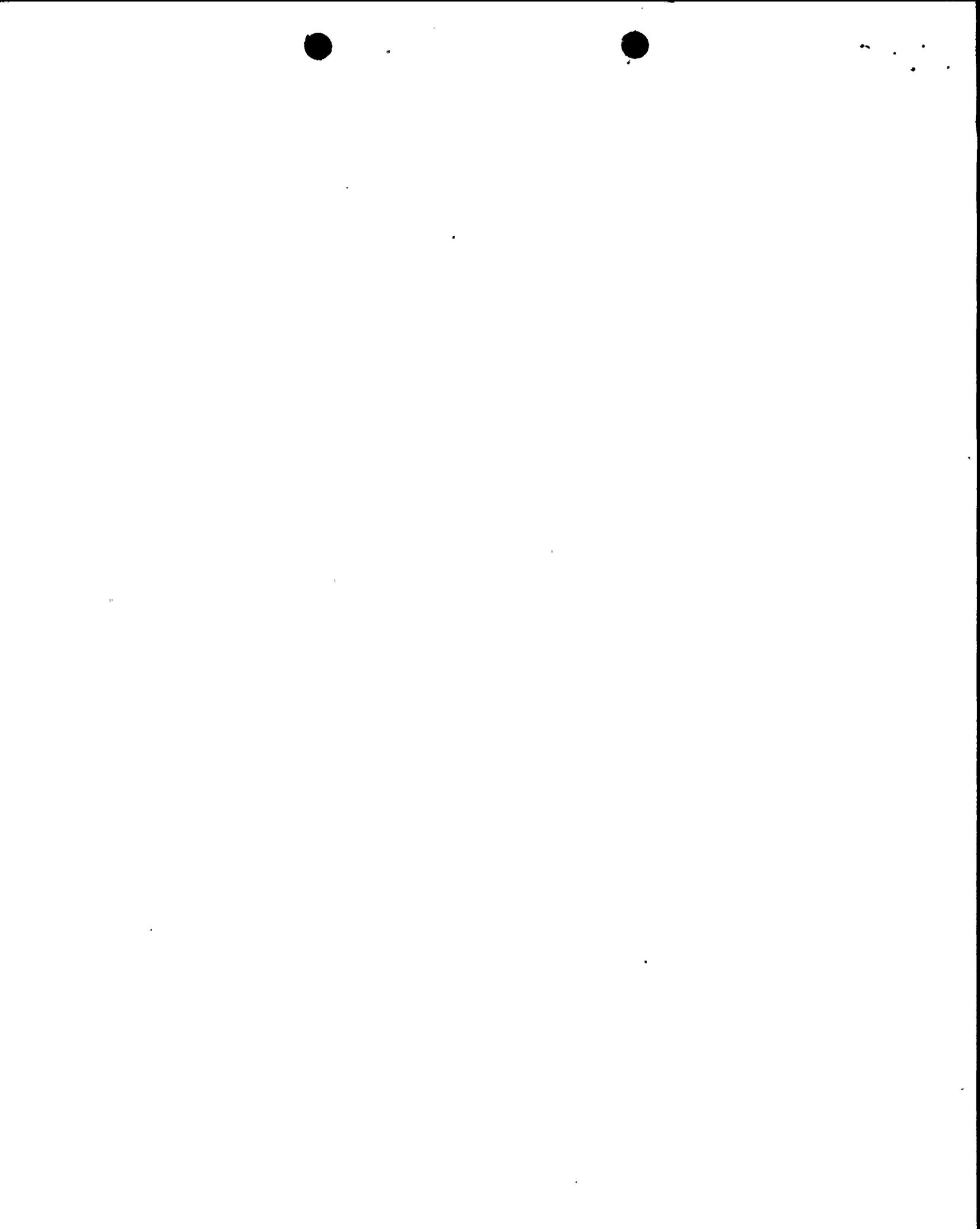
Influent and Effluent Lines from Drywell and Suppression Chamber Free Volume

1. Primary Containment Purge Lines The drywell and suppression chamber purge lines have isolation capabilities commensurate with the importance to safety of isolating these lines. Each line has two normally closed/fail closed valves - one located inside (nitrogen operated) and one located outside (air operated) the primary containment. The inboard end of each 12-in and 14-in valve located inside the primary containment is provided with a QA Category I debris screen to prevent entrainment of foreign matter in the valve seat. The isolation valves are interlocked to preclude opening of the valves while a primary containment isolation signal exists (Table 6.2-56).

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The radiological consequences of a LOCA occurring during containment purge system operation (isolation valves wide open) with the standby gas treatment system in the pressure control mode are discussed in Section 15.6.5.

2. Primary Containment Atmosphere Monitoring System Sampling Lines The primary containment atmosphere monitoring system consists of radiation and hydrogen/oxygen monitoring lines. Each line, suction and discharge, penetrates the primary containment and continuously monitors the radiation level and hydrogen/oxygen concentration during normal operation. These lines are equipped with two solenoid-operated isolation valves, one inside the primary containment and the other outside, located as close as possible to the primary containment. The hydrogen/oxygen monitoring lines are also used to continuously monitor the primary containment air during the post-LOCA period. Each isolation valve receives isolation signals. The isolation valves for hydrogen/oxygen monitoring lines are provided with individual keylock switches to override the isolation signal and initiate system operation, during the post-LOCA period.



6.5.1.2 System Design

6.5.1.2.1 General System Description

The SGTS is schematically shown on Figure 9.4-8. Design data of the SGTS principal equipment are listed in Table 6.5-1.

The SGTS consists of two identical, parallel, physically separated, 100-percent capacity air filtration assemblies with associated piping, valves, controls, and centrifugal exhaust fans. Effluents from the SGTS connect to a common exhaust line discharging to the exhaust tunnel leading to the main stack. The SGTS draws air from the reactor building.

6.5.1.2.1.1 SGTS Modes of Operation

The SGTS has three (3) modes of operation:

1. Safety-Related Mode - to maintain negative pressure in the reactor building secondary containment (post-LOCA) via connection to the reactor building recirculation ventilation system
2. Nonsafety-Related Mode - to provide charcoal filtration of primary containment atmosphere when inerting (start-up) or deinerting (shut-down) via connection to the containment purge system (CPS) full-flow 20" line
3. Nonsafety-Related Mode - to provide charcoal filtration of primary containment atmosphere during normal power operation to control primary containment pressure via connection to the CPS 2" by-pass line

Within 25 sec of a high radiation or LOCA signal, the SGTS draws 3,500 cfm from the discharge duct of the emergency recirculation unit cooler (Section 9.4.2) to either maintain or restore a subatmospheric pressure within the reactor building.

The SGTS is started automatically by any of the following signals:

1. High radiation or low air flow in the exhaust ducts above and below the refueling floor.
2. High pressure in the drywell.
3. Low reactor water level.

The SGTS can also be started manually and used to exhaust the primary containment purge system (Section 9.4.2.2.3).

The plant operator can stop one of the SGTS filter trains from the main control room after system initiation is completed. Because of the possibility of iodine desorption and charcoal ignition at high temperatures, a deluge system is provided for the charcoal adsorber section of the SGTS filter trains. Each charcoal bed has a temperature switch to detect any abnormal temperature rise at the outlet of the charcoal adsorber. When the temperature exceeds a predetermined set point, there is an alarm in the main control room, the exhaust fan is manually stopped and, if warranted, the fire protection system is manually initiated.



2. 4.

20 | A 4,000-cfm capacity centrifugal fan is provided downstream
of each SGTS filter train. This fan is a direct-drive type
with a single-speed motor powered from Class 1E buses. The
20 | decay heat produced by the radioactive particles in the
inactive charcoal filter train is removed by passing 500 cfm
of air from the equipment room through the inactive filter
train. The air is then exhausted to the main stack by the
fan of the active filter train. A missile-protected opening
20 | with a backdraft-type tornado damper located in the
equipment room allows outside air to be induced into the
room when makeup air for decay heat cooling is required.

The SGTS charcoal filter trains are located in the standby gas treatment building at el 261 ft.

Access doors are provided to give complete accessibility to all components for servicing. The doors are airtight, fitted with locking devices, and have provisions for opening inside the housing, as recommended in ERDA-76-21, Section 4.5.

6.5.1.3 Design Evaluation

The SGTS is designed to preclude direct release of fission products from the reactor building to the environment during all modes of operation by the following features:

1. The SGTS is housed in a Category I structure. All surrounding equipment, components, and supports are designed to pertinent safety class and Category I requirements.
2. The SGTS consists of two 100-percent capacity, physically separated filter trains. Should any component in one train fail, filtration can be performed by the redundant train.
3. The SGTS component design and qualification testing are in accordance with the recommendations of Regulatory Guide 1.52 to the extent discussed in Section 1.8.
4. During loss of offsite power, all active components such as motors, damper operators, controls, and instrumentation operate from their respective independent standby power supplies.



One Mile Point Unit 2 FSA

Should a loss of coolant accident occur during primary containment purge, with the SGTS operating in the pressure control mode, the calculated accident doses are within the 10CFR100 guideline values, as required by BTP-CSB 6-4.

Should a loss of coolant accident occur while the SGTS is operating in the pressure control mode, the resultant pressure at the SGTS filter is below the design pressure of 1 psig. The following are considered in this analysis:

1. The inboard and outboard CPS isolation valves to the Drywell (14") and Wetwell (12") are fully open at time=0 when the LOCA occurs. These lines are tied together to a 20" header.
2. The 20" line is shut off from the SGTS filters via a safety-related fail close valve (2GTS*AOV101) and the 2" bypass line is open via a safety-related fail close valve (2GTS*SOV102).
3. The CPS containment isolation valves close in five seconds.
4. The LOCA pressure at t=5 seconds is 24 psig.
5. For purposes of conservatism, the LOCA pressure of 24 psig is assumed to occur instantaneously at t=0 seconds; the pressure control valve (2GTSPV104) in the 2" bypass line is full open; and the resulting pressure spike at the SGTS filters occurs instantaneously.

The radiological consequences of this event are discussed in Section 15.6.5.



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DBE. The system is designed to nonnuclear safety standards and is not required for safe shutdown of the plant.

9.4.2.1.2 Primary Containment Purge

Power Generation Design Basis

1. Provide sufficient purging capability for the primary containment to permit entry of personnel within 16 hr of a reactor cold shutdown.
2. Provide the piping interconnection between the nitrogen inerting system (GSN) and the drywell and suppression chamber to permit inerting of the primary containment and to maintain the primary containment at positive pressure with nitrogen during normal operation so that any leakage can be monitored.
3. Provide a backup system to the redundant hydrogen recombiners for the dilution of hydrogen following a loss-of-coolant accident (LOCA). The hydrogen recombiners are described in Section 6.2.5.

15

Safety Design Basis

Provide seismically qualified piping and valves to protect adjacent safety-related equipment in the event of a DBE. The containment isolation provisions for the purge system lines facilitate compliance with 10CFR100 for the radiological consequences of a LOCA occurring during CPS operation (Section 15.6.5). The system is designed to nonnuclear safety standards and is not required for safe shutdown of the plant.

9.4.2.1.3 All Other Reactor Building Areas

Power Generation Design Basis

1. Provide an environment that ensures habitability of the areas served and optimum performance of equipment, within the temperature limits shown in Table 9.4-1.
2. For normal plant operation, provide a once-through ventilation system, utilizing outdoor air with controlled discharge of exhaust air to the atmosphere.
3. Exhaust more air from the reactor building than is being supplied, thereby maintaining the area at a negative pressure to inhibit the exfiltration of airborne contaminants.



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15.6.5 Loss-of-Coolant Accidents (LOCA) (Resulting from Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary) Inside Primary Containment

This event involves the postulation of a spectrum of piping breaks inside containment varying in size, type, and location. The break type includes steam and/or liquid process system lines. This event is also assumed to be coincident with a safe shutdown earthquake (SSE).

The occurrence of this event while SGTS is operating in the pressure control mode is also postulated.

The event has been analyzed quantitatively in Sections 6.2, 6.3, 7.1, 7.3, and 8.3. Therefore, the following discussion provides information not presented in the subject sections. All other information is covered by cross-referencing.

The postulated event represents the envelope evaluation for liquid or steam line failures inside containment.

15.6.5.1 Identification of Causes and Frequency Classification

15.6.5.1.1 Identification of Causes

There are no realistic, identifiable events which would result in a pipe break inside the containment of the magnitude required to cause a LOCA coincident with SSE plus SACF criteria requirements. The subject piping is designed to high quality and strict industry code and standard criteria and severe seismic and environmental conditions. However, since such an accident provides an upper limit estimate to the resultant effects for this category of pipe breaks, it is evaluated without the causes being identified.

15.6.5.1.2 Frequency Classification

This event is categorized as a limiting fault.

15.6.5.2 Sequence of Events and Systems Operation

15.6.5.2.1 Sequence of Events

The sequence of events associated with this accident is shown in Table 6.3-2 for core system performance and Table 6.2-8 for barrier (containment) performance.

Following the pipe break and scram, the low-low water level or high drywell pressure signal initiates HPCS and RCIC systems at time 0, plus approximately 30 sec.



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percent of the iodines in this leakage become airborne and available for release through the SGTS. This leakage is the same for the isothermal and isentropic approaches to the design basis analysis.

3. Reactor building pressurization - During the time when the pressure in the reactor building is greater than negative one-quarter inch water gauge compared to the environment leakage from the primary containment, TIP, and ESF systems travels directly to the environment. No credit is taken for mixing or filtration. This leakage is the same for the isothermal and isentropic approaches to the design basis analysis. | 21
4. SGTS operating in pressure control mode - occurrence of a LOCA while the SGTS is operating in the pressure control mode would result in primary containment air being released to the atmosphere from two pathways.
 - a. Primary containment air is filtered and exhausted to the environment through the main stack via SGTS. This volume includes flow through the containment purge system (CPS) isolation valves prior to closure, and the release of the inventory remaining in the CPS lines following closure.
 - b. The LOCA pressure in the primary containment causes backflow of drywell and wetwell air through the 2" nitrogen supply lines. Primary containment air flows past the isolation valves prior to closure and leaks past check valve 2GSN*V87. Credits for delay and plateout (as described in the bypass leakage discussion below) are applied to this leakage path. This leakage is released directly to the environment, unfiltered and at ground level.
5. Bypass leakage - The piping paths listed below provide potential routes for post-LOCA primary containment atmosphere to bypass the reactor building and the standby gas treatment system and be released directly to the environment.
 1. Main steam lines (4).
 2. Feedwater line.
 3. Post-accident sampling lines (4).
 4. Main steam drain lines (2).
 5. Reactor water cleanup line.
 6. Drywell equipment drain and vent lines (2).
 7. Drywell floor drain and vent lines (2).
 8. Primary containment purge lines (4). | 21



Nine Mile Point Unit 2 FSAR

Section 6.2.3 describes in detail the two methods used to determine the leak rates through the isolation valve(s) for each path. These two methodologies, one considering an isothermal flow process and the other considering an isentropic flow process, define the two separate approaches to the flow design basis analysis.

Using the leak rate data from Tables 6.2-55a and 6.2-55b, a prerelease holdup time is calculated for each bypass leakage path using the slug-flow method. The slug-flow method assumes that the



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Enclosure 2



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12 inch and 14 inch supply and exhaust lines may have their respective onboard and outboard isolation valves open

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CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT PURGE SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8. The drywell and suppression chamber 12 inch and 14 inch purge supply and exhaust isolation valves shall be OPERABLE and:

- a. The purge system ~~may be in operation for up to 90 hours per 365 days for inerting, deinerting, or pressure control.~~ VENTING or PURGING, ~~FF~~
- ~~b. Purge system valves 2CPS* AOV-105 (12 inch), 2CPS* AOV-107 (12 inch), 2CPS* AOV-110 (14 inch), and 2CPS* AOV-111 (12 inch) shall be sealed closed.~~
- b. ~~Purge system valve 2CPS* AOV-104 (14 inch) shall be blocked to limit the opening to 70°.~~ *valves 2CPS * AOV 105 (12 inch) and 2CPS * AOV 110 (12 inch)* Purge system valve 2CPS* AOV 111 shall be blocked to limit the opening to 60°.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

- ~~a. With any sealed closed drywell and suppression chamber purge supply and/or exhaust isolation valve(s) open or not sealed closed, close and/or seal the valve(s); otherwise isolate the penetration within four hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.~~
- b. With the drywell and suppression chamber purge supply and/or exhaust isolation valve(s) inoperable, or open for more than 90 hours per 365 days for other than inerting, deinerting or pressure control, close the open valve(s); otherwise isolate the penetration(s) within four hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- c. With a drywell and suppression chamber purge supply and/or exhaust isolation valve(s) with resilient material seals having a measured leakage rate exceeding the limit of Surveillance Requirements 4.6.1.8.2, restore the inoperable valve(s) to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.8.1 At least once per 31 days each drywell and suppression chamber purge supply and exhaust isolation valve of Specification 3.6.1.8.b and 3.6.1.8.c shall be verified ~~to be sealed closed or blocked to limit the opening to 70° or 60°~~ as applicable.

The 90 hour limit shall not apply to the use of 2CPS* AOV 108 and 2CPS * AOV 110, or 2CPS * AOV 109 and 2CPS* AOV 111, for primary containment pressure control, provided 2CPS* AOV 101 is closed, and the

NINE MILE POINT - UNIT 2

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2" bypass line is the only flow path to the standby gas treatment system. NOW 2 0 1985



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CONTAINMENT SYSTEMS

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SURVEILLANCE REQUIREMENTS (Continued)

4.6.1.8.2 At least once per 92 days each 12 and 14 inch drywell and suppression chamber purge supply and exhaust isolation valve with resilient material seals shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than or equal to 4.38 scf per hour per 14 inch valve and 3.75 scf per hour per 12 inch valve when pressurized to 40 psig.



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CONTAINMENT SYSTEMS

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STANDBY GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.3 Two independent standby gas treatment subsystems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3 and *.

ACTION:

- suspend all VENTING or PURGING of the drywell and/or suppression chamber # within 30 minutes, and restore the inoperable subsystem to OPERABLE status within 7 days, or*
- a. With one standby gas treatment subsystem inoperable, ~~restore the inoperable subsystem to OPERABLE status within 7 days, or:~~
1. In OPERATIONAL CONDITION 1, 2 or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. *restore the inoperable subsystem to OPERABLE status within 7 days, or*
 2. In Operational Condition *, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.
- b. With both standby gas treatment subsystems inoperable, ^{INSERT "A"} in Operational Condition *, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS or operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable. *2. ch*

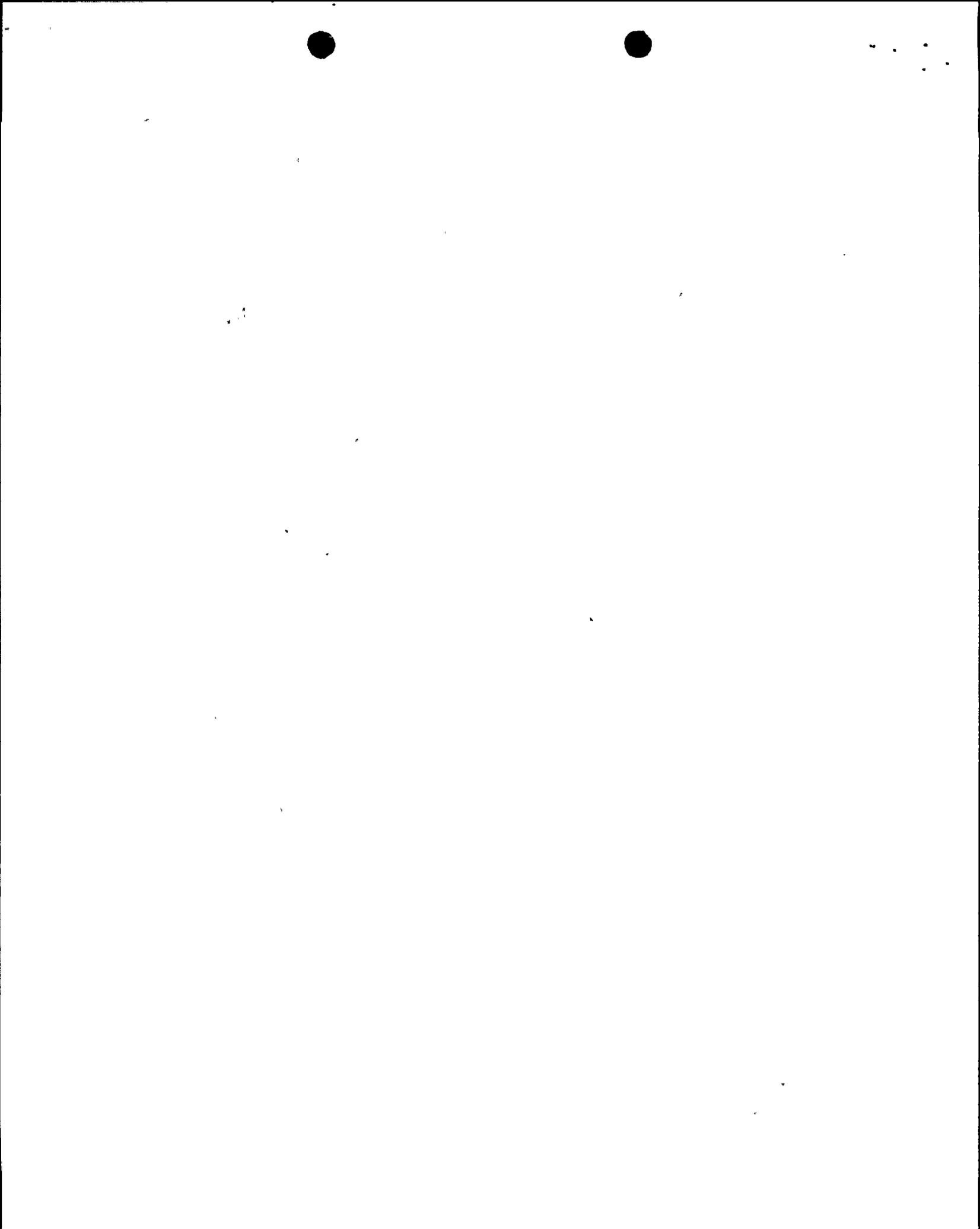
SURVEILLANCE REQUIREMENTS

4.6.5.3 Each standby gas treatment subsystem shall be demonstrated OPERABLE:

- a. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates for at least 10 hours with the heaters OPERABLE.

*When irradiated fuel is being handled in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

#The requirement to suspend VENTING or PURGING with an inoperable SGTS subsystem shall not apply to the use of 2 CPS #A0V108 and 2 CPS #A0V110, or 2 CPS #A0V109 and 2 CPS #A0V111, for primary containment pressure control, provided 2 GTS #A0V101 is closed, and its 2 inch bypass line is the only flow path to the standby gas treatment system.



1. In ~~the~~ OPERATIONAL CONDITION 1, 2 or 3, suspend all VENTING or PURGING of the drywell or suppression chamber, and initiate action within one hour to be in at least HOT SHUTDOWN in the following 12 hours, and in COLD SHUTDOWN in the subsequent 24 hours.

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3/4 6-38

NINE MILE POINT - 3/4 6-38a
UNIT 2



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SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the subsystem by:
1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52*, Revision 2, March 1978, and the subsystem flow rate is 3500 cfm \pm 10%.
 2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52*, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52*, Revision 2, March 1978, for a methyl iodide penetration of less than 0.175%; and
 3. Verifying a subsystem flow rate of 3500 cfm \pm 10% during system operation when tested in accordance with ANSI N510-1980.
- c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52*, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52*, Revision 2, March 1978, for a methyl iodide penetration of less than 0.175%.
- d. At least once per 18 months by:
1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5.5 inches Water Gauge while operating the filter train at a flow rate of ~~(2300)~~³⁵⁰⁰ cfm \pm 10%.
 2. Verifying that the filter train starts and isolation valves open on each of the following test signals:
 - a. Manual initiation from the control room, and
 - b. Simulated automatic initiation signal.
 3. Verifying that the decay heat removal isolation valves are open and the fan can be manually started.
 4. Verifying that the heaters dissipate 20.0 \pm 2.0 kw when tested in accordance with ANSI N510-1980.

*ANSI N510-1980 ^{is} applicable in place of ANSI N510-1975 and ANSI N509-1980 is applicable in place of ANSI N509-1976.

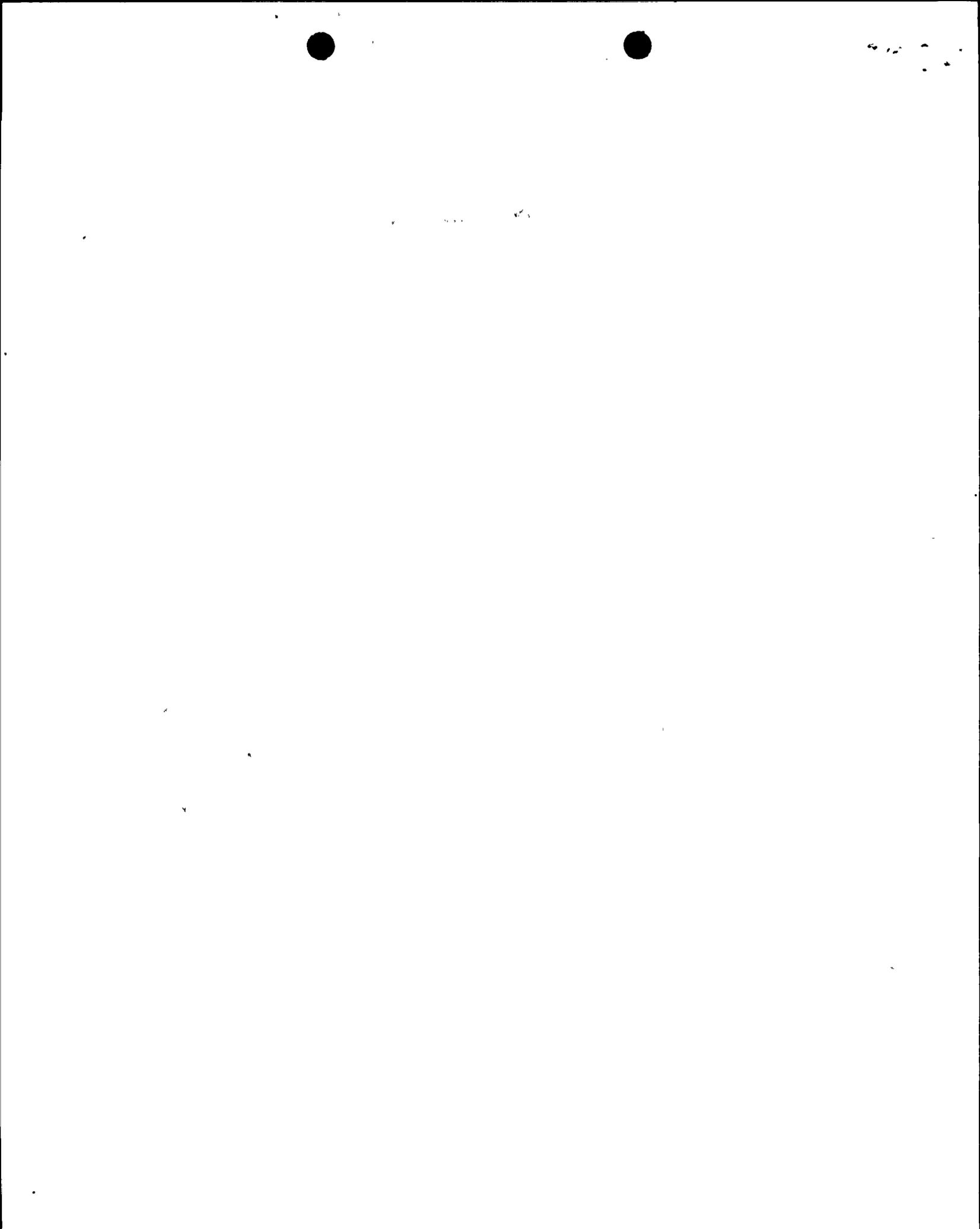


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SURVEILLANCE REQUIREMENTS (Continued)

- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of 3500 cfm \pm 10%.

- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 3500 cfm \pm 10%.



RADIOACTIVE EFFLUENTS

VENTING OR PURGING

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LIMITING CONDITION FOR OPERATION

3.11.2.8 VENTING* or PURGING* of the drywell and/or suppression chamber shall be through the standby gas treatment system.*

APPLICABILITY: ~~Whenever the drywell and/or suppression chamber is vented or purged.#~~ 1, 2 and 3

ACTION:

OPERATIONAL CONDITIONS

- a. With the requirements of the above specification not satisfied, suspend all VENTING and PURGING of the drywell and/or suppression chamber.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.8.1 The containment drywell and/or suppression chamber shall be determined to be aligned for VENTING or PURGING through the standby gas treatment system within 4 hours prior to start of and at least once per 12 hours during VENTING or PURGING of the drywell.

~~4.11.2.8.2 Prior to use of the purge system through the standby gas treatment system assure that:~~

- ~~a. Both standby gas treatment system trains are OPERABLE whenever the purge system is in use, and~~
- ~~b. Whenever the purge system is in use during OPERATIONAL CONDITION 1 or 2 or 3, one standby gas treatment system train shall be in operation.~~

#Not applicable until initial criticality.

*~~Not applicable during pressure control when using the 2 inch inlet standby gas treatment trains~~

* See specification 3.6.5.3

