5/18/81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 50-155-OLA
CONSUMERS POWER COMPANY	)	(Spent Fuel Pool
	)	Expansion)
(Big Rock Point Nuclear Power Plant)	)	

ANSWERS OF CONSUMERS POWER COMPANY
TO INTERROGATORIES (SET II) PROPOUNDED BY
CHRISTA-MARIA, ET AL.

Pursuant to 10 C.F.R. § 2.740b, Consumers Power Company ("Licensee") hereby submits answers to Interrogatory 7-3 of the above-entitled Interrogatories.

Interrogatory 7-3

Please describe and explain the containment supply relief system.

A. Answer

The reactor containment building (containment) for Big Rock Point is designed for continuous ventilation. Plant design utilizes continuous ventilation to provide contamination control for access to operating equipment and cooling to maintain critical equipment operable. During warm weather, the continuous ventilation is essential to maintain the containment temperature within the limits described in the Final Hazards Summary Report.

For purposes of this question, the containment ventilation supply relief system is contained in the following areas: The ventilation building (air shed), containment and the plant exhaust stack.

The air shed is attached to the outside of containment in an area between containment and the plant exhaust stack. The air shed houses louvers, filter and heating coils for conditioning and tempering the air before reaching the containment. Further, the air shed contains the supply and exhaust lines, the inlet air plenum and isolation valves which are closed automatically after any scram, loss of power or high radiation near spent fuel pool.

The containment houses the plant supply air fans with damper controls, the containment exhaust plenum, and two containment vacuum relief lines which are to prevent excessive external pressure from causing damage to the containment's integrity.

The plant exhaust stack houses the plant exhaust plenum, plant exhaust fans and air make-up damper with automatic controls to maintain rated air flow out the stack when plant demand falls below normal.

Basically, air is drawn through the louvers into the air shed, passes through the heating coils, filter, into the intake plenum, is drawn from the intake plenum into the supply line, through the supply isolation valves by the supply air fans and flows into containment. After the air passes through the containment areas, the air is collected in the containment exhaust plenum and drawn (containment maintained at slightly negative pressure) through the exhaust line, into the plant exhaust plenum by the plant exhaust fans, which discharge to the plant exhaust stack.

B. Documents Relied Upon

1. Big Rock Early (Pre) Operations Manual (Pages 219-232 Enclosed).
2. Letter CPCo to NRC (Ziemann) dated 11/29/78. Big Rock Point Plant - Additional Information Relative to Fuel Handling Accident in Containment.
3. Letter CPCo to NRC (Ziemann) dated 12/29/78. Big Rock Point Plant - Containment Purging During Normal Plant Operations.

C. Documents Reviewed But Not Relied Upon

1. Letter NRC to CPCo (Bixel) dated 10/16/79. Big Rock Point Plant - Related to Containment Purging.
2. Letter CPCo to NRC (Ziemann) dated 12/3/79. Big Rock Point Plant - Containment Purge System, CPCo Response for Additional Information.

D. Further Activities

It is anticipated that changes will be made to the Containment Purge System as indicated in the letter referenced below:

1. Letter CPCo to NRC (Ziemann) dated 3/14/80 - Big Rock Point Plant Containment Purge System, Single Failures.

Joseph Gallo, Esquire
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RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED USNRC MAY 19 1981 Office of the Secretary Docketing & Service Branch

In the Matter of CONSUMERS POWER COMPANY (Big Rock Point Nuclear Power Plant)	Docket No. 50-155

AFFIDAVIT OF EDWARD R COOPER

I, Edward R Cooper, of lawful age, being first duly sworn, do state as follows:

I am employed by Consumers Power Company as a staff engineer in the Operating Service Department. I have the responsibility within the Company for technical review and coordination aspects of the proposed spent fuel pool expansion at the Big Rock Point Plant. My resume is attached.

I have primary responsibility for answering Interrogatory 7-3.

To the best of my knowledge and belief, the statements in this affidavit and in the response to the interrogatory listed above are true and correct.

Edward R Cooper
Edward R Cooper

Subscribed and sworn to before me this 2nd day of October, 1980.

Dorothy H. Bartkiss

Notary Public, Jackson County, Michigan, my commission expires March 26, 1983.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
CONSUMERS POWER COMPANY) Docket No. 50-155-OLA (Spent Fuel Pool Expansion)
(Big Rock Point Nuclear Power Plant))

CERTIFICATE OF SERVICE

I hereby certify that copies of CONSUMERS POWER COMPANY'S ANSWERS TO INTERROGATORIES (SET II) PROPOUNDED BY CHRISTA-MARIA, ET AL. in the above-captioned proceeding were served on the following by deposit in the United States mail, first-class postage prepaid, this 19th day of May, 1981.

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RELATED CORRESPONDENCE

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

E. Reactor Building Heating and Cooling System (Contd)

SV-9173	- Mot St Ct SV - Oper Inlet Damper Po - Pipe Way and Steam Drum Cool. Unit B	C-20
PO-9435	- Inlet Air Damper Positioner - Pipe Way and Steam Drum Cool. Unit A	Local
PO-9434	- Inlet Air Damper Positioner - Pipe Way and Steam Drum Cool. Unit B	Local
TC-9265	- Inlet Air TC - Pipe Way and Steam Drum Cool. Units - Operates CV-9459	C-20
CV-9459	- SWR Flow Regulation - Pipe Way and Steam Drum Cool. Units A and B	Local
TI-9329	- SWR Pipe Way and Steam Drum Cool. Units	Local
TI-9330	- SWS Pipe Way and Steam Drum Cool. Units	Local
YS-9642	- SWS Pipe Way and Steam Drum Cool. Units	Local

F. Reactor Building Ventilation System

Ventilation air to the reactor building is supplied at rates varying from 0 cfm to 14,500 cfm and is so controlled as to maintain a slight negative pressure within the building itself.

Two, full capacity, ventilation supply air fans are provided in this system and discharge ventilation air, through a grill, directly into the general areas of the sphere.

A ventilation building, or air shed, attached to the sphere in a line between the sphere and stack, contains the outdoor air louvers, filters and air heating coils for tempering incoming air. Each supply air fan suction has an open-shut damper positioner with initiation integral to the fan starting circuit, and inlet vanes controlled by indoor, outdoor differential pressure, to regulate air flow.

A reactor building vacuum relief line with damper control integral to supply air fan motor starting circuits is open to the building when both supply air fans are stopped, insuring a free path for outside air in the event that building vacuum must be relieved.

Outside air enters the system through outside air louvers in the air shed, to the air plenum. It is then passed through air filters ( ), equipped with DPS-9059 which alarms high differential pressure (replace reactor building supply air filters) on Panel

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

C-20. Air flow from the outside air plenum is controlled by HS-9004 on C-26 (HS-9004 is a maintained contact push button), which selects face damper and temperature control on either "A" or "B" air heating units and puts the alternate unit on a stand-by basis, in the event that the operating unit cannot maintain a preset minimum temperature. TS-9304-1 opens Unit "A" face damper on high temperature, downstream of the heater; TS-9304-2 opens the face damper of the alternate unit in the event of low discharge air temperature from the heater. TS-9303-1 and 9303-2 perform the same function on Unit "B."

Steam flow to the air heater coils is controlled by TS-9313, with a sensor located in the outside air plenum. Contacts of TS-9313 close on high temperature, energizing SV-9171 to close CV-9460 and CV-9461, simultaneously; low temperature opens contacts in TS-9313, de-energizing SV-9171 to open CV-9460 and CV-9461, allowing steam flow from the plant heating boiler to both air heaters. During the heating season, the steam valves for both coils are fully open and are not modulated to avoid freezing.

Downstream of the warm air, or bypass air plenum is a temperature controller (TC-9266) which regulates inlet dampers to the two air heaters (Unit "A," PO-9401; Unit "B," PO-9402) within the high and low settings of TS-9303, 1 and 2 (Unit "B") and TS-9304, 1 and 2 (Unit "A") and controls the bypass damper (PO-9415) around both air heaters. High temperature in the ventilation supply air opens the bypass damper.

TS-9302 alarms low ventilating air temperature on Panel C-20 and TI-9333 indicates same on Panel C-26.

Two 24" diameter pneumatic cylinder and spring-operated check and butterfly valves, connected in series, are provided for the supply air inlet and for the exhaust air outlet to isolate the reactor building ventilation air. These valves are located immediately outside the sphere and within the air shed. The valves are arranged for spring

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

closing and air opening. They are automatically closed by the safety circuit during all scrams and may be manually closed by HS-9001 (reactor building ventilation isolation valve control switch) or by "close penetrations and scram" (S5) on Section C of main console. Both ventilation inlet isolation valves (CV-4096, CV-4097) have position switches (PoS-9101, PoS-9102) controlling position indicator lights on Section 2, MCP.

Inside the reactor building, in the supply air duct, is a temperature element (TE-9362) with temperature indication (TI-9338) on C-20, and a pressure switch (PS-9209) which opens the inlet damper to and starts the stand-by fan motor on loss of vacuum in supply air duct to fans. Another pressure switch (PS-9202) alarms on Panel C-20 on loss of vacuum.

Two, full capacity, supply air fans located adjacent to the ventilation penetrations (A and B) driven by 10-hp motors with run, off, and stand-by switches, controlled at MCC Bus 2D, are connected to the supply air plenum discharge air through a grill directly into the reactor building general area. Inlet dampers to the supply air fans are solenoid controlled (SV-9161-PO-9410, Fan A; SV-9160-PO-9411, Fan B) full open or shut with solenoid energizing integral to the fan motor starting circuits so that, at anytime either fan motor is energized, the inlet damper is open.

Inlet vanes to permit varying the supply air rate from approximately 30% to full fan capacity are positioned by a differential pressure controller (DPC-9071; PO-9412-Fan A, PO-9413-Fan B) which controls supply air flow so as to maintain a slight negative pressure within the reactor building. Differential pressure is indicated (DPI-9081) and annunciated (DPS-9055-high, DPS-9056-low) on Panel C-20.

Differential Pressure Controller 9071 has two solenoid-operated (SV-9155, SV-9156) isolation valves on the external pressure

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

probe due to the possibility of reactor building pressure rupturing the controller and exhausting through the external probe. These valves are connected in series with the ventilation isolation valves and close on the same signals.

In the event of closure of reactor building isolation valves and a simultaneous build-up of negative pressure within the building, a differential pressure switch (DPS-9052 in C-26) is provided to annunciate at 1-1/2" Hg vacuum on (Panel) and a differential pressure switch (DPS-9051 in C-26) is provided to override all other signals and open supply air isolation valves (CV-4096 and CV-4097) to break vacuum at 2" Hg vacuum.

A vacuum relief is provided inside the reactor building, on the supply air duct, upstream of the supply air fans. The vacuum relief damper (PO-9414) is controlled by SV-9159 in such a manner that, when either supply air fan motor is energized, SV-9159 is energized, closing the vacuum relief damper. When both supply air fan motors are de-energized, SV-9159 is de-energized, opening the vacuum relief damper which gives outside air an unobstructed route into the reactor building, should DPS-9051 open the supply air isolation valves to relieve a building vacuum.

Ventilation air flow through the reactor building rooms and passages is equal to the induced draft exhaust flow to the building exhaust plenum (core spray tank room - 422) created by the plant exhaust fans in the stack. Reactor building's exhaust routes, flows and controls are as follows:

Control rod drive pump room (403), shutdown heat exchanger and pump room (417) and fuel pit filter room (419) exhaust through the same duct with a total flow of 460 to 2300 cfm. Each room has a manually positioned exhaust damper and the main duct has automatic damper positioning (PO-9408), operated by TC-9268 (operating range 80° F to 120° F, set point 100° F) located in the control rod drive pump room (403).

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

Scram valves and accumulator room (405), control rod access room (407), 200 cfm each with manual damper control only.

Core spray tank room (422, exhaust plenum room), 200 cfm, manual damper.

Regenerative and nonregenerative heat exchanger room (439), cleanup demineralizer pump room (426) 400 and 200 cfm, respectively, and manual damper.

Instrument room (442), storage room (441) 200 cfm each, manual damper - fuel pit, remote manual controlled (PO-9437, HS-9030 on C-20) damper, 2100 to 4600 cfm.

Pipe way and steam drum area, 4000 to 6000 cfm, remote manual controlled (PO-9404, HS-9026 on C-20) damper.

The reactor building's clean and dirty sumps have a 4" exhaust line, with a Crispin air valve, which goes directly to the exhaust plenum.

The reactor building's pipe way and steam drum area ventilation is provided by the pipe way and steam drum cooling units (described in RB heating and cooling system), with a small amount (2000 cfm, maximum) added around the reactor head shield plug by the refueling area H and C units. A total of 30,000 cfm cooled air is discharged into this area with 2000 cfm to the reactor annulus on a level with the bottom of the extension tank (HS-9028 on C-20, PO-9406), 1000 cfm below the reactor and 1000 cfm into the ion tubes which discharges back into the reactor annulus (HS-9027 on C-20, PO-9405). The remainder of this ventilation air is discharged into the pipe way and steam drum area at four elevations (elevation 595', PO-9441-HS-9034 on C-20; elevation 616', PO-9440-HS-9033 on C-20; elevation 635', PO-9439-HS-9032 on C-20; elevation 650', PO-9438-HS-9031 on C-20) along the south wall. Of the total air exhausted from this area (a 36" x 36" exhaust grill and duct located above the steam drum, SE corner), 4000 to 6000 cfm are routed to the plant exhaust system with the remainder being recirculated and

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

recooled in the drum and pipe way cooling units. Make-up air at a rate equal to the air exhausted (4000 to 6000 cfm) is constantly being introduced into this system by infiltration through minor openings and through a make-up damper (located on the south side of cooling unit PO-9403) which is controlled by a differential pressure controller (DPC-9072), set to maintain a slightly more negative pressure in the drum area than in the reactor building itself. Differential pressure which is indicated (DPI-9085) and alarmed (DPS-9053-high pressure, DPS-9054-low pressure) on Panel C-20. DPS-9054 (low pressure) will also override DPC-9072 on low pressure in the pipe way to open the make-up damper.

Temperature within the ion tubes (TE-9372 to TE-9378), the reactor annulus (TE-9352, 9355, 9363, 9364, 9365, 9366, 9367, 9368, 9369, 9370, 9371), the pipe way and steam drum area (TE-9351, 9355, 9357, 9360) are all indicated (TI-9338) on C-20.

So as to decrease air-borne radiation hazards to personnel during refueling operation, a downward flow of air is created around the reactor vessel head and ion tubes by closing pneumatic dampers PO-9405 (HS-9027 on C-20) and PO-9406 (HS-9028 on C-20). This will allow air from the general area to flow downward around the vessel head and through the ion tubes.

Steam leak detection for the reactor building's pipe way and drum area is provided by a high dew-point detector (ME-9601, a Foxboro Dewcell model) which alarms MS-9626 - Minneapolis-Honeywell) and is a recorced (MR-9621) - Minneapolis-Honeywell, RTD indicating with 30-day recording chart) on Panel C-20 with its sensor located in the pipe way air recirculation, recooling duct.

The following instrumentation has been included in the reactor building ventilation description:

TC-9266	- Reactor Building Vent Air	C-26
TC-9268	- RB Control Rod Drive Pump Room	Local

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

DPS-9051	- RB Vacuum Breaker	C-26
DPS-9052	- RB Vacuum Breaker	C-26
DPS-9053	- RB Pipe Way High Pressure	C-20
DPS-9054	- RB Pipe Way Low Pressure	C-20
DPS-9055	- RB High Pressure	C-20
DPS-9056	- RB Low Pressure	C-20
DPS-9059	- RB Supply Air Filters	C-26
DPI-9081	- RB Differential Pressure	C-20
DPI-9082	- RB Supply Air Filters	C-26
DPI-9085	- RB Pipe Way Differential Pressure	C-20
DPC-9071	- RB Differential Pressure	C-20
DPC-9072	- RB Pipe Way Differential Pressure	C-20
TS-9302	- Reactor Building Vent Air Low Temperature	C-26
TS-9303	- RB Ventilating Air Heating Coil Low Temperature	C-26
TS-9304	- RB Ventilating Air Heating Coil Low Temperature	C-26
TS-9313	- RB Ventilating Air Steam Coil	C-26
TS-9305	- RB Shell Low Temperature	Local
TS-9306	- RB Shell Low Temperature	Local
SV-9151	- RB Ventilating Air Isolation Valve	C-26
SV-9152	- RB Ventilating Air Isolation Valve	C-26
SV-9157	- RB Ventilating Air Coil Damper	C-26
SV-9158	- RB Ventilating Air Coil Damper	C-26
SV-9159	- RB Vacuum Breaker Damper	C-22
SV-9160	- RB Supply Air Fan Isolation Damper	C-22
SV-9161	- RB Supply Air Fan Isolation Damper	C-22
SV-9171	- RB Ventilating Air Steam Coils	C-26
PO-9412	- RB Supply Air Fan "A" Inlet Vanes	Local
PO-9413	- RB Supply Air Fan "B" Inlet Vanes	Local
PO-9401	- RB Ventilating Air Coil Damper	Local
PO-9402	- RB Ventilating Air Coil Damper	Local
PO-9403	- RB Pipe Way Make-up Air Damper	Local

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

PO-9404	- RB Pipe Way Exhaust Damper	Local
PO-9406	- Reactor Annulus Supply Air Damper	Local
PO-9408	- RB Control Rod Pump Room Damper	Local
PO-9410	- RB Supply Air Fan "A" Isolation Damper	Local
PO-9411	- RB Supply Air Fan "B" Isolation Damper	Local
PO-9414	- RB Vacuum Breaker Damper	Local
PO-9415	- RB Ventilating Air Bypass Damper	Local
PO-9437	- Fuel Pit Exhaust Damper	Local
PO-9405	- Ion Tubes Supply Air Damper	Local
HS-9001	- Ventilating Isolation Valve Control	C-01
HS-9004	- RB Ventilating Air Heating Coils	C-26
HS-9026	- RB Pipe Way Exhaust Damper	C-20
HS-9028	- Reactor Annulus Supply Air Damper	C-20
HS-9030	- Fuel Pit Exhaust Air Damper	C-20
HS-9031	- RB Pipe Way Supply Air Damper	C-20
HS-9032	- RB Pipe Way Supply Air Damper	C-20
HS-9033	- RB Pipe Way Supply Air Damper	C-20
HS-9034	- RB Pipe Way Supply Air Damper	C-20
HS-9027	- Ion Tubes Supply Air Damper	C-20
CV-9460	- RB Ventilating Air Heating Coil Steam Valve	Local
CV-9461	- RB Ventilating Air Heating Coil Steam Valve	Local
CV-9496	- RB Ventilating Air Isolation Check Valve	Local
CV-9497	- RB Ventilating Air Isolation Butterfly Valve	Local
TI-9333	- RB Ventilating Air Supply	C-26
TI-9338	- RB Pipe Way and Reactor Annulus	C-20
PoS-9101	- Ventilating Air Isolation Valve Indicator	
PoS-9102	- Ventilating Air Isolation Valve Indicator	
TE-9351	- RB Pipe Way and Reactor Annulus	Local
TE-9352	- RB Pipe Way and Reactor Annulus	Local
TE-9353	- RB Pipe Way and Reactor Annulus	Local
TE-9354	- RB Pipe Way and Reactor Annulus	Local

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

F. Reactor Building Ventilation System (Contd)

TE-9355	- RB Pipe Way and Reactor Annulus	Local
TE-9357	- RB Pipe Way and Reactor Annulus	Local
TE-9358	- RB Pipe Way and Reactor Annulus	Local
TE-9359	- RB Pipe Way and Reactor Annulus	Local
TE-9360	- RB Pipe Way and Reactor Annulus	Local
TE-9362	- RB Pipe Way and Reactor Annulus	Local
TE-9363	- RB Pipe Way and Reactor Annulus	Local
TE-9364	- RB Pipe Way and Reactor Annulus	Local
TE-9365	- RB Pipe Way and Reactor Annulus	Local
TE-9366	- RB Pipe Way and Reactor Annulus	Local
TE-9367	- RB Pipe Way and Reactor Annulus	Local
TE-9368	- RB Pipe Way and Reactor Annulus	Local
TE-9369	- RB Pipe Way and Reactor Annulus	Local
TE-9370	- RB Pipe Way and Reactor Annulus	Local
TE-9371	- RB Pipe Way and Reactor Annulus	Local
TE-9372	- Seven Ion Tubes	Local
TE-9373	- Seven Ion Tubes	Local
TE-9374	- Seven Ion Tubes	Local
TE-9375	- Seven Ion Tubes	Local
TE-9376	- Seven Ion Tubes	Local
TE-9377	- Seven Ion Tubes	Local
TE-9378	- Seven Ion Tubes	Local
PS-9202		
PS-9209		
ME-9601	- RB Pipe Way Steam Leak	Local
MS-9626	- RB Pipe Way Steam Leak	C-20
MR-9621	- RB Pipe Way Steam Leak	C-20

G. Ventilation Exhaust

Ventilation exhaust from all plant areas, except a few specific ones already described, is routed to an exhaust plenum in the base of the 240' concrete vent stack. From this plenum, either one of

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

G. Ventilation Exhaust (Contd)

two motor-driven plant exhaust fans takes a suction and discharge up the stack. Total air flow out the stack is 30,000 cfm. This continuous air flow rate is maintained by a set of automatic dampers (PO-9423 via PC-9222) admitting from 0 cfm to 19,100 cfm of outside air to the plenum, compensating for variations in ventilation exhaust air flow. Ventilation exhausts to this plenum are:

Plant Exhaust Fan Room	16" x 8" 0-500 Cfm	Temperature Controlled
Containment Building	24" Diam 10,000-14,500 Cfm	Diff Press. Controlled
Cond Demineralizer Room	12" Diam 500 Cfm	
Radwaste Area	18" Diam 1500-4000 Cfm	Manually Controlled
Balance of Turbine and Service Bldg	30" Diam 9900-19,000 Cfm	Manually Controlled

In addition to manual control of the exhaust from the turbine and service buildings, a flow limiting element (FE-9592) will regulate the exhaust from the following areas to 3900 cfm through FC-9571 which will position PO-9433:

Decontamination Area Hood	- 500 Cfm
Shop (Rooms 103, 104 104A)	- 2000 Cfm
Turbine LO (Room 112)	- 200 Cfm
LO Storage (Room 111)	- 200 Cfm
Laundry and Access Control	- 1000 Cfm

In addition to the temperature-controlled fan (PO-9420) room dampers (0-500 cfm in above table), further control over fan room temperature and air flow is available in the manually operated louvers in the outside doors and an electric unit heater. This heater has a temperature control (TC-9275) and is powered from Panel P-14, MCC Bus 1D, Breaker 52-1D33.

The containment building exhaust goes to the stack exhaust plenum from an exhaust plenum in the enclosure via a 24" pipe, equipped with a flow damper (PO-9409) controlled by PC-9221, on the

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

G. Ventilation Exhaust (Contd)

enclosure exhaust plenum. This flow damper controls the amount of exhaust air to maintain a suitable pressure in the exhaust plenum ( ), varying the flow to accommodate changes in supply air flow. Since supply air to the enclosure is controlled by a differential pressure controller (DPC-9071) to maintain a slight negative pressure in the building, it is this dPC which exercises effective control of the exhaust air flow. The 24" containment building exhaust line also has a pair of air-operated, solenoid controlled (SV-9153 and SV-9154) isolation valves (CV-4094 and CV-4095). CV-4094 is a spring-closed check valve, checking outward air flow when closed. CV-4095 is a spring-closed butterfly type valve. These valves are closed by tripping of the solenoids by the safety system upon all scrams and may also be closed by HS-9001, reactor building ventilation isolation valve control switch, on Section "A" of the control console. These valves have position switches (PoS-9103 and PoS-9104) and controlling position indicator lights on Section 2, MCP. In addition, this 24" vent exhaust line has temperature element (TE-9361) with indication (TI-9338) on Control Panel C-20, and a flow element (FE-9591), with indication (FI-9561) on Panel C-20. Control Panel C-20 is next to MCC Bus 2D, near the personnel lock.

Each of the plant exhaust fans has a pneumatic-operated (Fan A, PO-9421; Fan B, PO-9422), solenoid controlled (A, SV-9167; B, SV-9168) discharge damper. The solenoid is in parallel with the fan motor control circuit, and opens the damper whenever the motor is started, whether by hand switch or automatically. With a fan motor hand switch in the "stand-by" position, and the other fan switch in the "run" position, the fan on "stand-by" will be started automatically whenever the pressure in the stack exhaust plenum increases to a set value( ), indicating failure of the other fan (PS-9204). Another pressure switch (PS-9203) operates an alarm - plant exhaust fans trouble - on Section 2 of MCP. This same annunciator will also be tripped by Overload Contact

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Description (Contd)

G. Ventilation Exhaust (Contd)

42-1D15 in the breaker for Fan A, or 42-1D25 for Fan B. The hand switches for these fan motors are on the breakers in Panel P-14, Bus 1D. There is a locally mounted pressure indicator (PI-9214) at the exhaust plenum indicating the pressure in the plenum.

H. Remote Area Heating

Tabulated below are certain areas or rooms which have locally mounted and controlled electric unit heaters with fans.

Area	Wattage	Power Feed	Power Breaker	Temp Controller
Condensate and Demineralizer Water Tank's Valve Pit	1 Kw	Lighting Panel 3L	21	TS-9314
Post-Incident Cooling Equipment Room	5 Kw	MCC Bus 1D	52-1D34	
Screen House	24 Kw	MCC Bus 2C	52-2C23	
Stack (Instrument Room)	5 Kw	MCC Bus 1D	52-1D33	TC-9275
Diesel Generator Room	6 Kw	MCC Bus 2C	52-2C26	
Well House	1 Kw	Lighting Panel 31L	1	
Calibration Facility	5 Kw	MCC Bus 1D	52-1D35	

There are also space heaters in the motors of Circulating Water Pumps No. 1 and No. 2, totaling 480 watts, fed from Lighting Panel 10L, Breaker No. 1, in the screen house.

Principle of Operation

The ventilation system for the three main buildings (reactor, turbine and service buildings) of the Big Rock Point Nuclear Plant has been designed to take advantage of natural, forced and induced ventilation in such a manner as to create a constant air flow from areas with negligible air-borne radioactivity potential to areas of higher air-borne radioactivity potential. This system of ventilation will serve to minimize any spread of air-borne radioactivity through an induced draft exhaust system from various areas throughout the plant to the stack.

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Principle of Operation (Contd)

The reactor building's ventilation system is forced and induced only and is designed for the same inward air flow from the periphery to the center of the building. Provision has been made for manual reactor building ventilation isolation and for automatic isolation in the event of any scram.

The turbine and service buildings are heated by forced hot air and convection heaters controlled by pneumatically operated room or area thermostats. The primary plant heating medium is an oil-fired package boiler which supplies 3180 pounds per hour of 15 psig steam to the various heating units.

Cooling air to the service building is provided by circulating service water through coils of the various heating and cooling units with forced cooled air following the ventilation air flow (control room the only exception). Turbine room cooling during the summer months may be achieved with natural circulation (due to convection) by opening louvers near ground level and exhausting this air through manually controlled louvers near roof level along the west side of the building.

The reactor building's heating and cooling systems are somewhat more complex due to possible isolation and the fact that the reactor annulus and steam drum and pipe way area must be cooled throughout any periods of reactor operation at power. Two air cooling units are provided for this area, utilizing plant service water flow through cooling coils, as the primary cooling medium. Five area heating and cooling units served by a closed loop demineralized water heating and cooling agent serve to heat or cool the general area of the sphere (area outside the concrete structure). Heating or cooling is achieved by routing either steam or service water through the tube side of one or both heat exchangers of the closed loop system and the water is circulated by one or both recirculation pumps to provide either a heating or cooling agent to these forced air units. As a further source of winter heating, incoming ventilation air is tempered by passing it across heating coils located in the ventilation air shed.

CONVENTIONAL PLANT SYSTEMS (Contd)

HEATING AND VENTILATING SYSTEM (Contd)

Principle of Operation (Contd)

The plant ventilation exhaust system terminates at a 240' stack which consists of two full-capacity vane axial fans, make-up air damper with automatic controls and an exhaust plenum where ducts from areas and systems terminate. An exhaust flow of 30,000 cfm out the stack is maintained with plant ventilation being of secondary importance to off-gas dilution. When ventilation demands fall below maintained air flow, the deficit is compensated for by make-up air.

Operating Instructions

A. Steam Heating Boiler

To Start From Summer Lay-Up

1. Check Breaker 52-1A33 closed.

2. Check make-up water supply to condensate tank open and drain closed. Ascertain tank level normal on gauge glass.

3. Check boiler water gauge glass valves open, drains closed and check fuel oil filter for sediment.

4. Close boiler control breaker and one feed pump breaker on panel below burner - make sure sufficient make-up is supplied to prevent pump running dry.

5. When boiler is filled to proper level (3-1/2" in gauge glass) and feed pump stops, close other feed pump breaker and valve in fuel oil supply and bypass lines.

6. Close burner motor breaker - burner should start. If it does not, attempt to reset "Fireye" controller.

7. Observe that burner shuts off at 14.5 psig. Open 6" gate valve steam outlet. Burner should restart at 10.5 psig.

8. If controls do not function, as outlined above, refer to manufacturer's instructions (Kewanee 876 and Iron Fireman burner control).

Operating Checks

1. Gauge cock and blow down valves on water column and water glass - blow down daily.

2. Blow down or drain approximately ten quarts of water from boiler - monthly.

Consumers Power Company

RELATED CORRESPONDENCE

COPY

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

November 29, 1978

DOCKETED USNRC MAY 19 1981 Office of the Secretary Docketing & Service Branch

Director, Nuclear Reactor Regulation
Att: Mr Dennis L Ziemann, Chief
Operating Reactors Branch No 2
US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - ADDITIONAL INFORMATION RELATIVE TO FUEL HANDLING ACCIDENT IN CONTAINMENT

Your letter dated May 22, 1978 requested Consumers Power Company to provide additional information relating to the engineered safety features which are available to mitigate the consequences of a postulated fuel handling accident inside containment (FHAIC) at the Big Rock Point Plant. The purpose of this letter is to provide the requested information.

Your letter requested the following four items:

1. Provide system descriptions (including P&IDs and control system logic and schematic diagrams) and analysis to demonstrate the extent to which existing systems required to function during the FHAIC comply with the criteria established in the Hazards Summary Report for engineered safety features.

2. Provide a description of the extent to which these systems will comply with the current NRC criteria for engineered safety feature systems which are listed in the NRC Standard Review Plan, NUREG-75/087.

3. Explain why it is not necessary to have these systems meet the current NRC criteria for ESF systems.

4. Information regarding proposed changes to the existing plant should be provided. This information should be as described in Regulatory Guide 1.70.

DUPE OF 7812040220

Response 1

System descriptions are provided via the following documents:

0740G30114 Sheet 2 (Attachment I)	Schematic Diagram - Air, Screen, Fire and Post-Incident Systems
0740G40125 Rev P (Attachment II)	Reactor Building Ventilating, Heating and Cooling System P&I Diagrams
Sketch No 1 (Attachment III)	Logic Diagram for Air Supply Valves, Scheme 8501
Sketch No 2 (Attachment IV)	Logic Diagram for Exhaust Vent Valves, Scheme 8512
Analysis No I (Attachment V)	Written System Logic Description

An analysis of the existing containment isolation system shows that recent modifications to the system (ie, automatic isolation on high radiation, vacuum relief through the 24-inch supply and exhaust lines) have enhanced the system's ability to comply with the criteria established in the Hazards Summary Report.

The Hazards Summary Report describes two 24-inch ventilation openings; one for supply, the other for exhaust, which are closed automatically within six seconds after any scram signal or loss of power. As described in the above documents, these two closing features are still present with the additional feature of high radiation closing also available. The Hazards Summary Report also describes a vacuum relief line which is intended to prevent excessive external pressure from causing damage to the containment's integrity. The vacuum relief modification has also enhanced this system's ability to comply with the vacuum relief criteria established in the FHSR by providing two independent vacuum relief lines.

It is, therefore, concluded that the existing containment isolation system that is required to function during the FHAIC is in compliance with the criteria established in the Hazards Summary Report for engineered safety features.

Response 2

The Containment Isolation System (CIS) is the only engineered safety feature system that is required to function to mitigate the radiological consequences of an FHAIC. An analysis of the NRC Standard Review Plan, NUREG-75/087, has shown that the following current NRC criteria need to be considered regarding the Containment Isolation System:

10 CFR Part 50 Appendix A, General Design Criteria, Criterion 23 - Protection System Failure Modes

10 CFR Part 50 Appendix A, General Design Criteria, Criterion 56 - Primary Containment Isolation

Regulatory Guide 1.53, Application of the Single Failure Criterion to Nuclear Power Plant Protection Systems

IEEE Standard 379-1977, Standard Application of the Single Failure Criteria to Nuclear Power Generating Station Class 1E Systems

Criterion 56 requires that lines connecting directly to the containment atmosphere through the containment be provided with two containment isolation valves, one inside containment, the other outside containment. The criterion further requires that valves outside containment be located as close to the containment as practical and that the automatic isolation vlaves shall be "fail-safe" upon loss of actuating power. The Big Rock Point Plant has two such lines penetrating the containment. They are the air supply and exhaust lines. Each line has two isolation valves in series (see 0740G40125, Attachment II) that are both located outside of containment, as close to the containment as practical. The redundant isolation valves are automatically controlled via electric signals controlling air to the pneumatic valve operators. The valve operators are "spring to close" which allow automatic closure on loss of air and/or electric power. The existing system meets Criterion 56 with the exception of valve location.

The remaining criteria concern the single failure and the failure mode. It is required that the components in the CIS have a failure mode that is "fail-safe." It is also required that the redundant valves have control circuitry that meets the single failure criterion. As it applies to this case, the single failure criterion means that containment isolation shall not be prevented due to the failure of any single component in the scheme. (See schemes on Attachments III and IV.) Analysis II (Attachment VI) has been performed to provide a single failure analysis of the containment isolation system schemes. The analysis has been performed in accordance with IEEE Standard 379-1977.

Response 3

As noted in Response 2, the containment isolation system design complies with Criterion 56 except for the location of the isolation valves. The existing design at Big Rock Point places both isolation valves outside the containment whereas the current criterion requires that one of these valves be located inside containment. The existing isolation valves are located as close to the containment as practical. It is not credible to assume that the conditions inside containment during fuel handling activities could be severe enough to compromise the physical integrity of the ventilation piping between the containment and the first isolation valve. Consumers Power Company, therefore, considers that the existing valve location design provides adequate assurance that Part 100 limits will not be exceeded as a result of a fuel handling accident inside containment.

Analysis II (Attachment VI) identifies the fact that the existing ventilation isolation system control circuitry does not meet the single failure criteria as established by IEEE Standard 379-1977. The postulated failures that do not meet single failure criteria are "stuck" contacts, mechanical failure of the solenoid valves and "hot shorts."

The probability of each of these failures is low. The probability (per Rasmussen) of a manual switch contact failing to transpose is 1×10^{-5}/demand. There is also a very low probability that the contacts on a relay will stick or "weld" closed. The probability (per Rasmussen) of the solenoid valve failing to operate is 1×10^{-3}/demand. This probability includes both electrical and mechanical failures. Since this application is concerned only with mechanical failures, and since they are less likely to occur than electrical failures, the probability of mechanical failure is considered extremely low. The probability (per Rasmussen) of "hot shorts" or shorts to power is 1×10^{-8}/hour.

Three events are necessary in connection with fuel handling in order to exceed Part 100 limits. First, a postulated failure of the crane is required while moving a fuel transfer cask over the reactor vessel with the head removed. Second, a postulated failure of the safety brake is also required, before the cask could possibly be dropped into the reactor. And third, the postulated failure of one of the ventilation isolation control valves, for at least fourteen minutes, is also required. The need for these three events to occur simultaneously further reduces the probability of exceeding Part 100 limits.

As a result of the above analysis, Consumers Power Company considers that it is not necessary to have the containment isolation system meet current NRC criteria for ESF systems in order to mitigate the radiological consequences of a fuel handling accident inside containment.

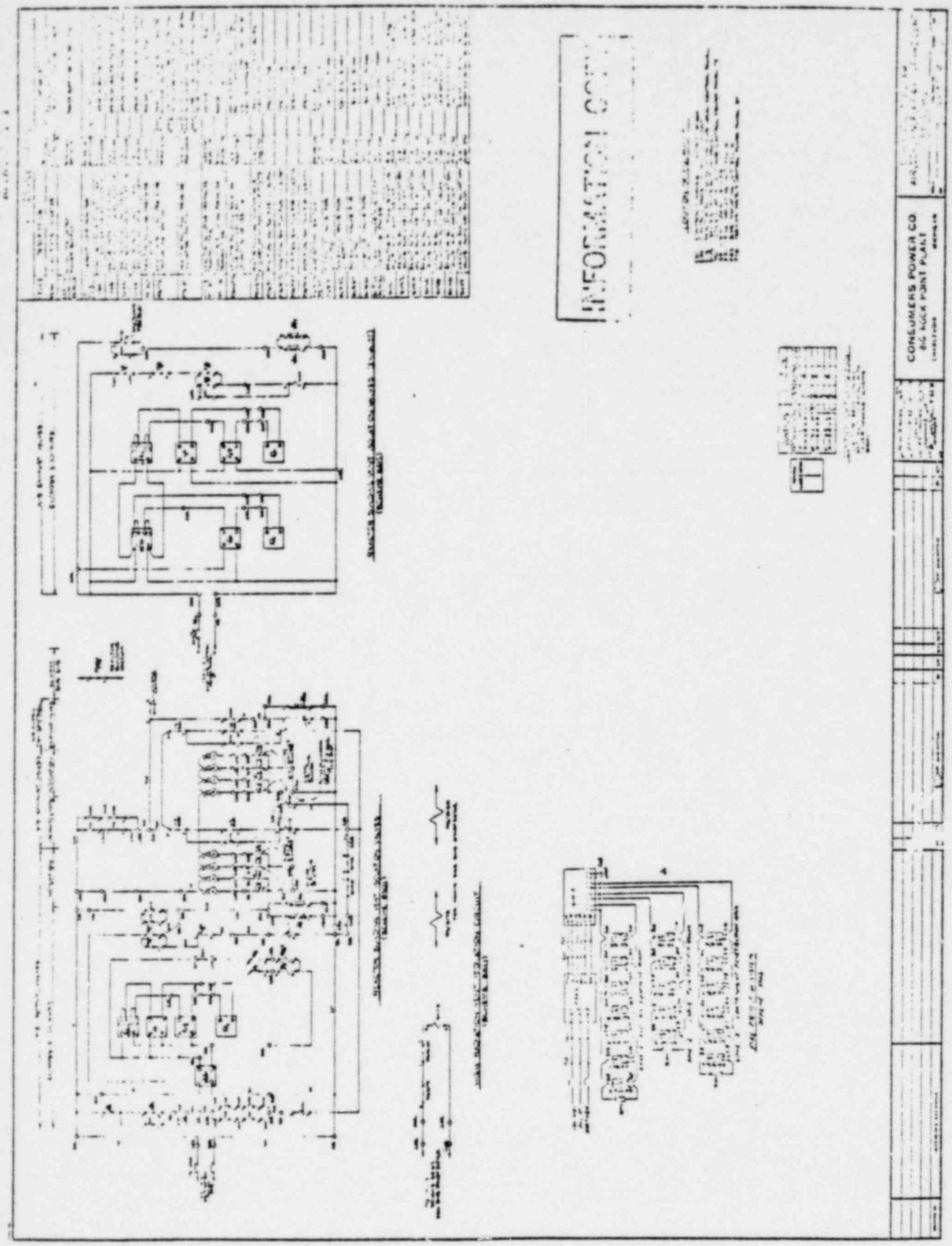
Response 4

No changes to the existing plant are planned.

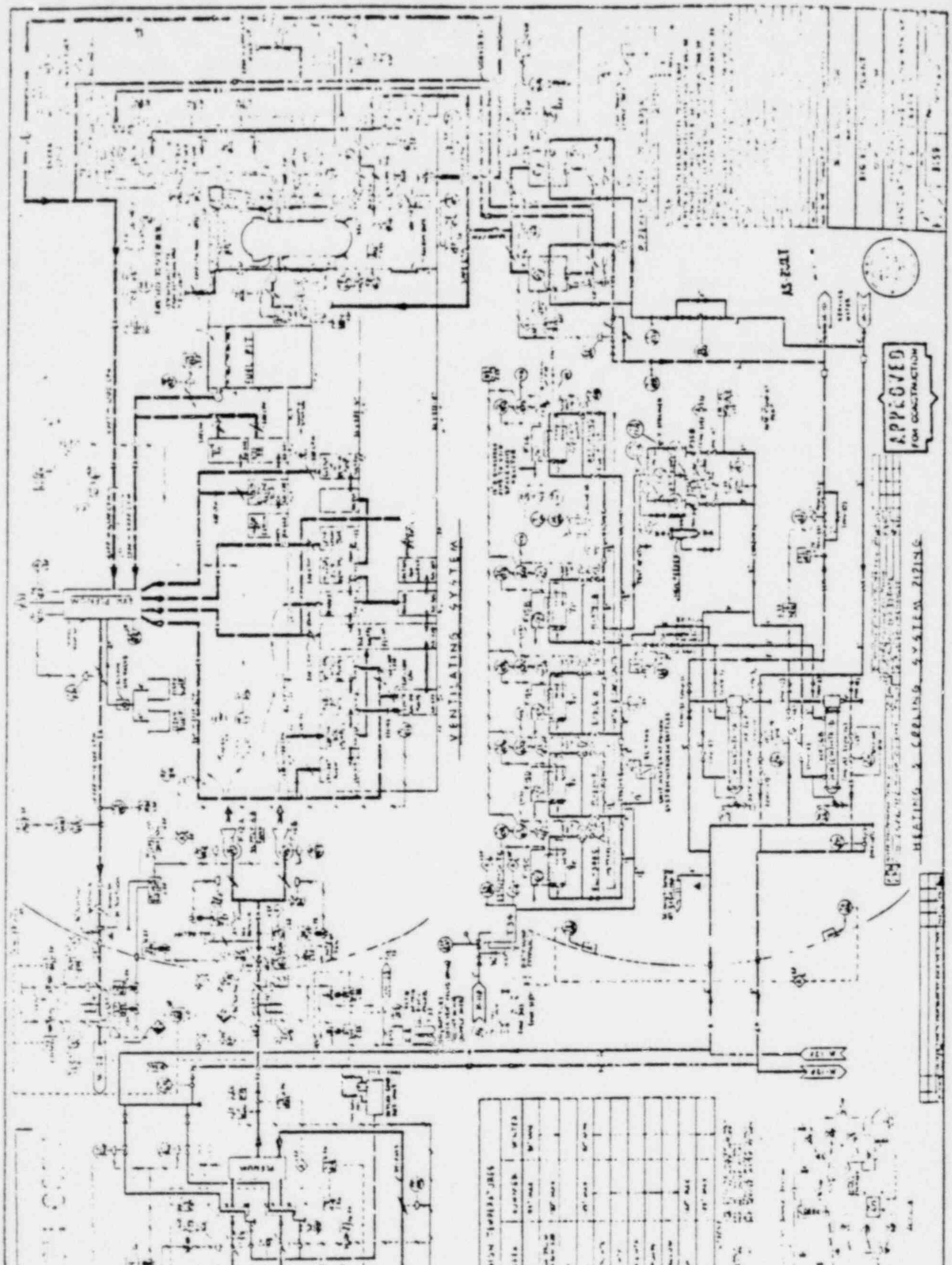
David A Bixel (Signed)

David A Bixel
Nuclear Licensing Administrator

CC: JGKeppler, USNRC



POOR ORIGINAL



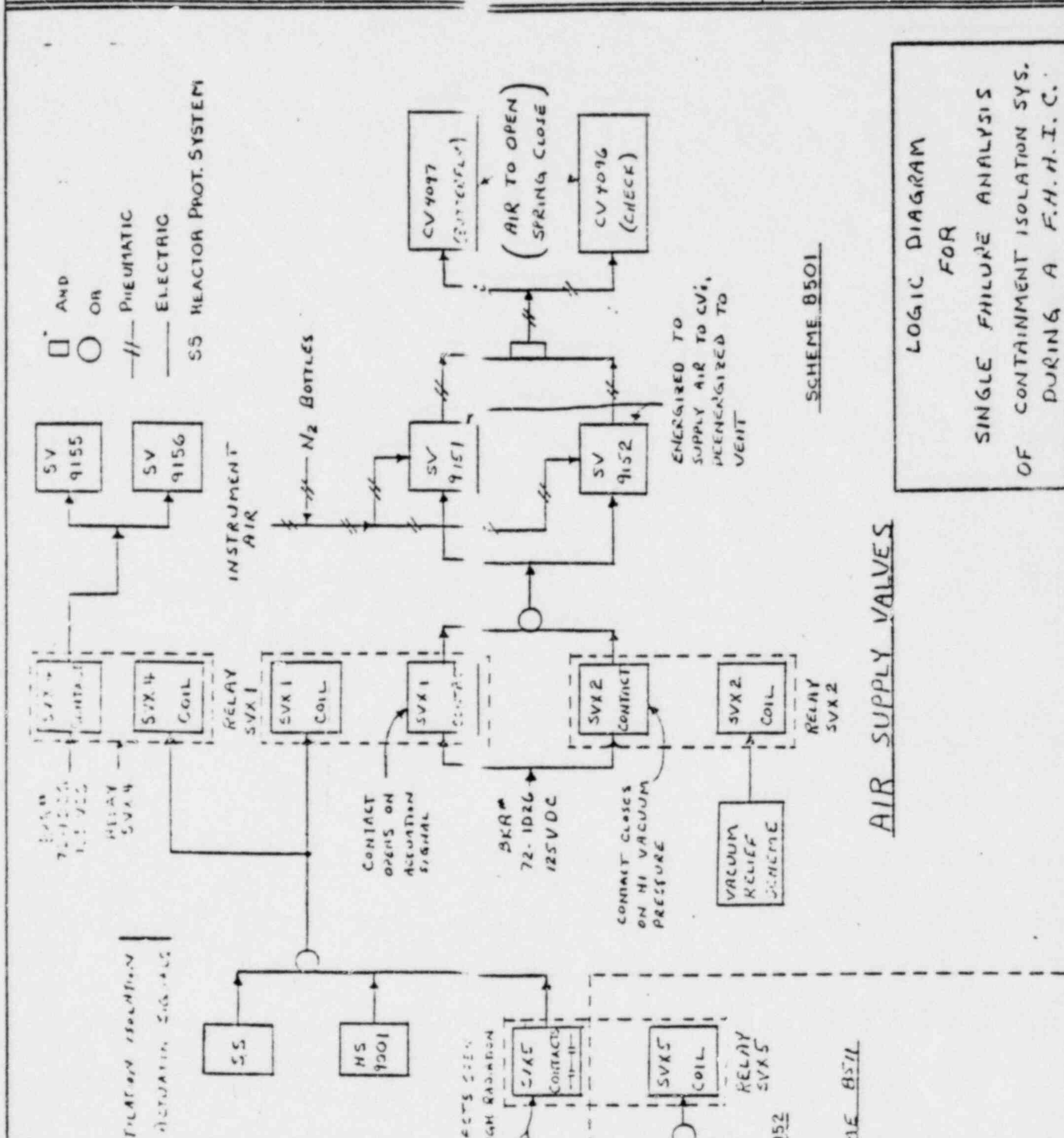
POOR ORIGINAL

ATTACHMENT III

Consumers Power Company

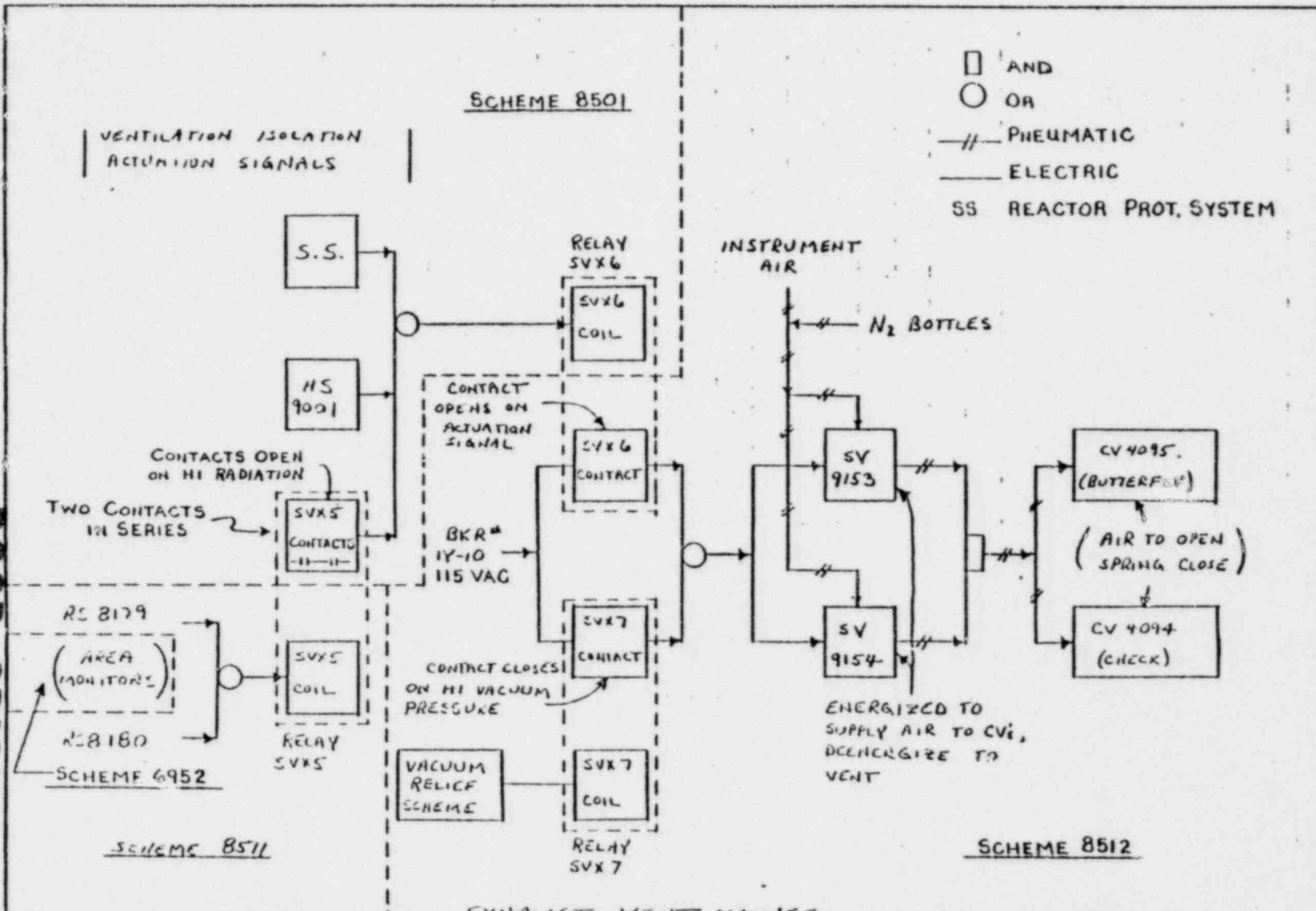
OPERATING SERVICES DEPARTMENT
PRODUCTION & TRANSMISSION
1945 W PARNALL RD
JACKSON MI 49203

Sketch No 1 Cal No -
Project No F.H.A.I.C.
Originator MR ...
Reviewed by —
Approved by —
Date 9/26/78 Page 1 of 1



POOR ORIGINAL

ATTACHMENT IV



LOGIC DIAGRAM FOR SINGLE FAILURE ANALYSIS OF CONTAINMENT ISOLATION SYS DURING A F.H.A.I.C.

Consumers Power Company

OPERATING SERVICES DEPARTMENT
PRODUCTION & TRANSMISSION
1945 W. PARNALL RD
JACKSON MI 49203

Sketch No 2 Cat No —
Project No F.H.A.I.C.
Originator MKW
Reviewed by —
Approved by —
Date 9/21/77 Page 1 of 1

POOR ORIGINAL

ANALYSIS I

System Logic Description

I. Air Supply Valves Logic Description

The Logic Diagram for the air supply valves, Scheme 8501, is shown on Sketch No 1, Attachment III. The two series air supply valves (see 0740G40125, Attachment II) to the containment are labeled CV-4096 and CV-4097. One valve is a butterfly, the other is a check. These are pneumatically operated valves that require air to open but are spring to close. This feature makes the isolation valves "fail-safe" on loss of instrument air.

The CVs can be opened with air from either of two parallel solenoid valves labeled SV-9151 and SV-9152. Air is supplied to these solenoid valves via an instrument air line or a connection to a bank of nitrogen bottles.

Power to the solenoid valves is supplied from 125 V d-c BKR #72-ID26 via parallel contacts SVX1 and SVX2. The closure of either of these contacts will energize the SVs, permitting the CVs to open. SVX1 relay is energized via proper alignment of contacts from the SS (closed under normal conditions, open during scram), HS 9001 (closed with switch in "open" or "normal after open" position), and SVX5 contact (closed on normal radiation levels, open on high). An open contact on any one of these devices provides an actuation signal that closes the CVs.

The SVX2 relay is energized on a vacuum relief signal which causes the SVX2 contact to close which in turn energizes the solenoid valves and opens the CVs. The relay is energized on increasing vacuum at -1.00 psig and is de-energized on decreasing vacuum at -0.70 psig. The auxiliary relays PISX1/173 and PISX2/173, as shown on 0740G30114, Attachment I, provide the necessary contacts for the desired deadband and annunciation.

II. Exhaust Vent Valves Logic Description

The Logic Diagram for the exhaust vent valves, Scheme 8512, is shown on Sketch No 2, Attachment IV. The logic description is identical to the one above for air supply valves with the exception of the appropriate equipment numbers and the auxiliary relays on the vacuum relief scheme. These relays are not required inasmuch as no additional annunciation is required for this scheme.

ANALYSIS II

I. Single Failure Analysis for Air Supply Valves, Scheme 8501

A basic requirement in the design of a Class 1E system is that no single failure of a component will interfere with the proper operation of an independent redundant counterpart or system. The redundant counterparts in this case are the series isolation valves CV-4096 and CV-4097. The point of this analysis is to determine if these valves will have the proper failure mode in the event of a single failure of a component.

At this point it is appropriate to emphasize that the failure mode of the CVs is in the closed position. The closed position is required for containment isolation. The valve operator is air to open and spring to close.

Independence and redundancy are the principal means of meeting the single failure criteria. The redundancy and independence of the CVs allows them to meet the single failure criteria as one set of components.

Air is supplied to the CVs via parallel solenoid valves, SV-9151 and SV-9152. The solenoids are energized to supply air to the CVs to maintain them in an open position. A common type of solenoid failure would involve having a coil wire "open" causing the solenoid to de-energize, thereby allowing the CV to "fail-safe." A less common but credible type of failure would involve a mechanical failure of the core assembly that prevents the solenoid from cycling to vent the air to the control valve when the solenoid is de-energized. This type of failure would not allow the CV to close. Inasmuch as either SV can supply air to both CVs and either SV is postulated to failure, the single failure criteria is not met at this point.

The effect of interfacing systems on the CIS must also be analyzed for single failure. The instrument air supply system is one such interfacing system. Inasmuch as air is not required to perform the containment isolation function, the instrument air supply does not have to meet single failure.

Relay contact SVX2 will energize the SVs on a high vacuum pressure signal. Energizing the SVs opens the CVs. Opening the CVs, during this condition only, allows air into the containment. As the vacuum condition is eliminated the CVs will again close to mitigate the release of contaminants to the atmosphere. The relay is normally de-energized and cannot be expected to fail electrically. A second type of failure mode to be considered is when the relay is energized during a vacuum relief signal and then the signal is removed. It can be postulated that the relay contact could fail closed, thereby allowing the CVs to remain open after the vacuum is gone. If the contact is postulated to stick closed the single failure criteria is not met.

Relay SVX1 is normally energized to close the SVX1 contact which energizes the SVs and allows the CVs to open. The relay is energized through the closed contacts of the SS (Reactor Protection System), HS-9001, and relay SVX5. Opening any of these contacts causes relay SVX1 to de-energize, thereby de-energizing the SVs and closing the CVs. The two postulated failure modes of the relay SVX1 are the same as relay SVX2 above. If the coil fails electrically the contact will open and circuit will "fail-safe." If the contact is postulated to stick closed, the power to the SVs would be maintained and the single failure criteria would not be met for this component.

As with the above contacts, it can be postulated that the contacts for the HS-9001 or SVX5 could fail in a closed position, thereby not permitting the appropriate isolation signal to de-energize SVX1 which de-energizes the SVs and allows the CVs to close. However, since these contacts represent redundant methods of providing the necessary actuation signal, a failure of either would not prevent closure of the isolation valves.

The SS signal is provided through two series contacts, thereby providing redundancy and meeting the single failure criteria.

The high radiation signal to the SVX5 relay is provided through two series contacts from independent area monitors, thereby providing redundancy and meeting the single failure criteria.

The power supply for the isolation scheme is a 125 V d-c breaker. A postulated loss of power would de-energize the SVs and allows the CVs to "fail-safe." Inasmuch as power is not required to provide containment isolation, the single failure criteria for this component is met.

In summary, the single failure criteria is not met due to the configuration of the following components: SV-9151, SV-9152, SVX2 contact, and SVX1 contact. A failure of either SV to cycle properly could prevent the air to the CV from being vented and the CVs would remain open. A failure of the contacts to open in the remainder of the above components could allow the SVs to remain energized and the CVs would remain open.

As a result of the lack of redundancy in the control wiring to the redundant CVs, it is also necessary to consider a postulated "hot short" in the wiring that could allow the SVs to remain or become energized independent of the ventilation isolation actuation signal. This failure also results in a nonconformance with the single failure criteria.

II. Single Failure Analysis for Exhaust Vent Valves, Scheme 8512

The exact similarity between Schemes 8501 and 8512 would result in an identical analysis for both. Therefore, the analysis for Scheme 8512 will not be separately detailed.

III. Conclusions

In performing a systematic single failure analysis in the format suggested by IEEE Standard 379-1977, the following has been determined:

1. The required protective function is containment isolation during a postulated fuel handling accident inside containment.

2. The required protective action is the closure of the containment isolation valves.

3. The closure of the isolation valves is the only system available to provide the protective function.

4. Redundant isolation valves exist in the system, but there is no clearly defined independence or redundancy in the control circuitry that operates the isolation valves.

5. After conducting a systematic evaluation of potential failures, the single failure criteria is not met for the scheme as a whole. (Several components do, however, meet the single failure criteria separately.)

The following assumptions were made in this single failure analysis:

1. There are no identified nondetectable failures inherit to the system design.

2. The system is qualified to withstand the affects of a seismic event without failure to any of its components.

It is, therefore, not required to analyze the system in the presence of event-caused failures and/or identified nondetectable failures coincident to any single failures.

Consumers Power Company

RELATED CORRESPONDENCE

COPY

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

December 29, 1978

Director, Nuclear Reactor Regulation
Att: Mr Dennis L Ziemann, Chief.
Operating Reactors Branch No 2
US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - CONTAINMENT
PURGING DURING NORMAL PLANT OPERATION;
RESPONSE TO NRC LETTER DATED NOVEMBER 29, 1978

Your letter dated November 29, 1978, discussed recent problems involving purging of reactor containment vessels during normal plant operation. Specifically, you discussed recent events in which safety actuation signals were inadvertently overridden when performing such purging. Your letter requested that power reactor licensees commit to a course of action involving termination of all containment purging during normal plant operation or specific justification of the acceptability of such purging.

Big Rock Point is designed to continuously ventilate the reactor containment building. Plant design utilizes continuous ventilation to provide contamination control for access to operating equipment and cooling to maintain critical equipment operable. During warm weather, the continuous ventilation is essential to maintain the containment temperature within the limits described in the Final Hazards Summary Report for large break accident initial conditions. During winter months, inlet air must be heated to maintain containment temperature above the lower limit considered in the Final Hazards Summary Report.

Standard Review Plan Section 6.2.4 and Branch Technical Position CSB 6-4, which were attached to your letter, appear to address plants of newer design involving containments normally isolated and for which containment purging is an abnormal condition. Big Rock Point differs from this design in that the containment is normally ventilated as described in the Final Hazards Summary Report. An additional difference is that no reactor protective system actuation signal must be overridden to open the containment isolation valves. The isolation valves are presumed to be open at all times and actuation signals are provided to close them in accident situations.

Based on the above considerations, Consumers Power Company has concluded that the request of your letter concerning limitation of containment purging is inappropriate for Big Rock Point.

DUPE OF
7901020135

Consumers Power Company will review Big Rock Point safety actuation circuits as requested in your letter. The results of this review will be provided by mid-March, 1979.

David A Bixel (Signed)

David A Bixel
Nuclear Licensing Administrator

CC: JGKeppler, USNRC

RELATED CORRESPONDENCE

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

October 16, 1979

Docket No. 50-155

DOCKETED
USNRC
MAY 19 1981

Mr. David Bixel
Nuclear Licensing Administrator
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Dear Mr. Bixel:

We are continuing our review of your November 29, 1978 submittal related to fuel handling accidents in containment and your December 28, 1978 submittal related to containment purging for the Big Rock Point plant and have found that the additional information described in the enclosure to this letter is needed. We request your response within 45 days of the date of this letter.

A generic evaluation of containment purge system electrical design has established certain evaluation criteria. A copy of these criteria are attached for your information.

Sincerely,

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosure:
1. Request for Additional Information
2. Criteria for Evaluation of Containment Purge System Electrical Design

cc w/enclosures:
See next page

DUPE OF
7910300021

cc w/enclosures:
Mr. Paul A. Perry, Secretary
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Judd L. Bacon, Esquire
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Hunton & Williams
George C. Freeman, Jr., Esquire
P. O. Box 1535
Richmond, Virginia 23212

Peter W. Steketee, Esquire
505 Peoples Building
Grand Rapids, Michigan 49503

Charlevoix Public Library
107 Clinton Street
Charlevoix, Michigan 49720

Sheldon, Harmon, Roisman
and Weiss
1725 I Street, N. W.
Suite 506
Washington, D. C. 20006

Mr. John O'Neill, II
Route 2, Box 44
Maple City, Michigan 49664

REQUEST FOR ADDITIONAL INFORMATION

BIG ROCK POINT PLANT CONTAINMENT PURGE SYSTEM

DOCKET NO. 50-155

1. In your submittal on "additional information relative to fuel handling accident in containment" dated November 29, 1978, you recognized some single failures in electrical design. In addition, because of automatic vacuum relief system circuits being integrated into the containment isolation system, there are several other single failures in the vacuum relief system that could block an isolation signal. A technical evaluation report was prepared by our consultant, EG&G Idaho, Inc., on Big Rock Point plant containment isolation system (CIS). The report has concluded that the lack of redundancy and independence in the air supply and exhaust portion of the containment isolation system and its integrated vacuum relief system, leaves the CIS open to numerous disabling single failures. The staff has reviewed this report and concur in its conclusions.

   A copy of EG&G Report No. RE-A-79-045 is attached. You are requested to address each single failure postulated in the report and provide a justification and/or proposed modification to the CIS.

2. There is only one manual contr . switch (HS-9001) to close both air supply valves and both exhaust valves. In July 16, 1973, I&E Bulletin No. 73-2 required all licensees to take action to determine whether the failure of a single control switch could result in the simultaneous failure of the redundant supply valves or redundant exhaust valves. You are requested to address your response to this bulletin.

Attachment:
EG&G Report No. RE-A-79-045

For U. S. Nuclear Regulatory Commission

ATTACHMENT I

CODE ASSESSMENT AND APPLICATIONS PROGRAM

TECHNICAL EVALUATION REPORT

BIG ROCK POINT PLANT CONTAINMENT ISOLATION SYSTEM

(Docket 50-155)

by

C. J. Cleveland

EG&G Idaho, Inc.

IDAHO NATIONAL ENGINEERING LABORAT

DEPARTMENT OF ENERGY

IDAHO OPERATIONS OFFICE UNDER CONTRACT EY-76-C-07-1570

Consumers Power Company

RELATED CORRESPONDENCE

COPY

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

December 3, 1979

Director, Nuclear Reactor Regulation
Att Mr Dennis L Ziemann, Chief
Operating Reactors Branch No 2
US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - CONTAINMENT
PURGE SYSTEM; CONSUMERS POWER COMPANY
RESPONSE FOR ADDITIONAL INFORMATION

By letter dated October 16, 1979, the NRC requested additional information regarding our submittals of November 29, 1978 and December 28, 1978 covering fuel handling accidents in containment and containment purging for Big Rock Point Plant.

The NRC letter requested that Consumers Power Company address single failure of the Big Rock Point containment isolation system as discussed in the EG&G Report No RE-A-79-045 (which is attached to the October 16, 1976 NRC letter) and provide a justification and/or proposed modification to the containment isolation system.

Consumers Power Company was also requested to address the concern over single manual control switches. If they fail, it could result in the simultaneous failure of the redundant supply valves or redundant exhaust valves.

Consumers Power Company is currently reviewing proposed design changes to the containment isolation system to alleviate the concerns raised in the October 16, 1979 NRC letter. Final solution is expected by February 1, 1980 and full details of the solution will be submitted to the NRC on or before this date.

David P Hoffman (Signed)

David P Hoffman
Nuclear Licensing Administrator

CC JGKeppler, USNRC

DUPLICATE

DUPE OF
7912050497

Consumers Power Company

RELATED CORRESPONDENCE

COPY

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

March 14, 1980

Director, Nuclear Reactor Regulation
Att Mr Dennis L Ziemann, Chief
Operating Reactors Branch No 2
US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - CONTAINMENT
PURGE SYSTEM, SINGLE FAILURES

Reference 1 provided the NRC staff with a single failure analysis of the existing Big Rock Point Plant Containment Purge System (Ventilation Supply and Exhaust Isolation Valves). The NRC then sent this analysis to EG&G who substantiated our findings. Reference 2 requested Consumers Power Company to address each single failure postulated in the EG&G report (attached to Reference 2) and provide a justification and/or proposed modification to the purge system. Reference 3 outlines Consumers Power Company's action and schedule.

Reference 1 had already identified the same single failures as pointed out in the EG&G report and each single failure was addressed and justified by a combination of probabilities and equipment redundancies. Since the NRC did not respond to these justifications, and based on Reference 2, Consumers Power Company has redesigned the electrical control schemes for the containment ventilation supply and exhaust isolation valves. These new schemes are shown on Drawings SK-0740G30114, dated 11-30-79, and SK-0740G40125, dated 11-30-79, and were submitted to the NRC staff for consideration. The Big Rock Point Plant staff has reviewed these new schemes and found that all of the single failures have been eliminated.

The detailed design phase of this modification has not yet started. However, if delivery time for qualified equipment is not unreasonable, modification completion is expected prior to start-up from the next refueling outage (October 24, 1980).

Reference 2 also requested Consumers Power Company to respond to IE Bulletin 73-02 which is concerned with the failure of a single control switch which could result in the isolation valves failing to operate when required. Both

DUPE OF 8003190479 DUPLICATE

the single failure analysis submitted in Reference 1 and the single failure analysis prepared by EG&G (Reference 2) showed that the single hand switch does not violate the single failure criteria for this particular control scheme. The failure of this hand switch would not prevent isolation on a high radiation or trip signal nor would it prevent opening the valves for vacuum relief. Therefore, no corrective actions are planned.

David P Hoffman (Signed)

David P Hoffman
Nuclear Licensing Administrator

CC JGKeppler, USNRC

References: (1) D A Bixel to NRC - letter dated November 29, 1978.
(2) NRC to D A Bixel - letter dated October 16, 1979.
(3) D P Hoffman to NRC - letter dated December 3, 1979.