REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8601140309 DOC. DATE: 86/01/08 NOTARIZED: NO DOCKET #
FACIL: 50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
AUTH. NAME AUTHOR AFFILIATION
KOBER, R. W. Rochester Gas & Electric Corp.
RECIP. NAME RECIPIENT AFFILIATION
LEAR, G. E. PWR Project Directorate 1

SUBJECT: Forwards response to request for addl info to aid in review of 851016 & 1223 applications for amend to DPR-18 re new mini-purge sys. Use of mini- will be limited to pressure control.

DISTRIBUTION CODE: A001D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 7
TITLE: OR Submittal: General Distribution

NOTES: NRR PWR-B ISAPD 1cy. 05000244
OL: 09/19/69

	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL
	PWR-A ADTS		1	0	PWR-A PD1 PD 01		5	5
	PWR-A EB		1	1	PWR-A EICSB		1	1
	FO PWR-A FOB		1	1	CLIFFORD, J		1	1
	PS PWR-A PSB		1	1	PWR-A RSB		1	1
INTERNAL:	ACRS	09	6	6	ADM/LFMB		1	0
	ELD/HDS4		1	0	NRR/DHFT/TSCB		1	1
	NRR/DSRO/RRAB		1	1	NRR/ORAS		1	0
	REG FILE	01	1	1	RGN1		1	1
EXTERNAL:	24X		1	1	EG&G BRUSKE, S		1	1
	LPDR	03	1	1	NRC PDR	02	1	1
	NSIC	05	1	1				
NOTES:			1	1				

TOTAL NUMBER OF COPIES REQUIRED: LTTR 31 ENCL 27

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

ROGER W. KOBER
VICE PRESIDENT
ELECTRIC & STEAM PRODUCTION

TELEPHONE
AREA CODE 716 546-2700

January 8, 1986

Director of Nuclear Reactor Regulation
Attention: Mr. George E. Lear, Chief
PWR Project Directorate No. 1
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Additional Information, Containment Mini-Purge
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Lear:

Attached is additional information requested by members of your Staff to aid in their review of our Application for Amendment concerning a new mini-purge system which was submitted on October 16, 1985 and revised with a submittal dated December 23, 1985.

Very truly yours,

Roger W. Kober

Roger W. Kober

A001
1/1

Additional Information Request Concerning Mini Purge

Request 1. Provide design drawings or sketch to show the installation of the mini-purge system and the special type blind flange for isolating the 48 inch purge line.

Response: A flow drawing of the mini-purge system, the 48 inch system with the flanges in place, and a drawing of the 48 inch flange assembly was transmitted to the Staff prior to our December 17, 1985 meeting.

Request 2. Provide surveillance requirements for the 48 inch purge system and the mini-purge system, specify periodic leakage integrated testing program for the isolation valves in both containment purge systems.

Response: Since the shutdown purge system flanges are sealed with a double seal gasket and are only removed during cold or refueling shutdown, they are considered to be similar to the containment equipment hatch and fuel transfer tube. Therefore, their testing requirements are consistent with those for the containment equipment hatch and fuel transfer tube. (Specification 4.4.2.4.b) i.e., they will be tested at each refueling or after each use. The acceptance criteria is presented in Specification 4.4.2.2 as a total leakage criterion for all penetrations and isolation valves.

Since the remaining 48" valves will only be used for refueling integrity, the testing frequency required by Specification 4.4.2.4.a will not apply to these valves and refueling integrity requirements indicated by Specification Table 3.6-1 Note 22 and Specification 3.8.1.a will apply to the remaining 48" valves.

The new mini-purge isolation valves are considered to be very reliable and should not require more frequent testing than other containment isolation valves. To demonstrate this, we will test the valves at six month intervals. Assuming satisfactory performance, the test frequency for these valves will be reduced after two years to the test frequency associated with other isolation valves. If the leakage through a mini-purge supply or exhaust line is greater than an arbritary 0.05 L_a, an engineering evaluation will be performed.

These restrictions have been incorporated into the proposed Technical Specifications.

Request 3. Unlimited use of the mini-purge system is inconsistent with the Staff's effort to minimize purging during normal plant operation. Establish a qualitative goal to minimize purge system usage with safety related reasons. See Exhibit for an example of this approach.

Response: Consistent with the Staff's effort to minimize purging during normal plant operation, a Technical Specification has been proposed that will limit the use of mini-purge. Use of mini-purge will be limited to pressure control, ALARA, respirable air quality considerations for personnel entry, surveillance tests that require the valve to be open or other safety-related reasons.

Request 4. Evaluate pressure capability of the existing vent ductwork used for the mini-purge system and demonstrate that the ductwork would remain intact if a LOCA should occur during containment purging at power, and check if the ductwork needs to be strengthened.

Response: As illustrated on the flow diagram, the mini-purge consists of a supply section and an exhaust section.

Supply Section - This section uses penetration 309 which penetrates containment approximately 3' above the Intermediate Building basement floor. The supply section is made of 6" schedule 40 pipe which is designed for a pressure greater than 60 psig. The portion inside containment consists of a debris screen and 90° elbow. The supply piping will take the pressure associated with a LOCA. The portion inside containment will not be damaged and will not prevent the isolation valve from closing. Only the supply fan and dust filter could be damaged if subjected to LOCA pressure, however, the fan and filter are located in the upper level of the Intermediate Building. There is no safety-related equipment in the area of the fan/filter. Therefore, any damage to the fan/filter is of no consequence.

Exhaust Section - This section uses penetration 132 which is approximately 3 feet above the Auxiliary Basement floor. The exhaust section consists of a debris screen, elbows and isolation valve inside containment. Outside containment consists of elbows and schedule 40 pipe up to the isolation valve. Downstream of the vertically orientated isolation valve is a vertical 20 gauge spiral duct. The duct runs vertically to approximately a foot below the ceiling then horizontally below the

ceiling to the Auxiliary Building charcoal filter unit. The portions of the exhaust section inside containment will not be damaged by LOCA pressure and will not prevent the isolation valves from closing. The spiral duct downstream of the isolation valve is not designed for LOCA pressures. If subjected to LOCA pressures, the spiral duct would separate at the seams and uncoil around the location of the first elbow. Since there is no safety-related equipment in the area, no adverse consequences will result from a duct failure. Also, the charcoal filters are not damaged because the spiral duct failure precludes the LOCA pressures from reaching the filters.

The environment in the Auxiliary Building and the Intermediate Building resulting from a duct failure or from the supply fan/filter failure would not be severe enough to cause equipment in the building to fail. If an adverse condition did develop inside containment while the mini-purge valves were open, an isolation signal would be generated. The valve closure time, including instrumentation delays, will not exceed five seconds. (The valve closure time is specified as 2 seconds.) Therefore, the escaping air and steam would only last for a few seconds, not long enough to create a severe environment in these buildings. Also, both buildings are large with large communication paths between floors which would prevent the creation of a severe environment.

Request 5. Provide information on ESF actuation signal override annunciation for the mini-purge system isolation valves.

Response: The mini-purge system isolation valves receive an isolation signal from the containment ventilation isolation signal. The valves must be individually reset to be reopened. The overrides associated with containment isolation have previously been discussed with the Staff. The Staff's review of this subject is presented in NRC letter from D. M. Crutchfield to R. W. Kober, "Completion of Generic Issue on Containment Purge and Vent Operation - (MPA B-24)", June 21, 1984.

Request 6: An analysis should be performed which demonstrates the containment purge system does not cause an unacceptable reduction in ECCS backpressure during a LOCA due to the partial loss of containment atmosphere through an open purge system.

Response: An analysis was performed to determine the reduction in containment pressure due to the mini-purge system being in operation at the start of a LOCA.

The analysis was performed with the CONTEMPT-EI/28A code. This code is the CONTEMPT-LT/028 code with improvement made by Energy Incorporated to make the code more flexible. The code was run using the most limiting PCT case presented in Reference 1. The same containment initial conditions and heat sinks were used as those presented in Reference 1.

Two cases were run. The initial case assumed the mini-purge system was isolated. The second case assumed the mini-purge supply and exhaust lines were open for five seconds. In the second case, the mini-purge was conservatively modeled as two six-inch diameter openings in containment. At five seconds into the transient, the containment openings were closed with a step function. Table 1 illustrates the difference in containment pressure due to the mini-purge being open for five seconds. The reduction in containment pressure is due to the partial loss of containment atmosphere while the mini-purge valves are open. Containment backpressure has the greatest effect on PCT during reflood. Reflood starts after the water level has reached the bottom of core. The maximum pressure difference during reflood is approximately 0.05 psi. During reflood, a generic sensitivity of PCT to containment backpressure is approximately 75°F per psi. Since the change in containment back-pressure is so small, the effect of this small change in backpressure on PCT can be approximated by just adding the ΔPCT to the calculated PCT. Thus, the effect of mini-purge operation at the start of a LOCA would be an increase in PCT of approximately 4°F. This can easily be absorbed by the current 367°F LOCA margin. The increase is also an insignificant change as defined by paragraph II.1.b. of 10 CFR 50 Appendix K.

Reference 1 - J.E. Maier (RGE) to H.R. Denton (NRC) letter dated December 20, 1983 transmitting Application for Amendment to Technical Specification, December 20, 1983.

Table 1

Difference in Containment Pressure Due to Mini-Purge

Time (sec)	ΔP (psi)	ΔTime (sec)	ΔP (psi)
0	0.0000	40	0.0481
1	0.0047	50	0.0466
2	0.0133	60	0.0453
4	0.0321	70	0.0444
5	0.0368	80	0.0437
6	0.0414	90	0.0432
8	0.0552	100	0.0426
10	0.0550	120	0.0416
12	0.0548	140	0.0410
14	0.0544	160	0.0400
16	0.0539	200	0.0387
18	0.0534	250	0.0371
20	0.0529	300	0.0357
24	end of blowdown	350	0.0344
30	0.0502	390	0.0334
39	bottom core recovery		

Request 7. An analysis should be performed which demonstrates the radiological consequences of a LOCA assuming the purge valves are open for the maximum interval required for valve closure are acceptable.

Response: The mass released through the open mini-purge supply and exhaust lines was calculated by the CONTEMPT code in the analysis done for the preceding response. The maximum interval for valve closure is five seconds. The total mass released from containment during the five seconds is 102.9 lbs. of air and 55.8 lbs. of water vapor. Branch Technical Position CSB 6-4 requires the primary coolant activity be based on a pre-existing

iodine spike. Conservatively, assuming the water vapor is primary coolant at 60 uCi/gm of dose equivalent I-131, the 0-2 hr. dose contribution from the open mini-purge system is approximately 0.375 rem to the thyroid.

The following additional assumptions were made in the calculation:

X/Q = dispersion coefficient = 4.8×10^{-4} sec/m^3 (UFSAR page 2.3-12)

BR = breathing rate = 3.47×10^{-4} m^3/sec (Regulatory Guide 1.25)

DCF = dose conversion factor I-131 = 1.48×10^6 rem/Ci (Regulatory Guide 1.25)

Dose (rem) = Ci released * X/Q * BR * DCF

The thyroid dose from a LOCA is given in the Ginna Updated FSAR on Table 15.6-19 as 130 rem (0-2 hour dose). The additional dose associated with the mini-purge valves being open is an insignificant increase (approximately 0.3%) in the LOCA dose.