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TO: Mr. Benard C. Rusche

FROM: Carolina Power & Light Company
Raleigh, North Carolina
E. E. Utley

DATE OF DOCUMENT: 12/7/76

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Ltr. w/attached....re our 10/4/76 ltr.... furnishing requested additional information concerning Appendix I.

PLANT NAME: H. B. Robinson #2

APPENDIX I DISTRIBUTION AFTER ISSUANCE OF A LICENSE

(6-P)

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Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2
DOCKET NO. 50-261
10CFR50 APPENDIX I

Dear Mr. Rusche:

By letter dated October 4, 1976, your staff requested additional information to evaluate H. B. Robinson Steam Electric Plant's (HBR) compliance with 10CFR50 Appendix I. Accordingly, responses to your staff's questions are provided below:

Question 1

In your response to Item III.G of Attachment A to your letter of July 12, 1976, you should indicate the average total steam generator blowdown rate used in your evaluation during periods of primary-to-secondary leakage. Indicate the fraction of operating time that you have experienced primary-to-secondary leakage.

Response

For the purpose of our evaluation, we are currently using a blowdown rate of 40,000 pounds per hour total for all three steam generators and not attempting to fractionalize the leakage. This method results in the most conservative answer. Since March, 1974, any primary-to-secondary leakage has been at too low a rate to be detectable during normal operation with blowdown in service. However, during periods of transient operation or isolation of a steam generator, a slightly increased activity has been detected for brief periods of time. Prior to March of 1974, Robinson No. 2 exhibited steam generator leakage in 14 months out of 24 months actual operation.

Question 2

Response to Item IV.A.1 of Attachment A to your letter of July 12, 1976, states that there will be 457 gpd input to the dirty waste system at 0.05 PCA. Indicate whether this flow rate is based on operating experience or engineering judgement.

Response

Our response was based on engineering judgement utilizing the HBR - Final Safety Analysis Report (FSAR) Table 11.1-4.

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Question 3

Your response to IV.A.1 of Attachment A to your letter of July 12, 1976, states that there is no treatment for steam generator blowdown waste. However, response to Item III.G states that these wastes can be treated in the waste processing system. Indicate the expected method of operation on an annual average basis taking into account anticipated primary-to-secondary leakage.

Response

For the purpose of our evaluation, we are assuming there is no treatment of the steam generator blowdown. This is the expected mode of operation.

Question 4

Your response to Item VI of Attachment A to your letter of July 12, 1976, should indicate the treatment provided for steam generator blowdown vent exhaust and main condenser air removal system.

Response

No treatment is provided.

Question 5

Provide the following effluent release point data:

a. For the main condenser air removal system and for the containment pressure and vacuum relief system, provide the information requested in Item VI.D of Attachment A to your letter of July 12, 1976.

b. For the plant stack and blowdown exhaust vent, indicate whether there are diffusers or deflectors on the release.

Response

a. The condenser air removal system is normally vented through an 8 inch line directly to the atmosphere. The release point is on top of the auxiliary building and is considered a ground release. A radiation monitor would cause the release to change to the stack if radiation were sensed in the line.

   The containment vacuum breakers are located in the ventilation inlet housing at the base of containment. The pressure relief system vents to the stack.

b. There are no diffusers or deflectors in the plant stack or blowdown exhaust vent.

Question 6

In the February 1975 Robinson joint frequency distribution, no occurrences of Pasquill Stability Classes A and B are reported while during other months of that year these classes occur relatively frequently. To what do you attribute the nonoccurrence of A and B stabilities during February?

Response

The information in Table 1, included as Attachment A, compares on a monthly basis the distribution of Pasquill Stability Categories for 1975 and 1976. During 1975, the range of monthly percentage of Class A type stability is from 0 percent to 52.3 percent while during 1976 the range of monthly percentage of Class A type stability is from 7.1 percent to 23.1 percent. As noted, during February 1975 the frequency of Class A stability was 0 percent; however, during 1976 the frequency of Class A type stability was 14.3 percent. Thus far during 1976, the distribution of A type class stability has not experienced the extreme ranges of percentage variation and appears to reflect a more normal seasonal variation. As for the reason for the difference between 1975 and 1976, two possible explanations may contribute to an answer. First, during 1975 problems were experienced in keeping the two redundant differential temperature systems recording identical readings. As a conservative approach until the problem was corrected, the most positive reading of the two systems was used to determine the atmospheric stability. The tendency is to shift the frequency of occurrence from the unstable cases toward the stable cases which could have resulted in the month of February 1975 in having no occurrence of Pasquill A or B type stability. Secondly, since the problems of 1975 occurred, the frequency of sensor checks and changeout have been increased to ensure the highest quality of data. Present policy is to remove the sensor system at the first sign of a discrepancy replacing it with a sensor that is traceable to a recent NBS calibration. As a result, the frequency of occurrence of Pasquill Type A stability appears to have approached normally expected values from July 1975 to present.

Question 7

In Attachment 5 of your June 4, 1976, submittal, "Information for 10CFR50 Appendix I Evaluation," you state that the higher occurrence of very unstable conditions during 1975 relative to the previous onsite data period (1967-1969), 22% and 5%, respectively, is not unrealistic when the difference in techniques used to describe the stability categories is taken into consideration. Describe the method used to calculate stability classes for the 1967 - 1969 joint frequency distribution. Include a more detailed discussion of how the differing calculational techniques account for the stated difference in frequency occurrence of Class A stability between the two data periods.

Response

The description of the method used to calculate the stability classes for the 1967 - 1969 joint frequency distribution is described in Section 2.7.2 of the FSAR for the H. B. Robinson Plant.

and the reverse during the summer. The topography of the site region is gently rolling with the highest elevation gradually increasing to 325 feet above plant grade to the northwest of the site at a distance of 10 miles. No significant hill-valley terrain configurations exist which might act to channel and confine airflow trajectories in any particular region.

Yours very truly,

E. E. Utley
Vice President
Bulk Power Supply

RGB/dkm

The following average distribution of very unstable conditions have been observed:

Period	Method	Percentage of Occurrence	Joint Data Recovery Rate
1967 - 1969	Wind Range	4.8%	74.3%
1/1/75-12/31/75	$\Delta T/\Delta Z$	22.0%	90.6%
1/1/76- 9/20/76	$\Delta T/\Delta Z$	12.9%	~90.0%

The evidence indicates that the 22.0 percent very unstable stability condition during 1975 might be slightly larger than normally expected when compared to the 1976 data. However, the differences between the 1967 - 1969 period and the more recent data periods may be due to the difference in calculational techniques used.

The 1967 - 1969 period used the wind range technique described above; however, the measurement was made at 120 feet (37 meters) above the ground. At this height, the variances in wind direction have decreased due to the lessened effect of surface roughness upon the wind flow. Thus, calculating the stability class at 120 feet above the ground utilizing the wind range method, the distribution would be shifted to more stable conditions than if the measurement had been performed at a lower level.

During the 1975 and 1976 data period, the stability calculation was made using differential temperature sensors between the levels of 10 meters and 60 meters. This slice of the atmosphere would tend to be more toward the extremes of the stability classification scheme than a similarly spaced slice at a higher altitude due to the surface heating and cooling.

The net effect of the two methods is that the wind range measured at 120 feet would tend to indicate relatively small occurrence of very unstable conditions while the differential temperature measurement over the 50 meter slice would indicate a larger occurrence of very unstable conditions.

Question 8

Section 3.8 of Attachment B to your July 12, 1976, submittal, "Information for 10CFR Part 50 Appendix I Evaluation," states that hills with an elevation greater than 60 feet above plant grade do not exist within 10 miles of the site. Topographic cross sections (Figures 3.7.2-3) included in the submittal indicate topography with elevations greater than 200 feet above grade within 10 miles of the site. Clarify this apparent discrepancy.

Response

The statement should be corrected as follows:

The airflow characteristics of the region reflect the modified monsoonal regime which is typical of the Southeastern United States. The prevailing airflow is from the colder continental interior toward the warmer ocean during the winter

ATTACHMENT A

TABLE 1
DISTRIBUTION OF STABILITY CATEGORIES
AT THE H. B. ROBINSON PLANT BY MONTH FOR 1975 AND 1976

	PASQUILL STABILITY CATEGORY													
	A		B		C		D		E		F		G	
MONTH	1975	1976	1975	1976	1975	1976	1975	1976	1975	1976	1975	1976	1975	1976
JANUARY	(3.6)	9.3	(2.0)	3.6	(3.7)	3.2	(30.4)	21.6	(36.1)	34.3	(13.8)	13.8	(10.4)	14.1
FEBRUARY	0.0	14.3	0.0	4.0	0.3	3.1	28.0	14.6	49.9	29.8	12.8	15.9	8.9	18.3
MARCH	16.7	10.6	3.3	3.2	5.3	3.6	27.0	21.6	29.2	35.8	10.1	14.8	8.4	10.4
APRIL	45.4	23.1	6.3	3.6	5.4	5.4	15.7	14.0	16.1	26.4	6.5	16.1	4.7	11.4
MAY	52.3	12.7	4.0	3.8	2.8	4.2	14.2	24.7	16.2	37.9	7.8	9.7	2.7	7.1
JUNE	(37.1)	9.3	(3.0)	6.0	(3.5)	5.6	(21.7)	34.3	(21.2)	28.3	(9.3)	10.3	(4.1)	1.8
JULY	29.6	7.1	3.1	5.7	3.1	8.0	29.8	25.9	27.1	33.8	6.8	16.3	0.4	3.2
AUGUST	24.6	18.2	4.5	4.6	3.6	4.9	18.8	27.1	30.7	32.5	15.3	11.1	2.5	1.5
SEPTEMBER	9.9	11.9	3.0	5.0	4.2	6.5	43.8	25.0	27.8	26.5	9.0	14.4	2.2	10.6
OCTOBER	17.3		3.4		3.8		24.6		25.5		16.0		9.3	
NOVEMBER	15.6		3.3		3.4		24.6		21.5		11.3		20.3	
DECEMBER	8.6		3.0		2.5		30.5		23.8		9.6		22.0	
PERIOD AVE.	22.0[a]	12.9[b]	3.3	4.3	3.6	4.9	23.4	23.2	27.0	31.7	10.6	13.6	8.0	8.7

[a] 12-Month Average

[b] 9-Month Average

( ) Less than 90% Joint Frequency Data Recovery Rate