



UNITED STATES
 ATOMIC ENERGY COMMISSION
 WASHINGTON, D.C. 20545

G. Lamas
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 FILE

FEB 9 1973

R. S. Boyd, Assistant Director for Boiling Water Reactors, L
 GRAND GULF NUCLEAR STATION QUESTIONS

PLANT NAME: Grand Gulf
 LICENSING STAGE: CP
 DOCKET NUMBER: 50-416
 RESPONSIBLE BRANCH: PWR#1
 REQUESTED COMPLETION DATE: February 9, 1973
 APPLICANTS RESPONSE DATE NECESSARY FOR
 NEXT ACTION PLANNED ON PROJECT: N/A
 DESCRIPTION OF RESPONSE: N/A
 REVIEW STATUS: N/A

Attached are the Accident Analysis Branch initial questions on the Grand Gulf Nuclear Station PSAR. Areas questioned include the site, engineered safeguards for iodine removal, and design bases accident consequences. During a recent site visit, Accident Analysis Branch personnel learned that significant design changes were being made in the Grand Gulf containment systems, and that an amendment describing these changes was in preparation. Preliminary calculations of design basis accident consequences yielded results exceeding part 100 guidelines. We anticipate major revisions to our calculational models as a result of the expected changes in containment design. This major change, if not submitted in the next few weeks, may affect the overall review schedule.

Harold R. Denton, Assistant Director
 for Site Safety *NRC/ALC*
 Directorate of Licensing

Enclosure
 (As Stated)

cc: w/o enclosure
 A. Giambusso
 W. McDonald

cc: w/enclosure
 S. Hanauer
 J. Hendrie
 W. Butler
 G. Lamas ✓
 G. Casley
 W. Nischan
 E. Adensam
 K. Murphy
 R. Zavadoski

B119

GRAND GULF

Clarify the specified exclusion radius distance of 780 meters. Figure 2.1-2 of the SAR indicates a distance of 2460 feet (750 meters) as the distance from the SGTS release point to the nearest site boundary.

The SAR states that MP&L does not own all land within the specified exclusion radius, but that it does hold options to buy all land within that area not presently owned. Indicate when those options will be exercised.

Define the plant restricted area, as discussed in Section 2.1.2.2 of the Standard Format. Provide a map showing the restricted area boundary lines and discuss your access control measures:

Provide details on the bases used by you to conclude that explosions or the release of hazardous materials shipped on nearby transportation routes or stored in the plant vicinity will not adversely affect plant operations.

Include the following details:

- (a) The types and lot quantities of hazardous materials stored or shipped, and the number of shipments per unit time (day, month, year).
- (b) The calculational methods or models used to predict the consequences of explosion or hazardous materials release on the plant.
- (c) Specific values of parameters used in the calculations, e.g. distances, pressures, concentrations.

GRAND GULF NUCLEAR STATION

ACCIDENT ANALYSIS BRANCH

QUESTION LIST (Q-1)

In section 6.4.2, evaluate the radioiodine loading of the filters (and resulting heat generation) based upon all the assumptions stated in Safety Guide #3, including the fission product source term.

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Regarding Section 9.4.1.2, provide evaluation and location of the dual fresh air inlets to the control room ventilation system. Provide the flow rates during normal and emergency operation. Calculate the cfm of unfiltered air leaking into the control room from ducts, doors, and other openings when the control room is isolated (no fresh air make-up). Use the following assumptions in the analysis:

- 1/8 inch water gauge differential for openings which may be effected by external winds.
- 1/16 inch water gauge differential for openings protected from direct wind effects.
- maximum design pressure differential for closed dampers on suction side of supply fans.
- 100 cubic feet air exchange per door opening, i.e. ingress or egress event.

The assumption that no inleakage occurs while the control room is isolated may be optimistic. An analysis should be performed to determine the thyroid, whole body gamma and beta skin doses assuming the inleakage based on results from the above analysis.

With regard to Section 15.1.X.2(2) of the Standard Format, and your SAR Section 15.4.1.2.2.2.1, the radiological consequences of a LOCA must be based on both ^abest estimate and ^aconservative estimate of fission product release. Thus an additional analysis is required using conservative source terms. (See Safety Guide No. 3).

The fission product source term used to estimate consequences of a postulated loss of coolant accident as discussed in Section 15.4.1.2.2 of the PSAR is not acceptable for the purpose of comparison with siting criteria. Preliminary calculations for your containment design using an AEC Safety Guide 3 source term yield consequences over Part 100 guidelines. Describe the changes in plant design you propose to meet the siting guidelines of Part 100. Provide a comparable analysis using the source term as described in AEC Safety Guide #3.

Provide the dose consequences at the site boundary and the low population zone boundary and in the control room following the design basis loss of coolant accident concurrent with the SSE due to leakage through the main steamline isolation valves. Assume loss of all non-Category I (seismic) components, and assume main steamline isolation valve leakage to be at Technical Specification limits. Demonstrate that leakage via the MSLIV's in conjunction with primary containment leakage following the postulated LOCA will not result in consequences exceeding the guideline of 10 CFR Part 100 and of General Design Criterion 19.

GRAND GULF

Preliminary calculations of the consequences of a refueling accident in the primary containment, using assumptions in Safety Guide No. 25, yield unacceptable consequences if the primary containment is not secure. Describe the Technical Specifications which will be proposed regarding primary containment integrity during fuel handling operations within the primary containment.

Analyze the fission product movement in the spent fuel air handling system (Page 9.1-6) due to a refueling accident in the auxiliary building. Discuss instrument response times, air flow, and exhaust duct isolation times. Demonstrate that the auxiliary building ventilation system will be automatically isolated before any significant release of radioactivity occurs as a result of the refueling accident within the auxiliary building. Section 15.4.2 contains an analysis of a fuel handling accident within the primary containment only. Provide an analysis of the off-site consequences of a refueling accident within the auxiliary building.

Identify toxic material, such as chlorine, that may be stored on or in the vicinity of the site, which, assuming a container rupture, may interfere with control room operation. Identify the location of storage on-site and list the distances between the location of any such material and the air intake to the control room. Provide an analysis of the severity of such accidents, and discuss the steps to mitigate their consequences. The description of the analysis should clearly list all assumptions.

DRYWELL CRACKING

Grand Gulf 142

Load Types

2/15/73

D - dead load $E' = 5SE$

S - shrinkage $E = \frac{1}{2}5SE$

P_1 - DBA Pressure T_1 - DEA temp

P_2 - SBA Pressure T_2 - SBA temp

(Small Break Accident)

$(D + S + P_2 + T_2) + P_1$ - total crack area = 1500 in²

18 mil crack:

$K = 133$ 10,300 in² SBA

$\frac{A}{\pi} = .043 \text{ ft}^2$

144

$\frac{A}{\sqrt{10}} = .043$

43

432

$A = .43 \text{ ft}^2$

576

0.92 sq. in

Grand Gulf Nuclear Station

Review Schedule Dates for Containment System Branch

	<u>Present Dates</u> (1973)	<u>Proposed Dates</u> (1973)
1st Q to PM	4-6	5-4
1st Q to MP&L	4-13	5-11
MP&L Response	6-8	6-22
Position &/or 2nd Q to PM	8-24	9-7
Position &/or 2nd Q to MP&L	8-31	9-14
MP&L Response	10-23	10-26
SER Input to PM	12-14	12-14
SER out	12-28	12-28

MEMO ROUTE SLIP		See me about this.	For concurrence.	For action.
Form AEC-93 (Rev. May 14, 1947) AECM 0240		Note and return.	For signature.	For information.
TO (Name and unit)	INITIALS	REMARKS		
R. L. Tedesco	DATE	Attached is an ANC letter which requests		
		\$14,500 to provide technical assistance		
		in revising CONTEMPT for Mark III application.		
TO (Name and unit)	INITIALS	REMARKS		
cc: H. Menzel → K. Cudlin → J. Glynn	DATE	We should have this capability as soon as		
		possible so that we can use CONTEMPT during		
		the testing program. I recommend that we		
TO (Name and unit)	INITIALS	REMARKS		
	DATE	try to get this additional funding.		
FROM (Name and unit)	REMARKS			
<i>SLK</i> G. C. Lainas				
PHONE NO.	DATE			
	3/1/73			

K. Cudlin

USE OTHER SIDE FOR ADDITIONAL REMARKS

GPO : 1971 O - 445-45

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