Central Files

AUG 14 1975

R. C. DeYoung, Assistant Director for Light Water Reactors,
Group 1, RL

AAB INPUT TO DAVIS-BESSE SER

PLANT NAME: Davis-Besse Unit 1
LICENSING STAGE: OL
DOCKET NUMBER: 50-346
MILESTONE NUMBER: 24.31
RESPONSIBLE BRANCH: LWR 1-4; L. Engle, LPM
REQUESTED COMPLETION DATE: June 30, 1975
REVIEW STATUS: AAB input partially complete

Attached is additional Accident Analysis Branch input for the Davis-Besse SER. This input by H. Fontecilla includes additional design basis accident doses and assumptions.

This review was coordinated by C. Ferrell.

Harold R. Denton, Assistant Director
for Site Safety
Division of Technical Review
Office of Nuclear Reactor Regulation

Enclosure:
As stated

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

w/enclosure
See page 2

cc: w/enclosure
S. Hanauer
R. Heineman
R. Boyd
RL A/D's
TR A/D's
SS B/C's
TR T/C's
D. Eisenhut
S. Varga
R. Klecker
A. Schwencer
L. Engle
W. Pasedag
E. Adensam
K. Campe
H. Fontecilla
K. Murphy
C. Ferrell

Distribution:
Central Files
NRR/Reading
AAB/Reading

OFFICE ▶	AAB/SS/TR	AAB/SS/TR	AD/SS/TR			
SURNAME ▶	C.Ferrell/vg	B.Grimes	H.Denton			
DATE ▶	7/31/75	8/6/75	7/[illegible]/75			

15.3 & 15.4

STEAM GENERATOR TUBE FAILURE & MAIN STEAM LINE FAILURE ACCIDENTS

On the basis of our experience with the evaluation of the steam line break and the steam generator tube rupture accidents for PWR plants of similar design, we have concluded that the consequences of these accidents can be controlled by limiting the permissible reactor coolant and secondary coolant radioactivity concentrations so that potential offsite doses are small. We will include appropriate limits in the Technical Specifications on these coolant activity concentrations. Similarly, we will include appropriate limits in the Technical Specifications on gas decay tank activity so that a single failure (such as sticking and lifting of a relief valve) does not result in doses that are more than a small fraction of the 10 CFR 100 guidelines.

TABLE V

DOSES

	THYROID (REM)	WHOLE BODY (REM)
Tube Rupture Accident	1.5	.4
Tube Rupture Accident with Coincident Iodine Spike	30	.4
Steam Line Break	1.5	<.1
Loss of Offsite Power	.35	<.1
Loss of Offsite Power with Coincident Iodine Spike	0.6	<.1
Rod Ejection Accident		
Case I*	121	<1
Case II**	60	1.6
Rod Ejection Accident (0-8 hr LPZ X/Q = 1.8×10^{-5} sec/m^3)	4	<.1
Rod Ejection Accident (8-24 hr LPZ X/Q = 1.3×10^{-5} sec/m^3)	<.1	<.1

* Releases through the containment.

** Releases through the secondary system.

STEAM LINE BREAK & STEAM GENERATOR

TUBE RUPTURE ACCIDENT

ASSUMPTIONS:

. Power = 2772 Mwth

. 2-hour X/Q = 5.2×10^{-4} sec/m^3 at exclusion boundary

. Iodine decontamination factor of 10 between water and steam

. Primary and secondary coolant equilibrium concentrations as limited by standard Technical Specifications (1.0 uCi/gr I-131 Eq and 100/$\bar{E}$ uCi/gr Noble Gases for primary coolant and .1 uCi/gr I-131 Eq for secondary coolant)

. Primary to secondary leak rate as limited by standard Technical Specifications (1 gpm)

. For accidents assumed to occur in coincidence with an iodine spike, the primary coolant concentration is as limited by the standard Technical Specifications for 48-hour periods (60 uCi/gr I-131 Eq at 100% power)

. Source spike factor of 500 after accidents

. 10% of iodine and noble gases fuel activity in gaps

. All releases through the secondary system (except Rod Ejection Accident, Case 1)

. 28% fuel with clad failures after rod ejection accident

. 0% fuel reaching initiation of melting

Control Rod Ejection Accident

The assumptions used to calculate offsite doses from a control rod ejection accident are:

Case I

1. Power level of 2772 Mwt.
2. 28% fuel failed in transient.
3. 10% of iodine and noble gas inventory in gap of failed fuel.
4. Release of total gap activity in failed fuel to containment building.
5. 50% plate-out of radioactive iodines.
6. Containment building sprays are not initiated.
7. Containment building leak rate of 0.30%/day for 24 hours and one-half this value thereafter.
8. Standard ground level release meteorology and dose conversion factors.

Case II

1. Power level of 2772 Mwt.
2. 28% fuel failed in transient.
3. 10% of iodine and noble gas activity in gap of failed fuel.
4. Release of total gap activity in failed fuel to reactor coolant.
5. Reactor coolant to secondary coolant operational leakage is 1 gpm.

Case II (Cont'd.)

6. Loss of off-site power so that steam is released from secondary side relief valve.

7. Reactor coolant-secondary coolant equilibrium reached at 16 minutes after the accident.