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DCP/NRC1269
NSD-NRC-98-5586
Docket No.: 52-003

February 25, 1998

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: T. R. QUAY

SUBJECT: ADDITIONAL CHANGES TO THE AP600 STANDARD SAFETY ANALYSIS REPORT (SSAR) CHAPTER 15 ACCIDENT ANALYSES

Dear Mr. Quay:

Attached are markup pages for Chapter 15 of the AP600 Standard Safety Analysis Report. The changes to Table 15.4-4 reflect the final analysis with the adjusted containment leak rate. The changes to Table 15.A-5 (Sheet 2 of 2) provide the χ/Q values for the plant vent in addition to the containment ground level release.

Please contact Ms. Susan V. Fanto (412)374-4028, if you have any questions concerning this material.

Brian A. McIntyre, Manager
Advanced Plant Safety and Licensing

jml

Attachment

cc: T. J. Kenyon, NRC (w/Attachment)
N. J. Liparulo, Westinghouse (w/o Attachment)

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Table 15.4-4 (Sheet 1 of 2)

PARAMETERS USED IN EVALUATING THE RADIOLOGICAL CONSEQUENCES OF A ROD EJECTION ACCIDENT

Initial reactor coolant iodine activity	An assumed iodine spike that has resulted in an increase in the reactor coolant activity to 24 μCi/g of dose equivalent I-131 (see Appendix 15A)[a]
Reactor coolant noble gas activity	Design basis activity (see Table 11.1-2)
Secondary coolant initial iodine activity	0.04 μCi/g dose equivalent I-131 (10% of design basis reactor coolant concentrations listed in Table 11.1-2)
Fuel cladding failure	
– Fraction of fuel rods assumed to fail	0.15
– Fission product gap fractions	0.036
Core melting	
– Fraction of core melting	0.00375
– Fraction of activity released	
Iodines and cesiums	0.5
Noble gases	1.0
Iodine chemical form (%)	
– Elemental	4.85
– Organic	0.15
– Particulate	95.0
Core activity	See Table 15A-3 in Appendix 15A
Nuclide data	See Table 15A-4 in Appendix 15A
Reactor coolant mass (lb)	3.6 ~~3.39~~ E+05

Note:

a. The assumption of a pre-existing iodine spike is a conservative assumption for the initial reactor coolant activity. However, compared to the activity assumed to be released from damaged fuel, it is not significant.

Table 15.4-4 (Sheet 2 of 2)

PARAMETERS USED IN EVALUATING THE RADIOLOGICAL CONSEQUENCES OF A ROD EJECTION ACCIDENT

Condenser	Not available
Duration of accident (days)	30
Atmospheric dispersion (χ/Q) factors	See Table 15A-5 in Appendix 15A
Secondary system release path	
– Primary to secondary leak rate (lb/hr)	260[a]
– Secondary coolant mass (lb)	2.45E+05
– Duration of steam release from secondary system ~~(min)~~ (sec)	~~10~~ 1400
– Steam released from secondary system (lb)	2.45 E+05
– Partition coefficient in steam generators	0.01
Containment leakage release path	
– Containment leak rate (% per day)	~~0.12~~ 0.10
– Airborne activity removal coefficients (hr^{-1})	
Elemental iodine	2.0[b]
Organic iodine	0
Particulate iodine or cesium	0.1
– Decontamination factor limit for elemental iodine removal	200
– Time to reach the decontamination factor limit for elemental iodine (hr)	2.6

Notes:

a. Equivalent to 1000 gpd at 561.5°F and 2250 psia
b. From Appendix 15B

Table 15A-5 (Sheet 2 of 2)

ATMOSPHERIC DISPERSION FACTORS (χ/Q) FOR ACCIDENT DOSE ANALYSIS

Main control room

χ/Q (s/m³) at HVAC Intake for the Identified Release Points[1]

	Elevated Containment Release[3]	Ground Level Containment Release Points[3,4]	Secondary Side Release Points[4,5]	Fuel Handling Area[4,6]	Fuel Building Relief Panel[4,7]
0 - 2 hours	1.2E-3	2.0E-3	2.0E-2	2.0E-3	3.0E-3
2 - 8 hours	8.0E-4	1.0E-3	1.8E-2	1.5E-3	2.0E-3
8 - 24 hours	4.0E-4	5.0E-4	8.0E-3	8.0E-4	1.0E-3
1 - 4 days	4.0E-4	5.0E-4	7.0E-3	8.0E-4	1.0E-3
4 - 30 days	3.0E-4	4.0E-4	6.0E-3	7.0E-4	9.0E-4

χ/Q (s/m³) at Control Room Door for the Identified Release Points[2]

	Elevated Containment Release[3]	Ground Level Containment Release Points[3,4]	Secondary Side Release Points[4,5]	Fuel Handling Area[4,6]	Fuel Building Relief Panel[4,7]
0 - 2 hours	4.0E-4	1.0E-3	2.5E-3	1.0E-3	1.0E-3
2 - 8 hours	2.0E-4	6.0E-4	2.0E-3	6.0E-4	6.0E-4
8 - 24 hours	1.0E-4	3.0E-4	1.0E-3	3.0E-4	3.0E-4
1 - 4 days	9.0E-5	3.0E-4	9.0E-4	3.0E-4	3.0E-4
4 - 30 days	8.0E-5	3.0E-4	8.0E-4	2.5E-4	2.5E-4

Notes:

1. These dispersion factors are to be used 1) for the time period preceding the isolation of the main control room and actuation of the emergency habitability system, 2) for the time after 72 hours when the compressed air supply in the emergency habitability system would be exhausted and outside air would be drawn into the main control room, and 3) for the determination of control room doses when the non-safety ventilation system is assumed to remain operable such that the emergency habitability system is not actuated.

2. These dispersion factors are to be used when the emergency habitability system is in operation and the only path for outside air to enter the main control room is that due to ingress/egress.

3. These dispersion factors apply to releases from the plant vent.

4. The listed values bound the dispersion factors for releases from the main equipment hatch, and the staging area hatch, ~~and the plant vent (elevated release)~~. These dispersion factors would be used for evaluating the doses in the main control room

for a loss-of-coolant accident, for the containment leakage of activity following a rod ejection accident, and for a fuel handling accident occurring inside the containment.

65. The listed values bound the dispersion factors for releases from the steam vents, the steam line safety & power-operated relief valves, and the condenser air removal stack. These dispersion factors would be used for evaluating the doses in the main control room for a steam generator tube rupture, a main steam line break, a locked reactor coolant pump rotor, and for the secondary side release from a rod ejection accident. Additionally, these dispersion coefficients are conservative for the small line break outside containment.

66. The listed values bound the dispersion factors for releases from the fuel storage and handling area. These dispersion factors would be used for the fuel handling accident occurring outside containment.

67. The listed values bound the dispersion factors for releases from the fuel storage area in the event that spent fuel boiling occurs and the fuel building relief panel opens on high temperature. These dispersion factors are to be used for evaluating the impact of releases associated with spent fuel pool boiling.