5 Where: t = bubble rise time, seconds
5 d = effective bubble diameter, cm

5 Since the minimum water depth over a dropped fuel assembly is less than 23 feet (21.34 feet), the assumed
5 iodine DF must be less than 100, according to Reg. Guide 1.25, and calculated with comparable
5 conservatism as done in Reg. Guide 1.25. Using the above relationship, with a water depth of 21.34 feet,
5 a comparable DF is equal to 89 (Reference OSC-6070).

<Insert A> → {Fod interal} {would remain

5 The fuel ~~assembly gap gas~~ pressure, at a Spent Fuel Pool bulk temperature of 150 F, ~~is calculated to be~~
5 less than 1200 psig (based on the present TACO2 computer code licensing limit of 2200 psia at operating
5 system conditions (Reference FSAR Section 4.2.3.1.3, "Fuel Thermal Analysis").

<Insert B>

5 The activity released from the water's surface is released within a two-hour period as a ground release.
5 The atmospheric dilution is calculated using the two-hour ground release dispersion factor of 2.2 x 10^{-4}
5 sec/m^3.

5 The total integrated dose (2-hr EAB) to the whole body at the 1-mile exclusion distance is 0.185 Rem and
5 the thyroid dose at the same distance is 52.45 Rem. These values are far below the limits given in
5 10CFR100 of 25 Rem whole body and 300 Rem thyroid.

5 15.11.2.2 Base Case Fuel Handling Accident Inside Containment

5 In 1977, the NRC asked Oconee to evaluate the offsite dose consequences for a fuel handling accident
5 inside containment, per the guidance given in Reg. Guide 1.25. Since the shallow end of the fuel transfer
5 canal is at an elevation of 816.5 feet, the same iodine decontamination factor used for the Fuel Handling
5 Accident in the Spent Fuel Pool is used for the Fuel Handling Accident inside Containment. The activity
5 released from the refueling water is released as a ground release, which has an atmospheric dispersion
5 factor of 2.2 x 10^{-4} sec/m^3. There is no credit taken for any containment closure/integrity resulting in the
5 released activity from the refueling water going straight outside.

5 Using the fuel assembly gap inventory in Table 15-1, and assuming all 208 fuel pins are damaged, the
5 two-hour EAB dose is 0.185 Rem to the whole body and 52.45 Rem to the thyroid. These values are
5 appropriately within the guidelines given in 10CFR100 (appropriately within means 100 Rem to the
5 thyroid), and are identical to the base case Spent Fuel Pool Fuel Handling Accident described in Section
5 15.11.2.1, "Base Case Fuel Handling Accident in Spent Fuel Pool."

5 15.11.2.3 Supplemental Cases of Fuel Handling Accidents

5 To provide additional information as to the sensitivity of various input assumptions into the offsite dose
5 consequences of the fuel handling accident, additional supplemental cases are described here.

5 CASE A:

5 If the radioisotope release from the spent fuel pool water's surface is assumed to be captured by the Spent
5 Fuel Pool Ventilation System, resulting in an elevated release, (atmospheric dispersion factor is equal to
5 3.35 x 10^{-5} sec/m^3) and assuming that the Spent Fuel Pool Filters are 90% efficient for the removal of
5 elemental and particulate iodine, and 70% efficient in the removal of organic iodine, the resultant
5 two-hour offsite dose is calculated to be 1.2 Rem thyroid and 0.021 Rem whole body at the exclusion
5 area boundary (EAB).

5 CASE B:

Attachment 4
Markup of UFSAR Change

INSERT A (Section 15.11.2.1, page 15-34)

Duke will use a DF equal to 89 for a maximum rod internal pressure in the spent fuel pool of 1300 psig for the fuel handling accident analysis per reference 21. This was justified in Reference 21 using the WCAP-7828 methodology described above.

INSERT B (Section 15.11.2.1, page 15-34)

or is calculated to be less than 1300 psig (based on the present TACO3 computer code licensing limit of a proprietary value above nominal system pressure at operating system conditions).

15.16.7 REFERENCES

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18. OSC - 6534 (Rev. 0), "Hydrogen Purge Cart Operator Dose Rate"
19. OSC - 3781 (Rev. 5), "Documentation of Maximum Hypothetical Accident(MHA) Dose Model For Oconee Nuclear Station"
20. OSC - 6064 (Rev. 1), "Estimated Radiation Dose Rates in the Auxiliary Building Following a Large Break LOCA"

THIS IS THE LAST PAGE OF THE CHAPTER 15 TEXT PORTION.

21. Request for Facility Operating License Amendment Rod Internal Pressure in Spent Fuel Pool Criteria, from M.R. McCollum (Duke Energy) to USNRC dated _____, Oconee Nuclear Station, Units 1, 2, and 3, Docket Nos. 50-269, 50-270, and 50-287.