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Subject: Draft Regulatory Guide DG-1081, *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors* and Draft Standard Review Plan (SRP) Section 15.0.1, Rev. 0, *Radiological Consequences Analyses Using Alternative Source Terms* (64 FR 91990)

Duke Energy Corporation offers the following comments on Draft Regulatory Guide DG-1081, *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors* and Draft Standard Review Plan (SRP) Section 15.0.1, Rev. 0, *Radiological Consequences Analyses Using Alternative Source Terms* (64 FR 91990). Duke Energy agrees with and endorses the comments submitted on behalf of the industry by the Nuclear Energy Institute.

We have developed additional comments and recommendations regarding DG-1081 and SRP 15.0.1, Rev. 0. These items are elaborated in Attachment 1.

Yours truly,

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Attachment 1
Duke Energy Comments on Draft DG-1081 and Draft SRP

1. Page 20, Section 5.1.4

Draft Regulatory Guide DG-1081 mentions several requirements that may not be consistent with a facility's current licensing basis. Examples of these requirements include guidance pertaining to single failure criteria, ESF system leakage rate, and passive failure requirements. These requirements are not directly related to the issue of source term (TID, NUREG 1465, or another Alternate Source Term) and are independent of source term. Assumptions concerning these items should not change and should be consistent with the existing licensing basis of the plant. Section 5.1.4 should be revised to provide clear guidance on these types of assumptions that are not affected by the choice of source terms.

2. Page 5, Section 1.1.2

The second paragraph in Section 1.1.2 implies that the use of AST, and any plant modifications resulting from making use of it, must preserve the assumptions made in the facility's PRA. For those Licensees that maintain a "living" PRA, NRC and industry guidance recommends that the PRA should be kept current with plant modifications in order to maintain a quality PRA. Therefore, this stipulation in the Draft Regulatory Guide is not necessary, nor is it risk informed. In addition, other Regulatory Guides describe how to implement a change with respect to PRA. Therefore, this statement may cause confusion, is not needed, and should be removed.

3. Page A-5, Appendix A Section 5.3

The guidance contained in the Draft Regulatory Guide specifies the use of conservative values in several phases of the dose calculation. Examples of conservatisms in the dose analysis include the following:

> The regulatory acceptance criterion for acceptable dose is conservatively low (25 rem TEDE). This limit is designed to and will ensure a very low probability of health effects of concern.

The prescribed source term is very conservative compared to the expected source term for design basis accidents (Large LOCA with successful ESF operations). The source term for a design basis accident is expected to be a small fraction of the prescribed source term.

The release from the plant is treated conservatively by using the upper limit of containment leakage as compared to expected values.

Meteorological parameters of X/Q used in the dose calculation are prescribed to be upper bound values (95%) expected to be encountered only 5% or less of the time as compared to an average value.

The dose is calculated for the most limiting receptor at the Exclusion Area Boundary and the Low Population Zone.

The use of conservative values and analysis of this type is appropriate. However, there is additional draft guidance that is conservative but unnecessary. Specifically, the requirement for certain plant configurations to assume a passive failure causing 50 gpm leakage for 30 minutes is not mechanistically based and is somewhat arbitrary. The likelihood of having a degraded core scenario represented by this conservative source term evaluation approach in combination with a passive failure is incredibly low. The requirement to assume a passive failure with the resultant prescribed system leakage rate should be deleted from the draft regulatory guide.

4. Page F-3, Section 5.8; Page G-3, Section 5.8; Page H-2, Section 7.6

These sections address steam generator tube uncovery for short periods of time. Duke Energy considers the effects of steam generator tube bundle uncovery during potential DNB accidents (Rod Ejection, Locked Reactor Coolant Pump Rotor). This consideration addresses the potential for failure of an emergency feedwater pump as the limiting single active failure, where atomization and entrainment of non-flashed primary leakage may occur. Therefore, during periods of tube bundle uncovery for very small leak rate accidents (such as 150 gpd), all primary coolant is assumed to escape without any mixing or depletion of radioactivity.

For large leak rates (such as with a steam generator tube rupture), a primary droplet entrainment fraction is computed and applied to periods of tube bundle uncovery.

5. Comments on Appendix I

a. Item 2

This section states that the radiation environment resulting from normal operations should be based on the source term estimates in a facility's Safety Analysis Report or consistent with the facility's Technical Specifications. This section should include a statement or provision that the use of historical data is acceptable when estimating the dose for past operations.

b. Item 4 to 6

These items provide guidance for estimated doses from the containment atmosphere. The guidance does not address doses due to activity buildup on ventilation filters. Additional guidance concerning buildup on filters is recommended.

c. Item 8

The guidance in this section states that the doses for equipment exposed to sump water should be calculated for a point located on the surface of the water. Shielding codes used by Duke Energy are capable of detailed modeling of the sump, including sump water self-shielding effects, and would be appropriate for these modeling tasks. This section should include a statement that recognizes the use of shielding codes for sump modeling. In addition, when considering sump water in ECCS piping, the pipe size and routing should be incorporated in the analyses to determine the dose rates. The guidance should be revised to reflect these considerations.