

~~Official Use Only - Security Related Information~~

## Oconee Flood Protection and the Jocassee Dam Hazard

NRC Meeting with Duke Energy Carolinas  
August 28, 2008



~~Official Use Only - Security Related~~  
Information

1

~~Official Use Only - Security Related Information~~

## Meeting Overview

- Purpose of meeting
- Basis for NRC concerns with external flood protection
- Perspective of credible event protection
- 10 CFR 50.54(f) letter and NRC expectations of the response
- Summary



~~Official Use Only - Security Related~~  
Information

2

~~Official Use Only - Security Related Information~~

## Purpose of Meeting

- Discuss the nature of NRC concerns regarding adequate flood protection at the Oconee Nuclear Station ("Oconee") site with Duke Energy Carolinas, LLC. ("Duke") representatives.
- Communicate the NRC expectations on the nature of the response from Duke to the 10CFR 50.54(f) Request for Information letter.



~~Official Use Only - Security Related~~  
Information

3

~~Official Use Only - Security Related Information~~

## Basis For NRC Concerns With External Flood Protection

### Background

- The Standby Shutdown Facility (SSF) was constructed to mitigate fire, sabotage, and flood-induced station blackout events by providing reactor coolant pump seal cooling, primary, and secondary makeup for all three Oconee units.
- The reference of the walls for flood protection to 5 ft (801' above MSL) is in the FSAR.



~~Official Use Only - Security Related~~  
Information

4

~~Official Use Only - Security Related Information~~

## **Basis of NRC Concerns With External Flooding Protection**

### **Adequate Protection Issue**

- The Jocassee Dam Failure Inundation Study (FERC Project No. 2503) was completed and predicts an Oconee site flood height range of 12.5 feet to 16.8 feet.
- The only study on record.
- Based on the FERC study, the SSF does not appear to be available after Jocassee Dam failure.



~~Official Use Only - Security Related~~  
Information

5

~~Official Use Only - Security Related Information~~

## **Basis of NRC Concerns With External Flooding Protection (Cont'd)**

### **Adequate Protection Issue (Cont'd)**

- In the event of a catastrophic flood which would render the switchyard (offsite power) and Keowee Dam unavailable, the SSF is the only site protection to provide defense-in-depth for Oconee.
- Floods in excess of 5 ft could lead to three-unit core damage and radiological release event.



~~Official Use Only - Security Related~~  
Information

6

~~Official Use Only - Security Related Information~~

## **Basis of NRC Concerns With External Flooding Protection (Cont'd)**

### **Random Dam Failure Frequency Issue**

- NRC discovered an underestimate of random Jocassee Dam failure frequency as part of the Significance Determination Process (SDP).
- NRC communicated the underestimated random failure frequency to Duke in June, November, and December 2007.

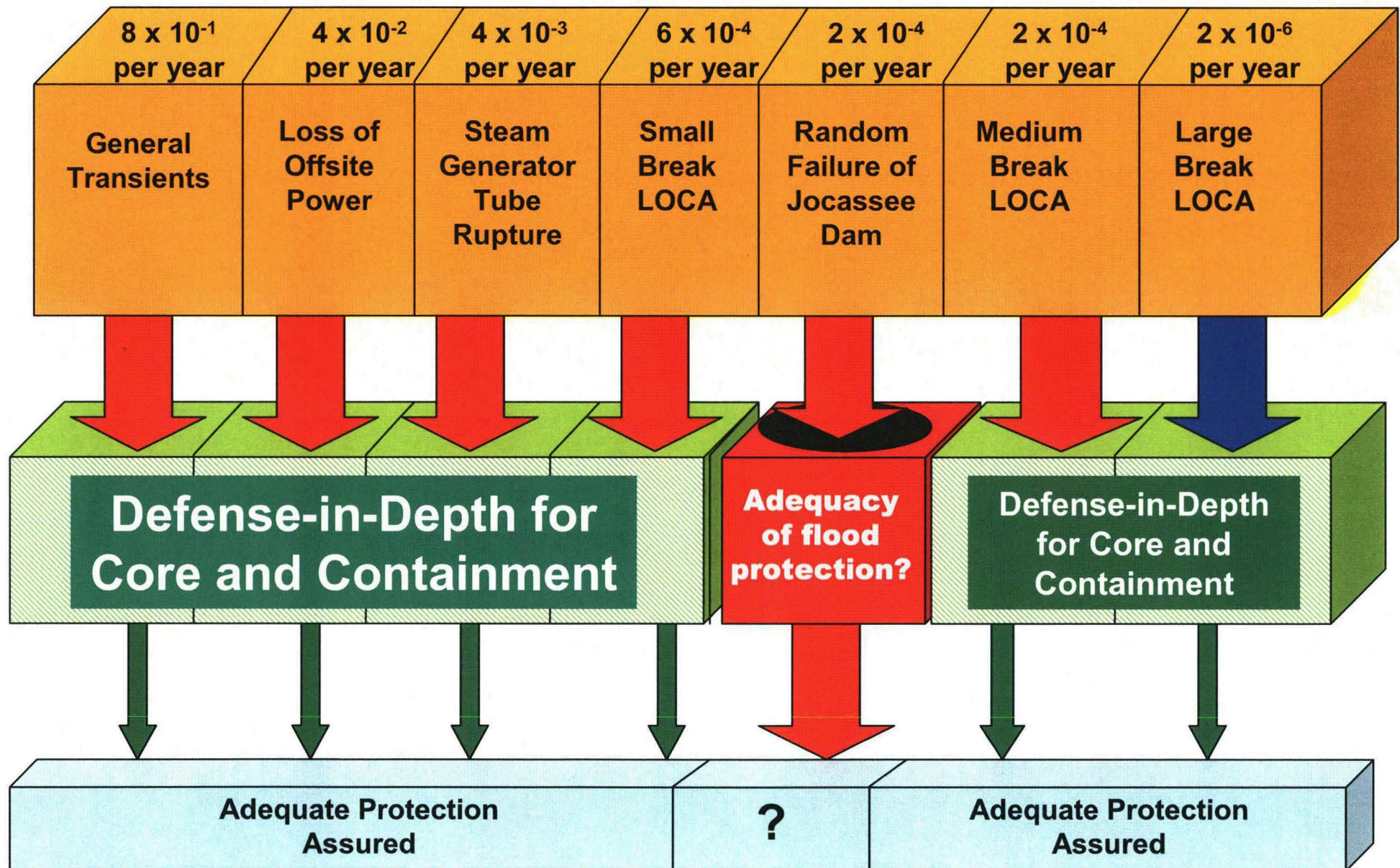


~~Official Use Only - Security Related~~  
Information

7



## Perspective of Oconee Credible Event Protection



~~Official Use Only~~ ~~Security Related~~ Information

### **10CFR 50.54(f) Letter Issues and NRC Expectations**

1. *Explain the bounding external flood hazard at Oconee and the basis for excluding consideration of the external flood hazards, such as those described in the Inundation Study, as the bounding case.*

#### **NRC expectation for response:**

Include details on bounding floods which can impact the ability to safely shut down the plant and maintain it in a safe condition.



~~Official Use Only~~ ~~Security Related~~  
Information

9

~~Official Use Only~~ ~~Security Related~~ Information

### **Information Request Letter Issues and Staff Expectations**

2. *Provide your assessment of the Inundation Study and why it does or does not represent the expected flood height following a Jocassee Dam failure.*

#### **NRC expectation for response:**

Provide an assessment of the validity of the inundation study. Address assumptions and safety margins for study parameters and boundary conditions.



~~Official Use Only~~ ~~Security Related~~  
Information

10



~~Official Use Only - Security Related~~  
~~Information~~

## Information Request Letter Issues and Staff Expectations

3. *Describe in detail the nuclear safety implications of floods that render unavailable the SSF and associated support equipment with a concurrent loss of all Alternating Current power.*

### **NRC expectation for response:**

Provide an assessment of remaining credited defense-in-depth for the Oconee units following loss of the SSF. On complete loss of all defense-in-depth and severe flood, provide details of the consequences to the site (e.g., accident sequence analyses addressing release consequences, timeframes, dose calculations, etc.). Include emergency planning contingencies.



~~Official Use Only - Security Related~~  
~~Information~~

11

~~Official Use Only - Security Related~~  
~~Information~~

## Summary

- Our concern regarding external flooding at Oconee is an adequate protection issue.
- As such, we want to emphasize the importance of taking prompt action to address this issue.
- The NRC expects a high quality, technically defensible, and timely formal written response.
- Duke's response to the 10CFR 50.54(f) letter will contribute to NRC's decision-making regarding future regulatory action on this issue.



~~Official Use Only - Security Related~~  
~~Information~~

12