



September 20, 2018

Michael Scott, Director  
Division of Preparedness and Response  
Office of Nuclear Security and Incident Response  
U.S. Nuclear Regulatory Commission  
Mail Stop T4D22A  
Washington, D.C. 20555

Dear Mr. Scott:

The Federal Emergency Management Agency (FEMA) has completed its Disaster Initiated Review (DIR) of the North Carolina communities within the 10-mile Emergency Planning Zone of the Brunswick Steam Electric Plant following Hurricane Florence. The Review included the examination of the local offsite response organizations, to include but not limited to the Emergency Operations Center functionality and its communication capabilities, in order to assess their continued capability to adequately respond to an incident at the plant.

On September 19, 2018, a comprehensive investigation and collection of field data was performed by the joint FEMA/North Carolina Radiation Protection Section DIR Team, in accordance with FEMA's Post Disaster Assessment of Offsite Capabilities Standard Operating Guide.

Based on the review of the information gathered, FEMA concludes that offsite radiological emergency preparedness is adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency at the Brunswick Steam Electric Plant. At this time, FEMA is not aware of any unresolved offsite emergency preparedness issues around Brunswick Steam Electric Plant, and therefore, we have no objections to plant startup and full-power operations.

Please contact me at 202-704-4242, if you have any questions or require any further assistance on this matter.

Sincerely,

Michael S. Casey, Ph.D.  
Director, Technological Hazards Division

Attachment  
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**FEMA**

September 20, 2018

MEMORANDUM FOR: Michael Casey, Director  
Technological Hazards Division

ATTENTION: Vanessa Quinn, Chief  
Radiological Emergency Preparedness Section  
Technological Hazards Division

FROM: Lawrence Robertson, Acting Chief/RAC Chair  
Technological Hazards Branch  
National Preparedness Division  
FEMA Region IV

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SUBJECT: Disaster Initiated Review - Brunswick Nuclear Plant

**Background:**

Hurricane Florence made landfall in the early morning of Friday, September 14, 2018, bringing rain, strong winds, and floods to the State of North Carolina. The Brunswick Nuclear Plant, operated by Duke Energy, is located near the City of Southport in southeastern Brunswick County, North Carolina. The 10-mile emergency planning zone encompasses portions of both Brunswick and New Hanover counties, which were impacted by the hurricane. All residents of the counties were under mandatory evacuation orders by the State of North Carolina. The Brunswick Nuclear Plant went into Mode 3 (hot shutdown) of both Units 1 and 2 on Thursday, September 13, 2018 in anticipation of the severe weather. The plant declared a Notice of Unusual Event (NOUE) on September 15, 2018 due to Emergency Action Level HU3.4, "A hazardous event that results in onsite conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles." The plant went into Mode 4 (cold shutdown) on September 18, 2018.

On September 15, 2018, FEMA Region IV performed a Preliminary Capabilities Assessment (PCA). Based upon that PCA, it was determined that the State of North Carolina and Brunswick and New Hanover counties were unable to implement protective measures in the event of an accident at the Brunswick Nuclear Plant. With that, FEMA Region IV concluded that a Disaster Initiated Review (DIR) of off-site emergency preparedness within the Brunswick Nuclear Plant 10-mile emergency planning zone was required.

FEMA Region IV REP staff and North Carolina Department of Health and Human Services, Division of Health Service Regulation, Radiation Protection Section personnel conducted the disaster initiated review. Relevant information pertaining to the State of North Carolina and Brunswick and New Hanover Counties' capabilities to protect the health and safety of the public and support the Brunswick Nuclear Plant was collected and reviewed. This information was gathered in discussions with those agencies as well as team observations while traversing the 10-mile emergency planning zone on September 19, 2018.

Based upon the review, FEMA Region IV has concluded that offsite radiological emergency preparedness is adequate to provide a reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency at the Brunswick Nuclear Plant.

### **Assessment:**

#### **1. Emergency Response Facilities**

The State of North Carolina and Brunswick and New Hanover Counties' activated their emergency operations centers in response to the impending landfall of Hurricane Florence. The State of North Carolina and both risk counties' emergency operations centers remain at level 1, full activation, in support of recovery and restoration operations. The State of North Carolina and Brunswick County emergency operations centers were not compromised. However, the New Hanover County emergency operations center lost their independent universal power supply as a result of a lightning strike. New Hanover County transferred their operation to the county government center, their alternate operation center, without a degradation to operations and where they continue to operate. Restoration of the New Hanover County emergency operation center will be completed during their recovery from the event. The state and risk county emergency operations centers are functional and their staffs are capable of coordinating emergency response operations in support of an event at the Brunswick Nuclear Plant, if needed.

#### **2. Communications**

Primary and secondary communication systems are operable and functioning. No irregularities were noted in the primary or secondary means of communication between Duke Energy, the State and the risk counties.

#### **3. Emergency Response Organizations**

State and county emergency management, law enforcement, fire, and emergency medical services organizations are available and capable of providing services to ensure a safe and secure environment. The multi-agency organization for performing waterway warning of the Cape Fear River is available and capable of performing all necessary tasks. Law enforcement agencies are capable of establishing traffic and access control points if necessary. Fire service and other emergency workers are capable of establishing designated reception centers for evacuee and emergency worker and vehicle monitoring and decontamination stations to perform radiological monitoring and decontamination activities. The State of North Carolina has identified Lincoln

and Catawba County trained emergency workers as backup for activities in Brunswick and New Hanover Counties if necessary.

#### **4. Public Alert and Notification**

The prompt alert and notification system for the 10-mile emergency planning zone consists of a fixed siren system and the broadcast of emergency alert system messages. This system has 38 pole mounted sirens placed strategically throughout the emergency planning zone with 32 in Brunswick County and six in New Hanover County. The prompt alert and notification system of the 10-mile emergency planning zone is operable. As of this assessment, 29 sirens are operable on primary alternating current power with direct current backup. Nine sirens are operable on direct current backup; these nine sirens are located in Brunswick County. Duke Energy has implemented a maintenance plan to recharge those siren batteries every four days to ensure operability. This compensatory measure is within technical specifications of those siren batteries. The risk counties have the resources to conduct backup route alerting if needed. Reverse calling systems are also operational in both counties for notifying the public if necessary. The State's joint information system is capable of issuing emergency public information and instructions relative to the Brunswick Nuclear Plant in a timely manner.

#### **5. Access and Functional Needs and Transportation Resources**

The State and risk counties maintain enough transportation assets to fulfill requirements. Movement of transportation dependent populations to include disabled, access/functional needs, and schools remain unencumbered. There is no degradation of this capability.

#### **6. Evacuation Routes**

The State and risk counties maintain sufficient law enforcement assets to perform the duties required of them. Primary evacuation routes inside of the 10-mile emergency planning zone are passable. County emergency management officials and State of North Carolina Department of Transportation staff closely monitor and coordinate all road conditions. The state and risk counties implemented numerous traffic and access control points relative to Hurricane Florence response. Evacuation route impediments were identified as flooding and have been resolved or alternate routes are in place at this time. Alternate routes continue to be removed as flood waters recede. Additional time to travel upon identified alternate routes out of the emergency planning zone were estimated to be less than 15 minutes. State and county assets to perform public messaging are in place, to include using roadside unit display messages with changeable messages, public communication networks, and social media.

#### **7. Accident Assessment**

The North Carolina Department of Health and Human Services, Division of Health Service Regulation, Radiation Protection Section has the staff, equipment, and resources available to provide independent radiological dose assessment and provide recommendations to decision

makers on protective actions for the health and safety of the public. The section can deploy the state's radiological field monitoring teams to monitor and assess a radiological plume.

## **8. Support Services**

The risk counties have the available resources to staff and operate reception and congregate care centers in accordance with their plans and procedures. Brunswick and New Hanover counties activated shelters in support of their displaced populace. Sufficient shelter space is available for each county to support the Brunswick Nuclear Plant 10-mile emergency planning zone. Doshier Memorial Hospital and the New Hanover Regional Medical Center Main Campus are operational and capable to provide treatment to radiological contaminated injured individuals in accordance with plans and procedures. The supporting county emergency medical services have not been degraded and are capable to respond, care, and transport a radiological contaminated injured individual.

## **9. Population Shifts**

There has been no significant population shift due to the incident.

## **10. Supporting Documentation**

All supporting documentation gathered by the Review Team will be retained on file at FEMA Region IV.

## **Conclusion:**

Based on information gathered during this disaster initiated review, FEMA concludes that State of North Carolina and Brunswick and New Hanover Counties' offsite radiological emergency preparedness is adequate to provide reasonable assurance and that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency at the Brunswick Nuclear Plant.