Appendix E: Nuclear Hazards

The hazard mitigation planning guidance does not require local jurisdictions to specifically address response to a nuclear incident within this plan, however Orange County has taken measures to prepare for such an event.

Orange County Emergency Services, in conjunction with other local, state, and federal agencies, has developed a comprehensive multi-hazard plan to deal with any emergency that may befall our county. The multi-hazard plan is a separate document from this plan and was revised in 2009 into the Emergency Operations Framework to best reflect County practices during emergencies and ongoing changes to County government.

One of the potential hazards facing the county is a nuclear/radiological materials incident that can be brought about by both intentional and unintentional causes. There are three scenarios involving nuclear or radiological material release that could affect the county.

The three scenarios are:

1. Incident at Shearon Harris Nuclear Power Plant
2. Detonation or activation of a nuclear or radiological weapon
3. Spillage or loss of containment of radiological material

Orange County is located within the 50 mile "ingestion pathway" of the Shearon Harris Nuclear Power Plant. This means that the possibility exists for contamination of water, food stuffs, land, and infrastructure in the event of a catastrophic release of nuclear material from the plant. Both intentional and unintentional causes could effect such a catastrophic release. It should be noted that Orange County is not in danger of any blast effects from an explosion at the plant.

Intentional detonation or activation of a nuclear weapon remains a concern. The range of effects to the county vary widely depending on the device utilized. Devices range from simple radiological material dispersal, use of a high explosive to disperse material, detonation of an improvised fissionable weapon, or detonation of a military grade fissionable nuclear weapon. The first two types of devices would primarily cause contamination and would not result in immediate death due to radiation exposure. The latter two would result in widespread casualties and contamination over a wide area.

Intentional or unintentional spillage or loss of containment of radiological material is the most likely possibility of radiological material to be unnaturally released within our county. Possible methods for this include transportation accidents involving rail or road based vehicles, malfunction of the containment system of devices that utilize radiological materials such as x-ray machines, and breach of containment of airborne or spaceborn nuclear powered devices.

Orange County has taken a pro-active stance in approaching the threat by introducing many studies and programs that have improved our response.

In May 2002, Orange County hosted a symposium on the threat of nuclear terrorism within the area, focusing on spent fuel rod storage at Shearon Harris Nuclear Power plant. Outcomes from this symposium lead to a federally financed study on evacuation methods, routes, and timelines for evacuation orders.

The symposium also offered guidance for the revision of the County's multi-hazard plan. The multi-hazard plan was revised in February 2003 to add responsibilities for county departments to respond to the various impacts of terrorism. The plan was updated again in 2009 to reflect current practices and County government changes.

Since this symposium, County personnel have participated in two exercises involving radiological material. The University of North Carolina at Chapel Hill held the first tabletop exercise with a dirty bomb scenario at the Dean Smith Center on June 18th, 2002. Triangle J Council of Government hosted a tabletop exercise with a similar scenario later that year.

Orange County Emergency Services and law enforcement departments completed a US. Department of Homeland Security terrorism assessment tool in 2003 that identified:

- critical targets
- necessary equipment for effective response
- potential threat elements

The multi-hazard plan addresses the three nuclear/radiological scenarios listed above and assigns certain county staff with emergency responsibilities to respond and carry out duties related to a terrorist attack including a nuclear incident.