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LETTER TO COMMISSION
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TO: Mayor Matti Herrera Bower and Members of the City Commission

FROM: *Hilda M. Fernandez for*
Jorge M. Gonzalez, City Manager

DATE: June 14, 2011

SUBJECT: **Letter From Mayor Stoddard, City Of South Miami, Regarding Turkey Point Nuclear Power Plant**

At the request of South Miami Mayor Phillip K. Stoddard, PhD, the attached letter is transmitted for your perusal.

REP
JMG/REP

C: Duncan Ballantyne, Assistant City Manager, Hilda Fernandez, Assistant City Manager, Jorge Gomez, Assistant City Manager, Dolores Mejia, Special Projects Administrator,



City of South Miami

Philip K. Stoddard, PhD
Mayor

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10 June 2011

To Miami-Dade County Elected Officials:

We received a letter from Mr. Curtis Somerhoff, Director of Miami Dade County's Department of Emergency Management, dated 9 May 2011, explaining the County's radiological emergency plan. I go through his letter below and explain why his explanations do not assuage my grave concerns about the County's preparation for radiological emergencies at Turkey Point.

Mr. Somerhoff wrote:

Federal regulations have established two emergency planning zones around nuclear plants: the plume exposure pathway (with a radius of about 10 miles from the reactor site) and the ingestion exposure pathway (with a radius of about 50 miles from the reactor site).

In the significant radiation releases on record following nuclear accidents, airborne radiation plumes, at levels considered dangerous, have not stopped 10 miles from the reactor site, not at Chelyabinsk, Seversk, Chernobyl, Three Mile Island, or Fukushima. Our government evacuated American citizens 20 miles out from Three Mile Island and 50 miles out from Fukushima. The Japanese government is now evacuating people from Iitate Village, 25 miles from the Fukushima. Transposed to Miami, that would be the distance from Turkey Point to Miami International Airport, an area with over a million inhabitants. Although the NRC statutes only require local agencies to prepare evacuation plans for a 10 mile emergency planning zone (EPZ), experience shows this radius is inadequate.

The ingestion exposure pathway (with a radius of about 50 miles) includes all of Miami-Dade County, and Parts of Broward, Monroe, and Collier Counties, as well as adjacent coastal waters.

Food and water obtained within 50 miles of Turkey Point would be off limits for human consumption. In other words, the entire Miami-Dade agricultural industry, the Biscayne Bay and Florida Bay fisheries and seafood industry, and the Everglades water supply could be contaminated beyond use. What would we drink, cook with, and wash our dishes and ourselves in if not the water?

Protective measures range from sheltering and evacuation options for areas close to the nuclear plant...

According to FPL's evacuation study, the 10-mile EPZ around Turkey Point is home to 187,374 residents and 19,055 transients, 206,429 people in all. Miami-Dade County has nuclear emergency shelter capacity for 60,769 evacuees, just under a third of the EPZ population. What happens to the other 145,660 people directed to show up at the Tamiami Park Emergency Reception Center (ERC), with their pets, seeking direction to safe radiation shelters? The ETE study found that 30% of evacuees would bring their pets along, but only two shelters accept pets, and only if they are pre-registered.

And what happens if the plume extends up into the shelter zone, or even to Tamiami Park contaminating the ERC itself?

Multiple evacuation scenarios are considered so evacuation decision-makers have detailed time estimates that take into account such vagaries as shadow evacuations within and outside the emergency planning zone, transient population behavior and weather impacts.

Let us consider these "shadow evacuations", the propensity of people outside an EPZ to self-evacuate without official instruction to do so. The County's radiological emergency evacuations plan is based on an Evacuation Time Estimate (ETE) study prepared by FPL's consultants. The ETE study considered the effects on traffic that 60% of the people in the shadow region evacuated. Unfortunately they defined the shadow region to only include people living outside the 10-mile EPZ but south of Coral Reef Drive (SW 152 St), just 13 miles from Turkey Point. Based on what evidence do County emergency planners believe that people who live north of Coral Reef Drive would not self-evacuate? Following every nuclear disaster, the suckers who followed official directions and stayed behind were told after the fact *"Oh sorry, the radiation your area received was higher than we realized at the time."* Everybody knows that now. May I suggest that Coral Reef Drive was an arbitrary boundary, selected by the consultants to keep the total number of evacuees in a logistically manageable range, but with no scientific basis in the history of nuclear accidents or the published studies of self-evacuation behavior following radiological releases. A more extensive shadow evacuation than planned (i.e., people north of SW 152 St) totally invalidates the evacuation time estimates.

People who cannot evacuate because of outside conditions (e.g., traffic jams, radiation clouds, lack of shelter space) will be told to stay inside with the windows closed, a practice called "in-place sheltering". I think it's fair to assume that we'd also be without power following a nuclear power plant accident, so no air conditioning, and the tap water should be considered unfit to drink for 50 miles. This scenario is a formula for widespread heat shock as happened in New Orleans after Katrina.

But the County's in-place sheltering plan has other problems. According to the EPA, masonry houses such as we have in South Florida provide only a 40% reduction in radiation exposure in a radiological emergency. Spending 24 hours in our houses during a radiation release would give us the same radiation exposure as standing in our front yards for 14 hours.

Our experience with hurricane threats demonstrates our ability to manage large-scale evacuations and sheltering operations.

Prior to hurricane County emergency planners have over a week of warning, and days of television coverage in which to provide residents with detailed instructions. We get no warning prior to a radiological emergency, our residents have never practiced a radiological evacuation, people are truly terrified of invisible threats like radiation, and even scientists cannot yet agree about the risks of low radiological exposure. With the nuclear plants down and Turkey Point in a haze of radiation, we'll have no power and probably no television. The sirens and the odd radio may be the residents' only warning of an invisible threat. My point is that experience with hurricanes should not leave us over-confident of our ability to manage a radiological emergency.

Miami-Dade maintains a robust radiological emergency training and exercise program. Responders tasked in the plan receive recurring radiological response training and are evaluated by the Federal Emergency Management Agency (FEMA) during regular drills and exercises.

Indeed, the Miami-Dade County Radiological Emergency Preparedness Plan stated the following in 2009:

Organizations that operate rotary wing aircraft that could be tasked to support response or recovery operations in Miami-Dade include but are not limited to:

1. Miami-Dade Fire Rescue Department
2. Miami-Dade Police Department
3. Miami-Dade Public Works Department
4. US Immigration & Customs Inspections
5. US Coast Guard
6. City of Miami Police Department

But here's what the US Coast Guard wrote to FPL the year before in 2008:

*This letter provides current resource and support capabilities for Coast Guard assets located in the vicinity of the Florida City Turkey Point Nuclear Plant. Please note that any emergency assistance that the Coast Guard may provide would be limited by the fact that **Coast Guard crews are not equipped or trained for radiological response**, and thus, cannot be exposed to radiological contamination. Coast Guard assets will be restricted to activities and geographic locations that are air monitored for radioactive fallout and are certified to be safe without protective clothing or equipment. Consequently, **the Coast Guard is unable to act as the primary responder for nuclear power plant disasters.***

One might ask how carefully the County discussed its radiological plan with the US Coast Guard, or the other five agencies on that list.

Mr. Somerhoff's statement about delivery of potassium iodide (KI) excuses the state's policy not to support proactive KI distribution plans:

Ample quantities of Potassium Iodide (KI) are stocks locally and available for distribution at the Emergency Reception Center. Since KI only protects one organ from only one time of radiation, and does not prevent other radiation doses, the focus of the plan is on moving people out of harm's way.

I find both his statement and plan for KI distribution to be irresponsible. While radioactive cesium, strontium, and xenon are certainly problematic in a radiological release, radioiodines (e.g., I¹³¹) are the most abundant radioisotopes released, and are particularly dangerous for children because they concentrate in the thyroid and focus what may be written off as low whole-body dose ("no more radiation than a few chest X-rays") onto a much smaller target organ. Here I quote from the document *World Health Organization Guidelines for Iodine Prophylaxis Following Nuclear Accidents*:

*To obtain full effectiveness of stable iodine for thyroidal blocking requires that it be administered shortly **before exposure** or as soon after as possible.*

The County stocks KI for distribution at the Tamiami Park ERC. That fact makes it difficult or impossible to provide KI prophylaxis to children and pregnant women downwind of a nuclear accident **before** they are exposed to airborne radioiodines. According to the WHO report, taking KI nine hours after initial exposure reduces its efficacy by 50%. How long would it take to get KI into circulation in 95% of the affected population? In North Carolina the public utilities pre-distribute KI to residents to avoid the obvious distribution problem during and after an emergency.

In none of the local planning documents I have read has anyone convinced me it would be possible to quickly screen 200,000+ people for radiation exposure at the County's sole ERC, located at Tamiami Park. Nor is it clear whether emergency managers can realistically get all the cars through the site in a timely manner. The Youth Fair at Tamiami Park gets less than 100,000 attendees at peak, yet when I tried to get my daughter to the fair one night last spring we found ourselves mired in a 4 square mile traffic jam; she got out and walked the last half mile.

When Mr. Somerhoff wrote that the County has "ample KI" on hand, I am wondering how many doses of KI that includes. The disparity in shelter spaces vs. EPZ population also makes me question whether the County stocks enough doses for the population that could be exposed (all those under the age of 40), and enough stocks for the next few weeks or months as proved necessary in neighboring Poland following the Chernobyl disaster in Ukraine. Likewise I wonder whether the County maintains stocks of KI in syrup form suitable for children. Children, as we know, are critically vulnerable to I¹³¹ exposure because their thyroid glands are small and their metabolisms are high.

Then Mr. Somerhoff downplayed the human risks from nuclear accidents.

From a risk standpoint, the chance of being seriously injured, permanently disabled or killed in an auto accident far exceeds the chance of being injured, permanently disabled or killed as a result of a nuclear plant accident.

I take it that his point is we should keep things in perspective and not worry too much about mortality from nuclear accidents. However physicians and scientists recognize that a nuclear accident entails far broader epidemiological risks than just acute exposure leading to rapid death. The medical profession has known for over 50 years that genetic damage from radiological exposure may not appear for years or even generations (Powell, 1957, Am J Public Health).

Mr. Somerhoff concluded his letter with this confusing statement:

It is my hope the tragic effects in Japan will lead to the discussions necessary to match the actual threat from nuclear power to the perceived threat.

First he reminds us of Japan where three of Fukushima's nuclear plants experienced reactor core meltdowns, and loss of cooling at spent fuel pools exposed fuel rods causing hydrogen explosions, a brief criticality, and massive release of nuclear contamination. Then he implies that the actual threat of nuclear power is less than the perceived threat. Scientists believe that the actual threat in South Florida is *significantly greater* than has been broadly perceived. A threat is the product of the probability of an event and the consequences of an event: on both counts, the actual threat is greater than most people realize.

First, consider the probability of a radiological accident at Turkey Point. FPL has repeatedly stated that Turkey Point withstood the full impact of Andrew. It did not. Hurricane Andrew passed to the north of Turkey Point, dealing it the clean side of the storm and only a 5.5 foot storm surge. Even so, the reactors were down for 5 days, cooled by diesel generators. Had Hurricane Andrew come ashore South of Turkey Point, in Card Sound for example, the 17 foot surge it delivered to what is now Cutler Bay would have been directed at the Turkey Point reactor site. FPL has repeatedly stated that TPN 3 & 4 are situated 20 feet above sea level, but LiDAR-based elevation maps provided by Dr. Dean Whitman at FIU show the land on which the two reactors sit is between 11 to 16 feet, with the surface around the reactor buildings at 15 to 16 feet. Reviewing the elevation data, a scientist in this group stated:

There are areas right nearby which are lower including the generators and other major electrical equipment on the west side which are around 11 feet where the outlet for cooling water is located. A 16 foot surge with waves on top of that would inundate 80-95 percent of the property and damage much of the equipment located outside.

These generators and cooling pumps are all-critical for keeping two reactor cores and 2.4 million pounds of spent fuel from overheating as happened in Fukushima. NOAA has recorded lesser storms over that deadly track on two occasions. It's just a matter of time.

Second, consider the consequences. I should like you to close your eyes and remember what South Dade was like after Hurricane Andrew. Now imagine it with oxidizing fuel rods.

Our experience with hurricanes has given us incentive to invest in emergency training and infrastructure. That is the only good news. Local hurricane preparedness plans are predicated on our ability to predict storms far before they happen. Nobody has ever predicted a nuclear accident before it happened. South Florida's emergency planners, managers, and responders have no experience coping with actual radiological release, especially following a monster hurricane, which is when a nuclear accident is most likely to occur in South Florida.

When FPL planned the existing reactors at Turkey Point in the 1960s, Miami was a small city and South Dade was a sparsely populated agricultural region. A large population has moved in since then, a population too large to evacuate effectively, FPL's ETE study notwithstanding. If anything, Mr. Somerhoff's letter details the inadequacy of our emergency preparedness. We have no plan for evacuating large swaths of South Florida's population from should radiation streak northward 50 miles. We have no viable mechanism in place to get KI into the mouths of children and pregnant women before they are exposed to radioiodines. Reliance on a single Emergency Reception Center for the entire county is ludicrous. People within 10 miles of Turkey Point have received literature but those I've spoken to have only have limited understanding of the radiological emergency plans that they've never practiced. The rest of the County's population seems to have been left out of the planning process altogether.

Last autumn, I protested these inadequacies to the Atomic Safety and Licensing Board of the NRC. Here's part of their response:

FEMA sent a letter to the NRC indicating that, based on its "thorough review," FPL's emergency evacuation plans are adequate, and there is Reasonable Assurance that the plans can be implemented with no corrections needed.

This would be the same FEMA that approved New Orleans' emergency plans prior to Hurricane Katrina.

Considering the dire circumstances that we have in New Orleans, virtually a city that has been destroyed, things are going relatively well.

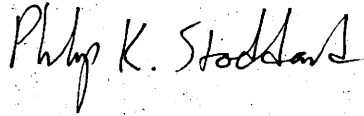
- FEMA Director Michael Brown, Sept. 1, 2005

FEMA has not been very good at imagining what hurricane driven water can do to levies or, apparently, to nuclear power plants.

My city, South Miami, is situated 17 miles north of Turkey Point, seven miles outside the planned evacuation zone. The only consideration we receive in the County's radiological emergency plan is that we live in the "ingestion exposure pathway" so in a radiological emergency we will be told not to consume our homegrown fruits and vegetables.

FEMA's stamp of approval clearly doesn't protect our own families or the residents that we were elected or appointed to serve from the lack of realistic preparation here in Miami-Dade County. We deserve better consideration.

Sincerely,

A handwritten signature in black ink that reads "Philip K. Stoddard". The signature is written in a cursive style with a large, prominent initial "P".

Philip K. Stoddard, Ph.D.
Mayor