

October 9, 1992

Docket Nos. 50-250
and 50-251

NOTE TO: James Richardson, Director
Division of Engineering
Office of Nuclear Reactor Regulation

Ashok Thadani, Director
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

Frank Congel, Director
Division of Radiation Safety and Safeguards
Office of Nuclear Reactor Regulation

FROM: Steven Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

SUBJECT: EDO PRINCIPAL CORRESPONDENCE CONTROL NO: 0008129
CONGRESSIONAL BRIEFING ON TURKEY POINT

Attached is a letter that has been sent to Senator Bob Graham (R-FL) from several individuals concerning Hurricane Andrew's impact on Turkey Point. At the request of Congressional Affairs, NRC is tentatively scheduled to brief the Senator's Subcommittee on October 20, 1992, on the specific issues raised in the letter. In preparation for the proposed briefing, by October 14, 1992, please provide a brief response to each question (or issue) that falls into your area. We have assigned responsibilities on the margin of the enclosure. Either L. Raghavan, NRR Project Manager, or K. Landis of Region II has already contacted the cognizant members of your staff concerning this request. Because of the tight schedule for preparation of the briefing, your immediate attention to this matter is appreciated.

/s/
Steven Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

* SEE PREVIOUS CONCURRENCE

LA:PDII-2*
DMiller
10/08/92

PM:PDII-2*
LRaghavan
10/08/92

D:PDII-2*
HBerkow
10/05/92

ADR2*
GLainas
10/08/92

B:DRPE
SVarga
10/9/92

Document Name: S:TP8129.GRN

Florida Power and Light Company

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September 23, 1992

Senator Bob Graham
Senate Environment and Public Works Committee
Subcommittee on Nuclear Reactor Regulation
Washington, D.C. 20510-0903

Dear Senator Graham:

We the undersigned local, state, regional and national citizen organizations are writing to you on behalf of over a million members to express grave concern about what happened at the Turkey Point nuclear power reactors before, during, and after they were struck by the winds of Hurricane Andrew on August 24, 1992.

In particular, we respectfully ask that you:

1) Conduct an investigation, with full subpoena powers, into the events and damage that occurred at the Turkey Point nuclear power plants as a result of Hurricane Andrew. The investigation should scrutinize the performance of Turkey Point systems and equipment, especially those systems that failed as a result of the hurricane. In particular, we ask the Subcommittee to examine the failure of the Emergency Notification System, Emergency Siren System, Fire Protection System, Offsite Power System, Offsite Radiation Monitoring System, and much of the Security and Surveillance Systems. The Subcommittee's investigation should also examine whether some of these critical systems should be required to be rebuilt so that they will function during a worst case hurricane at Turkey Point. The Subcommittee should also investigate the performance of plant employees, state officials, federal regulators and emergency planning officials before, during and after the hurricane. Finally, in light of events at Turkey Point, the Subcommittee should investigate whether the Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Administration (FEMA), when these agencies assess the adequacy of evacuation plans, should be required to consider the possibility that severe natural phenomena, such as hurricanes and earthquakes, could completely disrupt emergency response capability at vulnerable nuclear plants.

2) Request the General Accounting Office (GAO) to conduct an investigation into whether an adequate and workable emergency evacuation plan existed during, and after, the storm that would have enabled people who live around Turkey Point to evacuate if it became necessary. The GAO investigation should address the fact that Andrew disrupted Turkey Point's offsite communications temporarily during the storm, destroyed evacuation routes for days, and rendered radiation monitors and emergency sirens

- more -

Letter to Sen. Graham, page 2

critical to an evacuation inoperable. Such an investigation would benefit Floridians, but also citizens living around nuclear power plants that could have their emergency response plans disrupted by natural disasters. The investigation would also assist federal and local officials who must consider the effect of severe external environmental phenomena in their radiological emergency evacuation planning process.

We make these requests because we are deeply disturbed by the Nuclear Regulatory Commission's failure to inform the public about the full scope of damage at Turkey Point until documents obtained by a former Florida Power & Light Senior Engineer were leaked to environmental organizations, resulting in media scrutiny of the situation. We now know, despite NRC reassurances, that Turkey Point did not survive the storm unscathed. Numerous systems failed. And, fire protection equipment that was required to function in a hurricane did not - a failure that placed Turkey Point on ALERT status for six days.

On the human side, it is clear that emergency officials were incapable of responding to a nuclear accident in the midst of, or after the hurricane. Yet, the NRC, which you oversee, has stated to the Ft. Lauderdale Sun-Sentinel, "As far as the NRC is concerned, everything is OK. It's their decision when to start up again." The NRC also told The Miami Herald, "The plant ... functioned as it was designed." The NRC made these statements knowing that certain systems designed to protect the public health and safety during normal operation and accident conditions were rendered inoperable by Hurricane Andrew, and in some cases remained inoperable for weeks.

Additionally, it is our understanding that the NRC is currently considering allowing Turkey Point Unit #4 to restart with an "interim" fire protection system that may not meet the stringent hurricane standards that are required.

We believe that the NRC's conduct, in this instance, raises serious questions as to whether they have violated their mandate to protect the public health and safety. A simple reading of the media reports and attached documents concerning hurricane related events at Turkey Point demonstrate that many things went wrong during the storm that require government scrutiny, including the apparent "nothing can go wrong" attitude of the NRC.

We therefore believe that it is of the utmost importance to the health and safety of the people of South Florida and the nation that those with the most knowledge of the conditions and events surrounding the Turkey Point nuclear power plants during

- more -

Letter to Sen. Graham, page 3

and after the hurricane be thoroughly deposed, and that all relevant documents be examined with utmost care.

Senator Graham, as Florida's Senior Senator and Chairperson of the Senate Subcommittee that oversees the Nuclear Regulatory Commission, you are in the best position to guarantee that such investigations will take place.

We urge you to announce a Senate investigation and a GAO investigation as soon as possible, with a mandate to answer, among others, the questions attached to this letter. We the undersigned believe that nothing short of a public investigation into the full scope of events and damage that occurred at the Turkey Point nuclear power plants as a result of Hurricane Andrew will ensure the health and safety, not only of those people living in South Florida, but people living in the area of other nuclear plants susceptible to natural disasters.

We trust that you will begin at once to fully investigate our concerns.

Joseph Podgor
Friends of the Everglades

Tom Weis
Clean Water Action

Athan Manuel
Florida Public Interest Research Group

Bonnie Barnes-Kelley
Friends of the Oleta River

Morgan Levy
West Dade Coalition of Homeowners

Harvey Wasserman
Greenpeace

Michael Mariotte
Nuclear Information & Resource Service

Scott Danman
Safe Energy Communication Council

Joette Lorian
Floridians for Safe Energy

Lee Emerson
Sierra Club, Miami Chapter

Donna Dowling
Reef Relief

Steven Meyerson, MD
Physicians for Social
Responsibility,
Miami Chapter

Brant Blackwelder
Friends of the Earth

Jim Riccio
Public Citizen

Letter to Sen. Graham, page 4

QUESTIONS

PUBLIC INFORMATION: What information was available to the NRC and local and state government officials when they informed members of the press and the public that Turkey Point had made it through the storm safely and was "shutdown"? Who controlled and disseminated information on Turkey Point during and after the hurricane?

Actions

RT

SHUTDOWN: Why was Turkey Point in "hot standby" rather than "cold shutdown" when Hurricane Andrew came ashore and what, if any, was the potential safety consequence to the public? Were both Turkey Point Units 3 and 4 in Mode 4 two hours prior to hurricane force winds, as required?

RT

OFFSITE POWER: What was the wind speed when the offsite power lines providing power to vital systems in the nuclear plants failed? Were the power pylons "hurricane proof"? How long did it take to re-establish offsite power completely to the plant? When was offsite power restored to the plant? Would underground power lines improve reliability in a storm?

RT

EMERGENCY DIESEL GENERATORS: How long was it before emergency diesel generators (EDGs) supplied power to the emergency systems when offsite power failed? Why did one EDG fail on Thursday after the storm and how long did it take for the backup to actuate? How much fuel was available for the EDGs and how was it delivered to the plant? Was an additional EDG damaged by the oil spill at Turkey Point? Was function of the EDGs' cooling water supply ever threatened by debris on the plant site?

RT

EMERGENCY NOTIFICATION SYSTEMS: Why did the Emergency Notification System that provides vital communication links to the Emergency Operations Center fail causing Turkey Point to lose all communications with the outside world for over an hour during the storm? If an accident had occurred during the time that the system was inoperable how would it have affected emergency response time?

RT

FIRE PROTECTION SYSTEM: Why did the fire protection system, which is required to withstand a storm or hurricane, fail during the hurricane? Who was informed of the failure? Will the fire protection system be rebuilt to more stringent hurricane specifications since it failed? Will Turkey Point remain shutdown until the fire protection system is rebuilt?

NRR

SIREN SYSTEM: When did the Emergency Operations Center become aware that the Turkey Point Emergency Siren System had been rendered inoperable by the hurricane? Since the siren system remained inoperable for weeks, what was the contingency plan to notify the

AEOD/RT

- more -

Letter to Sen. Graham, page 5

public if an accident had occurred at Turkey Point during or after the storm? Who was responsible for the plan?

SECURITY: To what extent did the security and surveillance system fail in the storm and were any security/safeguards problems presented by this failure at a plant that had full fuel cores in both reactors? How was security for the plant conducted?

RT

HARDWARE: What is the current condition of pipes, pumps and other equipment that was located outside of the containment building at this twenty-year-old nuclear plant? Will seismic testing be conducted on this equipment before the plant is allowed to operate? What is the status of the Reactor Pressure Vessel with respect to embrittlement? Was this problem exacerbated while the Overpressure Mitigation System was inoperable?

RT / WRA
RT / Mcta
RT / out's
barr

SPENT FUEL POOL: Was there any structural damage to the spent fuel pool auxiliary building, which contains large amounts of high level nuclear waste? What plans did the utility have to restore water to the pool if the pool was damaged by a projectile? How would water have been circulated if emergency power to the pumps was lost?

RT

RADIOACTIVE INVENTORY: Was there any low-level radioactive waste onsite at the plant awaiting shipment to Barnwell, South Carolina? If so, what became of the LLRW during and after the hurricane? Were there any other radioactive materials on site that could have been affected by the hurricane? What agency has performed an inventory of radioactive materials on the nuclear plant site?

RT

RADIATION MONITORS: Were environmental radiation monitors surrounding the plant destroyed by the storm? If so, how was environmental radiation in the environment surrounding the plant monitored during and after the hurricane and who monitored it? When did the state first take independent radiation readings after the hurricane? Who is monitoring the environment now?

RT

OIL PLANT: What danger did the failure of sections of the oil plants at Turkey Point, including puncture of an oil tank and structural damage to a 450-foot stack, pose to the nuclear power plant? Was this stack designed to withstand 235 mph winds? What wind speeds are the Turkey Point plants designed to withstand? In light of the damage to the oil plant that did occur, is there a question as to whether a nuclear and oil plant built to different hurricane standards can safely co-exist?

ESGB

LIGHTING: Was lighting and/or air conditioning ever lost to the control room or the containment building? If so, were operations or equipment ever jeopardized? Did poor lighting prevent surveillance

RT

- more -

Letter to Sen. Graham, page 6

testing required to prevent overpressurization of the reactor pressure vessel while the overpressure mitigation system was administratively inoperable? Could this failure to perform the required surveillance have threatened the integrity of Turkey Point's embrittled reactor pressure vessels?

EMPLOYEES: How many employees remained at Turkey Point during the storm? Did employees remain at the plant on a volunteer basis? Was there a sufficient number of employees to conduct operations and required surveillance testing, and how long did it take for additional employees to get to the plant after the hurricane?

ALERT STATUS: Why was the public never informed that Turkey Point was on ALERT status from August 24th through August 30th? Were emergency workers and visitors who entered the area after the hurricane, including President Bush, informed that Turkey Point was on ALERT status? Were local fire and police departments, government officials and departments notified as required by the state's emergency plan? ALERT, according to the Florida Radiological Emergency Plan means "Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant." Was it proper for NRC officials to contend that there was never any risk to the public?

EVACUATION: Was there ever a potential for the situation at the Turkey Point nuclear power plants to deteriorate during the week that Turkey Point operated without offsite power and other vital equipment? If so, what plans did local, state, and federal officials have to evacuate the population, if necessary, and who was responsible for making these plans and communicating them to the public? Should the NRC be required to consider the possibility that a hurricane could completely disrupt emergency response capability in light of the damage to the emergency systems caused by Hurricane Andrew? Does the damage caused to emergency response systems, offsite radiation monitors and evacuation routes by Andrew raise a potential site suitability issue?

INSURANCE: In light of the "nuclear exclusion clause" that appears in most homeowner's insurance policies, if a worst case nuclear accident occurred at Turkey Point in connection with a hurricane, would insurers be required to compensate homeowners or would the hurricane-related claims be voided or reduced because of the nuclear exclusion clause?

FAILED SYSTEMS: Since systems designed to protect the public under normal operating and accident conditions were rendered inoperable by the hurricane, will the NRC assure that before Turkey Point restarts it will have systems designed and built to function in a class 4 or

- more -

Letter to Sen. Graham, page 7

5 hurricane? Or if not, can the NRC demonstrate that those systems that are not required to withstand a hurricane are not necessary to protect the public health and safety in light of recent hurricane experience? Also, since some scientists contend that global warming may increase both the frequency and intensity of hurricanes, what assurance do we have that the Turkey Point systems how required to be "hurricane proof" are designed and built to withstand the strongest hurricane that can occur?

ALTERNATIVES: How much will it cost to repair and rebuild Turkey Point to withstand the worst case hurricane that could occur? Are there cost effective alternatives to repairing Turkey Point that would be less of a risk in a hurricane zone?

FA

- End -

Note to Frank Engel: 10E1

This is another urgent Turkey Point document. We learned yesterday that it is due on 11/20 rather than 11/27. I would appreciate your review and concurrence on the substance of those portions of the response which fall into your area by COB 11/18. Verbal notification to L. Rafterman is adequate. Note that there may be some minor word changes by the Tech Editor. I appreciate your help.

Ed - As we discussed -

It seems we are trying to avoid saying that there were any problems. As a result of the hurricane, this response should use the words the Commission has already used in reports to Congress to recognize that FEMA concerns plant shutdown until FEMA reassessment (with NRC support) and reasonable assurance was reaffirmed.

Commission has done LC study 11/18/93

Falky N1:



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

The Honorable Bob Graham
United States Senator
P.O. Box 3050
Tallahassee, FL 32315

Attention: Becky Liner

Dear Senator Graham:

The enclosure is our response to the questions on Turkey Point which your constituents asked in a letter to your office dated September 12, 1992, concerning Hurricane Andrew's impact on the nuclear plants. Previously, on October 21, 1992, we briefed your staff and on November 6, 1992, provided additional information concerning certain other Hurricane-Andrew related questions which other of your constituents asked in their letter dated September 23, 1992.

I trust that this information will assist you in responding to the requests of your constituents.

Sincerely,

James M. Taylor
Executive Director for Operations

Enclosure:
As stated

DRAFT - ~~PREDECISIONAL~~

The Honorable Bob Graham
United States Senator
P.O. Box 3050
Tallahassee, FL 32315

Attention: Becky Liner

Dear Senator Graham:

The enclosure is our response to the questions on Turkey Point which your constituents asked in a letter to your office dated September 12, 1992, concerning Hurricane Andrew's impact on the nuclear plants. Previously, on October 21, 1992, we briefed your staff and on November 6, 1992, provided additional information concerning certain other Hurricane-Andrew related questions which other of your constituents asked in their letter dated September 23, 1992.

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Sincerely,

James M. Taylor
Executive Director for Operations

Enclosure:
As stated

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DRAFT ~~PREDECISIONAL~~

QUESTION: TURKEY POINT

Why did several systems important to the health and safety of the public (such as fire protection, security/surveillance, radiation monitoring, warning sirens and communications) fail during the Hurricane? Have these systems been reestablished?

Hurricane Andrew hit south Florida with sustained surface winds of up to 145 miles per hour (mph) per the National Hurricane Center estimate. Several unofficial reports estimate stronger gusts. The eye of the storm passed over the site and caused significant onsite and offsite damage. However, the nuclear portion of both units, that is the portions that could pose a radiological hazard to the public if they failed, were not damaged. Prior to the advent of the storm, the licensee, in accordance with its emergency planning procedures, brought the Units to a hot shutdown (Mode 4) and the units remained in a stable condition. There was no release of radiation to the environment.

Following completion of the storm damage repairs to the Turkey Point Unit 4 and common systems, the licensee restarted Unit 4 on September 29, 1992. Storm damage repairs to the Turkey Point Unit 3 are being implemented during its ongoing Cycle 13 refueling outage. Unit 3 is expected to resume its power operation by November 25, 1992.

The storm included damage to the fire protection, security / surveillance, radiation monitoring, warning sirens, and communications systems. The storm also caused loss offsite power. Following the storm, the licensee either restored the specific functions of these systems or implemented appropriate alternate means to meet their functions. Each of these systems is discussed below:

Fire Protection System

As a result of the hurricane winds the service water system high water storage tank collapsed and caused damage to the fire protection system. Within a few hours following the hurricane, the licensee established 30-minute roving fire watch patrols with the available personnel and by August 31, 1992, when qualified fire watch personnel became available, established Technical Specifications (TS)-required fire watches. By 5:20 p.m. on August 27, 1992, the licensee established a backup fire water capability which met the TS requirements. Prior to restart of Turkey Point Unit 4, the licensee implemented an interim fire protection configuration with backup water and backup pump capabilities. The licensee performed a safety evaluation of this interim configuration and satisfactorily demonstrated compliance with Appendix R to 10 CFR 50 and TS requirements. On October 5-9, 1992, the NRC staff inspected and verified the licensee's implementation of the plant's fire protection/prevention program including the interim fire protection system configuration. The licensee restored the fire protection system to its design basis configuration by November 15, 1992. To prevent any future damage of these types to the fire protection system, the licensee has eliminated the service water high water storage tank.

DRAFT - PREDECISIONAL

EP procedures?

completely ignores shutdown due to offsite EP concern

No need for EP problem

re EP, licensee and State and locals implement appropriate means 30+ days after event

56
Security/Surveillance

The storm caused damage to security buildings which were constructed to withstand 120 mph winds. The Intrusion Detection and Surveillance (IDS) System remained operational until the cameras or intrusion equipment also sustained damage due to the storm. At least nine protected area barriers were also damaged. Within a few hours after the storm, the licensee assessed the damage and deployed security personnel to secure the site and establish personnel and material access controls. Subsequently, the licensee re-established the Secondary Alarm Station (SAS) as its command and control facility. Armed security officers were positioned in the Auxiliary Building which would have been the most direct passage to containment. At the conclusion of the storm, security personnel were deployed in and around the protected and vital area. During subsequent searches of the protected and vital areas, there were no indications of site penetration during the storm.

The full regulatory acceptable security system was established by the licensee on September 22, 1992. Security measures were reviewed and found acceptable by the NRC Region II Safeguards Inspectors on September 23-25, 1992.

RPS
Radiation Monitoring

Radiation monitoring is performed by 21 direct radiation monitors, specifically, thermoluminescent dosimeters (TLD) and 5 air samplers. The TLDs were secured to various appurtenances, such as trees and poles. Many of the trees were destroyed by the hurricane. Four air sampling stations and several TLDs surrounding the plant were destroyed during the storm. During and after the storm, direct radiation levels were monitored by 13 of the 21 environmental TLDs required by TS which were recovered. In addition, approximately 52 of 76 TLDs located within the licensee's radiologically controlled area (RCA) and protected area boundaries also remained functional to monitor any potential releases from the plant. Preliminary results of radiological environmental samples, e.g. broad leaf vegetation, water, soil and sediments, which were collected on September 9, 1992, indicated no abnormal readings.

The licensee contracted with the State of Florida to conduct the radiological environmental monitoring program. The State initiated sample recovery and damage estimates for the program on September 2, 1992. Restoration and replacement of equipment was initiated on September 9, 1992. All TLDs and air monitoring equipment were replaced and determined to be operable by September 14 and September 19, 1992, respectively.

To aid recovery in the event of a future hurricane, the licensee plans to attach the TLDs to the warning siren poles which may better withstand the hurricane forces.

Why say this?

DRAFT - PREDECISIONAL

Warning Sirens

Many of the sirens, towers, and repeaters became inoperable during the hurricane. Although the exact time at which the licensee became aware of the degraded condition of the siren system is not known, the licensee assumed complete system disablement and initiated restoration activities as soon as access roads were cleared. Full siren system restoration and system testing was accomplished by September 21, 1992.

completely ignores the shutdown due to EP - makes total reliance on licensee representation of adequacy of offsite EP - a fundamental deficiency identified in LL.

The State of Florida Radiological Emergency Plan for Nuclear Power Plants recognizes the possibility that the sirens may become inoperable. Because of this possibility, an alternate means of notification is preplanned in the State's Emergency Plan. This alternate means consists of "route alerting" the population within the area of interest. The route alerting is performed by backup police, fire rescue, and/or airplanes with loudspeakers, notifying the population to take the necessary actions.

Communications

Sustained hurricane winds caused damage to transmission lines, antennas and transmitters. The communications systems that operated on the Southern Bell aerial copper wire along Palm Drive failed due to fallen trees and other foreign objects from high velocity winds. Following the storm, the licensee reestablished communications, on an intermittent basis, with portable transceivers and security station cellular telephones which were functional after the storm. Continuous communications were established by the afternoon of August 24, 1992.

Since the hurricane, the communications systems that relied on the Southern Bell aerial copper wire have been replaced by a buried fiber optic cable along Palm Drive. In addition, the licensee has installed two new high frequency radio systems to facilitate communications between the plant and offsite. These communications systems are designed with antennas to withstand winds in excess of 170 miles per hour. Spare antennas are also available onsite to ensure prompt replacement, if needed.

Offsite Power

The storm caused damage to transmission lines and switchyard equipment which resulted in loss of offsite power. Offsite power was established to the fossil fuel-fired units startup transformers at 6:35 p.m. on August 29, 1992. However, power was not brought onto the nuclear side until the reliability of the offsite power sources was verified. One vital bus each for Unit 3 and Unit 4 was energized from offsite power on August 30. A second source of offsite power was available on September 2, 1992.

The Turkey Point plants are designed with four (two per unit) emergency diesel generators (EDGs) such that they receive an automatic start signal immediately on sensing a loss of load from the offsite power supply buses. Only one EDG

DRAFT - ~~PREDECISIONAL~~

per unit is required to provide emergency power. In addition, the four EDGs can be cross-tied, if necessary, to provide emergency power to the other unit. Once the diesel motor and generator are running at the proper speed (rpm) the load sequencer automatically sequences the various safety-related loads to the generator. The EDGs and sequencers worked as designed. The licensee, in preparation for the storm, tested the EDGs and verified that all fuel tanks were full prior to the onset of the storm. The available fuel exceeded TS requirements. None of the safety-related EDGs suffered any damage from the storm since they are housed in seismic Category 1 designed steel reinforced concrete structures.

Is it credible to think that the Hurricane impacted population could have been evacuated during, or after, the storm if there was a nuclear accident at Turkey Point?

The potential for the situation at Turkey Point to deteriorate further in the aftermath of the damage done by Hurricane Andrew was minimal, although the potential hypothetically did exist. NRC officials, who were closely monitoring plant conditions on a 24-hour basis, believed there was no significant radiological risk to the public during or after the storm.

During the time of the hurricane and during the time period that the site was without offsite power, the plants were in Mode 4 ("Hot Shutdown") as required by emergency plan implementing procedures and, therefore, not operating. The plants were placed in "Cold Shutdown", or Mode 5, as follows:

at 5:05 p.m. on August 25, for Unit 3; and

at 10:15 a.m. on August 26, for Unit 4.

Emergency diesel generators provided power to the vital emergency equipment throughout the event, as designed, in a fully reliable manner. Offsite power was restored to the nuclear units on August 30, 1992.

The ten-mile emergency preparedness zone (EPZ) was largely evacuated during the first few days after Hurricane Andrew although some residents began to re-enter the zone during the period. The state and local counties would have been called upon to implement their in-place and previously exercised emergency plans if a radiological emergency had occurred in order to protect public health and safety. Where elements of offsite emergency preparedness had been compromised, the state and local counties may have required additional Federal and state assistance in order to assure that adequate compensatory measures could have been implemented for protection of public safety. Prior to the hurricane, an evacuation order covering over 99% of the population in the EPZ, was issued by Dade and Monroe Counties. As the main thoroughfares leading out of the EPZ remained passable following the hurricane, it is believed that the population, which did not evacuate, had the ability to do so if the need arose. We should note that Turkey Point had entered mode 4 (hot shutdown) prior to the arrival of the hurricane. A

*had not evacuated
on hurricane
day*

DRAFT - ~~PREDECISIONAL~~

*What is the
basis for these
statements?*

radiological release, due to a nuclear accident from the plant with the plant in mode 4, is not considered likely.

If not, should we replace the power supplied by Turkey Point with alternative sources of energy?

A response to this question, prepared by Florida Power & Light, is attached.

Finally, who is investigating the environmental impact of the oil spill that occurred at Turkey Point during the Hurricane?

A response to this question, prepared by Florida Power & Light, is attached.

DRAFT - PRELIMINARY

Note to Frank Engel: 10E1

This is another urgent Turkey Point document. We learned yesterday that it is due on 11/20 rather than 11/27. I would appreciate your review and concurrence on the substance of those portions of the response which fall into your area by COB 11/18. Verbal notification to L. Rafterman is adequate. Note that there may be some minor word changes by the Tech Editor. I appreciate your help.

Herb Berkman
11/18/92



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

The Honorable Bob Graham
United States Senator
P.O. Box 3050
Tallahassee, FL 32315

Attention: Becky Liner

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Sincerely,

James M. Taylor
Executive Director for Operations

Enclosure:
As stated

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Tallahassee, FL 32315

Attention: Becky Liner

Dear Senator Graham:

The enclosure is our response to the questions on Turkey Point which your constituents asked in a letter to your office dated September 12, 1992, concerning Hurricane Andrew's impact on the nuclear plants. Previously, on October 21, 1992, we briefed your staff and on November 6, 1992, provided additional information concerning certain other Hurricane-Andrew related questions which other of your constituents asked in their letter dated September 23, 1992.

I trust that this information will assist you in responding to the requests of your constituents.

Sincerely,

James M. Taylor
Executive Director for Operations

Enclosure:
As stated

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QUESTION: TURKEY POINT

Why did several systems important to the health and safety of the public (such as fire protection, security/surveillance, radiation monitoring, warning sirens and communications) fail during the Hurricane? Have these systems been reestablished?

Hurricane Andrew hit south Florida with sustained surface winds of up to 145 miles per hour (mph) per the National Hurricane Center estimate. Several unofficial reports estimate stronger gusts. The eye of the storm passed over the site and caused significant onsite and offsite damage. However, the nuclear portion of both units, that is the portions that could pose a radiological hazard to the public if they failed, were not damaged. Prior to the advent of the storm, the licensee, in accordance with its emergency planning procedures, brought the Units to a hot shutdown (Mode 4) and the units remained in a stable condition. There was no release of radiation to the environment.

Following completion of the storm damage repairs to the Turkey Point Unit 4 and common systems, the licensee restarted Unit 4 on September 29, 1992. Storm damage repairs to the Turkey Point Unit 3 are being implemented during its ongoing Cycle 13 refueling outage. Unit 3 is expected to resume its power operation by November 25, 1992.

No work
+ CP
problem

The storm included damage to the fire protection, security / surveillance, radiation monitoring, warning sirens, and communications systems. The storm also caused loss offsite power. Following the storm, the licensee either restored the specific functions of these systems or implemented appropriate alternate means to meet their functions. Each of these systems is discussed below:

Fire Protection System

As a result of the hurricane winds the service water system high water storage tank collapsed and caused damage to the fire protection system. Within a few hours following the hurricane, the licensee established 30-minute roving fire watch patrols with the available personnel and by August 31, 1992, when qualified fire watch personnel became available, established Technical Specifications (TS)-required fire watches. By 5:20 p.m. on August 27, 1992, the licensee established a backup fire water capability which met the TS requirements. Prior to restart of Turkey Point Unit 4, the licensee implemented an interim fire protection configuration with backup water and backup pump capabilities. The licensee performed a safety evaluation of this interim configuration and satisfactorily demonstrated compliance with Appendix R to 10 CFR 50 and TS requirements. On October 5-9, 1992, the NRC staff inspected and verified the licensee's implementation of the plant's fire protection/prevention program including the interim fire protection system configuration. The licensee restored the fire protection system to its design basis configuration by November 15, 1992. To prevent any future damage of these types to the fire protection system, the licensee has eliminated the service water high water storage tank.

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Security/Surveillance

The storm caused damage to security buildings which were constructed to withstand 120 mph winds. The Intrusion Detection and Surveillance (IDS) System remained operational until the cameras or intrusion equipment also sustained damage due to the storm. ~~At least nine protected area barriers were also damaged.~~ Within a few hours after the storm, the licensee assessed the damage and deployed security personnel to secure the site and establish personnel, ~~and materials at the controls.~~ Subsequently, the licensee ~~re~~ established the Secondary Alarm Station (SAS) ~~at its command and control facility.~~ Armed security officers were positioned in the Auxiliary Building which would have been the most direct passage to containment. At the conclusion of the storm, security personnel were deployed in and around the protected and vital areas. During subsequent searches of the protected and vital areas, there were no indications of site penetration during the storm.

~~The full regulatory acceptable~~ security system was established by the licensee on September 22, 1992. Security measures were reviewed and found acceptable by the NRC Region II Safeguards Inspectors on September 23-25, 1992.

Radiation Monitoring

Radiation monitoring is performed by 21 direct radiation monitors, specifically, thermoluminescent dosimeters (TLD) and 5 air samplers. The TLDs were secured to various appurtenances, such as trees and poles. Many of the trees were destroyed by the hurricane. Four air sampling stations and several TLDs surrounding the plant were destroyed during the storm. During and after the storm, direct radiation levels were monitored by 13 of the 21 environmental TLDs required by TS which were recovered. In addition, approximately 52 of 76 TLDs located within the licensee's radiologically controlled area (RCA) and protected area boundaries also remained functional to monitor any potential releases from the plant. Preliminary results of radiological environmental samples, e.g. broad leaf vegetation, water, soil and sediments, which were collected on September 9, 1992, indicated no abnormal readings.

The licensee contracted with the State of Florida to conduct the radiological environmental monitoring program. The State initiated sample recovery and damage estimates for the program on September 2, 1992. Restoration and replacement of equipment was initiated on September 9, 1992. All TLDs and air monitoring equipment were replaced and determined to be operable by September 14 and September 19, 1992, respectively.

To aid recovery in the event of a future hurricane, the licensee plans to attach the TLDs to the warning siren poles which may better withstand the hurricane forces.

Why say this?

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Warning Sirens

Many of the sirens, towers, and repeaters became inoperable during the hurricane. Although the exact time at which the licensee became aware of the degraded condition of the siren system is not known, the licensee assumed complete system disablement and initiated restoration activities as soon as access roads were cleared. Full siren system restoration and system testing was accomplished by September 21, 1992.

The State of Florida Radiological Emergency Plan for Nuclear Power Plants recognizes the possibility that the sirens may become inoperable. Because of this possibility, an alternate means of notification is preplanned in the State's Emergency Plan. This alternate means consists of "route alerting" the population within the area of interest. The route alerting is performed by backup police, fire rescue, and/or airplanes with loudspeakers, notifying the population to take the necessary actions.

Communications

Sustained hurricane winds caused damage to transmission lines, antennas and transmitters. The communications systems that operated on the Southern Bell aerial copper wire along Palm Drive failed due to fallen trees and other foreign objects from high velocity winds. Following the storm, the licensee reestablished communications, on an intermittent basis, with portable transceivers and security station cellular telephones which were functional after the storm. Continuous communications were established by the afternoon of August 24, 1992.

Since the hurricane, the communications systems that relied on the Southern Bell aerial copper wire have been replaced by a buried fiber optic cable along Palm Drive. In addition, the licensee has installed two new high frequency radio systems to facilitate communications between the plant and offsite. These communications systems are designed with antennas to withstand winds in excess of 170 miles per hour. Spare antennas are also available onsite to ensure prompt replacement, if needed.

Offsite Power

The storm caused damage to transmission lines and switchyard equipment which resulted in loss of offsite power. Offsite power was established to the fossil fuel-fired units startup transformers at 6:35 p.m. on August 29, 1992. However, power was not brought onto the nuclear side until the reliability of the offsite power sources was verified. One vital bus each for Unit 3 and Unit 4 was energized from offsite power on August 30. A second source of offsite power was available on September 2, 1992.

The Turkey Point plants are designed with four (two per unit) emergency diesel generators (EDGs) such that they receive an automatic start signal immediately on sensing a loss of load from the offsite power supply buses. Only one EDG

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per unit is required to provide emergency power. In addition, the four EDGs can be cross-tied, if necessary, to provide emergency power to the other unit. Once the diesel motor and generator are running at the proper speed (rpm) the load sequencer automatically sequences the various safety-related loads to the generator. The EDGs and sequencers worked as designed. The licensee, in preparation for the storm, tested the EDGs and verified that all fuel tanks were full prior to the onset of the storm. The available fuel exceeded TS requirements. None of the safety-related EDGs suffered any damage from the storm since they are housed in seismic Category 1 designed steel reinforced concrete structures.

Is it credible to think that the Hurricane impacted population could have been evacuated during, or after, the storm if there was a nuclear accident at Turkey Point?

The potential for the situation at Turkey Point to deteriorate further in the aftermath of the damage done by Hurricane Andrew was minimal, although the potential hypothetically did exist. NRC officials, who were closely monitoring plant conditions on a 24-hour basis, believed there was no significant radiological risk to the public during or after the storm.

During the time of the hurricane and during the time period that the site was without offsite power, the plants were in Mode 4 ("Hot Shutdown") as required by emergency plan implementing procedures and, therefore, not operating. The plants were placed in "Cold Shutdown", or Mode 5, as follows:

at 5:05 p.m. on August 25, for Unit 3; and

at 10:15 a.m. on August 26, for Unit 4.

Emergency diesel generators provided power to the vital emergency equipment throughout the event, as designed, in a fully reliable manner. Offsite power was restored to the nuclear units on August 30, 1992.

The ten-mile emergency preparedness zone (EPZ) was largely evacuated during the first few days after Hurricane Andrew although some residents began to re-enter the zone during the period. The state and local counties would have been called upon to implement their in-place and previously exercised emergency plans if a radiological emergency had occurred in order to protect public health and safety. Where elements of offsite emergency preparedness had been compromised, the state and local counties may have required additional Federal and state assistance in order to assure that adequate compensatory measures could have been implemented for protection of public safety. Prior to the hurricane, an evacuation order covering over 99% of the population in the EPZ, was issued by Dade and Monroe Counties. As the main thoroughfares leading out of the EPZ remained passable following the hurricane, it is believed that the population, which did not evacuate, had the ability to do so if the need arose. We should note that Turkey Point had entered mode 4 (hot shutdown) prior to the arrival of the hurricane. A

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radiological release, due to a nuclear accident from the plant with the plant in mode 4, is not considered likely.

If not, should we replace the power supplied by Turkey Point with alternative sources of energy?

A response to this question, prepared by Florida Power & Light, is attached.

Finally, who is investigating the environmental impact of the oil spill that occurred at Turkey Point during the Hurricane?

A response to this question, prepared by Florida Power & Light, is attached.

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Summary
Security
2/12
5-27

The storm caused minor damage to security buildings which were constructed to withstand 120 mph winds. The Intrusion Detection and Surveillance (IDS) System remained operations until certain components failed to perform due to storm related conditions. A portion of the protected area barrier was also damaged. Within a few hours after the storm, the licensee assessed the damage and deployed security personnel to secure the site and establish controls over the access of personnel, materials and vehicles. Subsequently, the licensee established its command and control facility in the Secondary Alarm Station (SAS). At the conclusion of the storm, security personnel were deployed in and around the protection and vital areas to provide compensatory measures that would maintain security system performance capabilities. During subsequent searches of the protection and vital areas, there were no indications of site penetrations by persons during the storm.

The security system was fully restored by the licensee on September 22, 1992. Security measures were reviewed and found acceptable by the NRC Region II Safeguards Inspectors on September 23-25, 1992.

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