

August 17, 2010

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

_____)	
In the Matter of)	
)	
FLORIDA POWER AND LIGHT)	
)	Docket Nos. 52-040 COL
)	52-041 COL
(Turkey Point Nuclear Power Station,)	
Units 6 & 7))	
_____)	

Citizens Allied for Safe Energy, Inc. Petition to Intervene and Request for a Hearing

This is a petition to intervene filed under 10 C.F.R. § 2.309 and in response to a notice published by the Nuclear Regulatory Commission (“NRC” or “Commission”) at 75 F.R. 34777 on June 18, 2010.¹ Citizens Allied for Safe Energy (CASE) hereby petition to intervene on behalf of CASE members in the application by Florida Power and Light (FPL or “the applicant”) before the Commission for two combined construction and operating license (“COL”) for two new nuclear power reactor units to be called Turkey Point Units 6 and 7, located in Homestead Florida. CASE also requests a hearing on the above captioned matter. As demonstrated below, CASE has representational standing through its members to make this request. This is a pro se Petition; CASE has no counsel. Coordination of the Petition and subsequent communications will be

¹ The application, submittal documents and reference documents are available at <http://www.nrc.gov/reactors/new-reactors/col/turkey-point/documents.html#appDocuments>

provided by Barry White. See attached authorization declaration (exhibit XYZ) and notice of appearance of Mr White, (exhibit ZYX).

This petition includes the details (with particularity) of the contentions that the co-petitioners find to be substantive and vital to NRC's consideration of the applicant's combined operating license application ("COLA"). The purpose of raising these issues is the protection of our members and their interest in this process. The contentions are that: [NEED TO REFINE – short one-liners here]

1. The COL (FSAR and ER) do not adequately reflect information about rising sea level **due to climate change** during the license period and the potential impact on the operating area, as well as impacts at the site. In addition to sea level, elevated storm surge has not been factored in FPL's COL application.
2. The COL does not address dangers to public health and safety due to new powerlines that are required for the operation of two additional nuclear reactors at Turkey Point.
3. The COL does not adequately address evacuation problems.
4. The COL and the ER do not include a plan for handling the extended storage of so-called "low level" waste and that plan, if extended to the frame of decades would need to include consideration of elevated sea level and storm surge.
5. Water – ??? additional issues (Surge will be with sea level – separate or together ?)
6. The ER under reports the impact of the evaporation particulates in the condenser cooling loop. The use of waste waters will mobilize complex substances including pharmaceuticals, **carcinogens** and human hormones into the airshed of a large metropolitan area.
7. The plans for iodine storage/distribution are not protective **or well conceived** .

8. The projections for the Turkey Point **units 6 & 7** decommissioning fund do not reflect the issues raised in contentions in section 1.

DESCRIPTION OF THE PROCEEDING

The COLA for the proposed Turkey Point Nuclear Units 6 and 7 (“TP 6 & 7”) was filed pursuant to 10 C.F.R. Part 52 Subpart C by FPL on June 30, 2009. The application requests approval of a COL for Turkey Point Units 6 & 7 located in Homestead, Florida. Notice of NRC’s receipt of the application was published in the **Federal Register** on August 3, 2009 (74 FR 38477). The application was accepted for docketing and published on October 7, 2009 (74 FR 51621).

The Turkey Point Units 6 & 7 COL application incorporates by reference appendix D to 10 CFR Part 52 and the AP1000 Design Control Document (DCD) submitted by Westinghouse to the NRC on May 26, 2007, as Revision 16, and updated by Revision 17, on September 22, 2008.

CASE seeks party status in this licensing action since there are specific, harms that its members would suffer if the concerns identified in this Petition are not addressed.

STANDING OF PETITIONER

CASE is a Florida non-profit corporation. CASE has 125 members, of which 25 have signed the attached declaration in support of this intervention. The CASE

business address is 10001 SW 129 Terrace, Miami, FL 33176. CASE is representing the interests of its members: [names of those who have signed declarations] who live within 50 miles of the proposed reactors and whose declarations are attached (exhibits MNPOPQ).

There are viable **alternative energy** options in lieu of nuclear power available to meet the energy needs of Florida that are clean, safe and sustainable. **Also, there are other sites in Florida which could better accommodate new nuclear reactors.**

Construction and operation of the proposed new units at Turkey Point would cause irreversible damage to the local environment, and it would pose risks to the health and safety of current and future generations of Florida residents, including members of CASE.

If an accident occurred at the facility it could result in radiological releases and environmental contamination that would adversely affect the health and well being of CASE members, as well as all living beings in the region. The licensing of this nuclear plant will result in the creation of a new, permanent repository for high level radioactive waste, with the costs of its safeguarding and maintenance to be borne by the public in perpetuity. The risks and costs associated with this technology are unacceptable to CASE and its members, especially given the abundance of alternatives available.

Members of the co-petitioners live, work, travel, recreate, use and enjoy natural resources in the vicinity of the proposed nuclear facility. They breathe the air, drink and use the water, eat food grown in the vicinity of the proposed project. All are customers of electric power companies whose rates will be impacted directly, or indirectly, by this project.

CASE seeks to avoid or minimize the risks posed by this nuclear plant by ensuring that the highest possible safety and environmental standards are imposed on the proponents of this project, and that all of these issues are fully and thoroughly addressed in the NRC's licensing proceeding.

Pursuant to 10 C.F.R. § 2.309, a request for hearing or petition to intervene is required to address (1) the nature of the petitioner's right under the Atomic Energy Act ("AEA") to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order that may be entered in the proceeding on the petitioner's interest.

Other standing requirements are found in NRC case law.² In *Diablo Canyon*, the Atomic Safety and Licensing Board noted that petitioners who live within 50 miles of a proposed nuclear power plant are presumed to have standing in reactor construction permit and operating license cases, because there is an "obvious potential for offsite consequences" within that distance.

Further record, as summarized by the Atomic Safety and Licensing Board ("ASLB"), on standing requirements are as follows:

In determining whether a petitioner has sufficient interest to intervene in a proceeding, the Commission has traditionally applied judicial concepts of standing. See *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1)*, CLI-83-25, 18 NRC 327, 332 (1983) (citing *Portland General Electric Co. (Pebble Springs Nuclear Plant, Units 1 and 2)*, CLI-76-27, 4 NRC 610 (1976)). Contemporaneous judicial standards for standing require a petitioner to demonstrate that (1) it has suffered or will suffer a distinct and palpable harm that constitutes

² *Pacific Gas & Electric Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation)*, LBP-02-23, 56 NRC 413, 426 (2002).

injury-in-fact within the zone of interests arguably protected by the governing statutes (e.g., the Atomic Energy Act of 1954 (AEA), the National Environmental Policy Act of 1969 (NEPA)); (2) the injury can be fairly traced to the challenged action; and (3) the injury is likely to be redressed by a favorable decision. See *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plants), LBP-99-25, 50 NRC 25, 29 (1999). An organization that wishes to intervene in a proceeding may do so either in its own right by demonstrating harm to its organizational interests, or in a representational capacity by demonstrating harm to its members. See *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 271 (1998). To intervene in a representational capacity, an organization must show not only that at least one of its members would fulfill the standing requirements, but also that he or she has authorized the organization to represent his or her interests. See *Private Fuel Storage, L.L.C.* (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 168, *aff'd on other grounds*, CLI-98-13, 48 NRC 26 (1998).

Standing to participate in this proceeding is demonstrated by the attached Declarations of the above named members of CASE, people who live in Florida within 50 miles of the proposed site and who have authorized one or more of the co-petitioners to represent their interests in this proceeding.

The attached Declarations declare that people who live near (within 50 miles, though some live much closer) the Turkey Point site, declare further that they are members of CASE and that they support this petition. Thus, they have presumptive standing in this intervention by virtue of their support for the action and their proximity to the proposed nuclear plants that may be constructed on the site.³

In the case at hand the granting of a combined operating license (“COL”) to Florida Power and Light would permit the construction and operation of two new nuclear reactors, and therefore additional generation of radioactive waste and radioactive emissions in South, Florida. The co-petitioner’s members seek to protect their lives,

³ *Diablo Canyon, supra*, 56 NRC at 426-427, citing *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 146, *aff'd*, CLI-01-17, 54 NRC 3 (2001).

health and safety and economic interests as customers and ratepayers (directly or indirectly) of FPL by opposing the issuance of a COL to FPL. The co-petitioners seek to ensure that no COL is issued by the Commission unless FPL demonstrates full compliance with the AEA, the National Environmental Policy Act (“NEPA”) and all other applicable laws and regulations.

Further, determination of standing is based on three requirements: injury, causation and redressability. CASE hereby requests to be made a party to the proceeding because: (1) construction and operation of two nuclear reactor units at South would present a tangible and particular harm to the health and well-being of the co-petitioners’ members living within 50 miles of the site and who are ratepayers of the company; (2) the Commission has initiated proceedings for a COL, the granting of which would directly affect the co-petitioners and their members; and (3) the Commission is the sole agency with the power to approve, to deny or to modify a license to construct and operate a commercial nuclear power plant.

CONSIDERATIONS

The Commission is charged by the AEA with to forego actions that would be “inimical to the common defense and security or to the health and safety of the public.”⁴ Public safety is “the first, last, and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility.”⁵ As detailed

⁴ 42 U.S.C. §2133(d).

⁵ Petition for Emergency and Remedial Action, 7 NRC at 404, citing *Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers*, 367 U.S. 396, 402

below in the petitioner's contentions, FPL's COLA fails to comply with the NEPA requirement that it fully address the environmental impacts of constructing and operating the proposed South reactors.

The AEA sets minimum standards for the operation of nuclear facilities, while NEPA requires the Commission to consider and attempt to avoid or mitigate significant adverse environmental impacts of licensing those facilities. AEA and NEPA overlap to some extent; however they also establish independent requirements.⁶ It is "unreasonable to suppose that [environmental] risks are automatically acceptable, and may be imposed upon the public by virtue of the AEA, merely because operation of a facility will conform to the Commission's basic health and safety standards."⁷ NEPA requires NRC to go beyond the AEA, by requiring consideration of alternatives to the COLA and for reducing or avoiding adverse environmental impacts of NRC licensing actions.⁸

(1961).

⁶ *Limerick Ecology Action v. NRC*, 869 F.2d 719, 729-30 (3rd Cir. 1989) ("*Limerick Ecology Action*") (holding that the AEA does not preclude NEPA).

⁷ *Limerick Ecology Action*, quoting *Citizens for Safe Power v. NRC*, 524 F.2d 1291, 1299 (D.C. Cir. 1975).

⁸ 10 C.F.R. § 51.71(d).

The NRC staff's responsibility in preparing an EIS under NEPA, and the Safety Evaluation Report under NRC regulations is to conduct a fair and independent analysis of the impacts of the proposed action on the environment, and compliance with NRC regulations, in order to give the decisionmaker a useful tool, based on solid scientific and technical data, to make a decision to grant or deny the COLA. Since neither of those documents is prepared until later in the process, the issues raised by the petitioner must also rise to that same level of import in the consideration of whether to grant or deny the applicant's COL.

OVERVIEW OF THE CONTENTIONS

A COL is authorization from the NRC to construct and operate a nuclear power plant at a specific site. Before issuing a COL, the NRC staff is required to complete safety and environmental reviews of the application in compliance with the AEA and NEPA. CASE seeks to intervene because operation of the two proposed nuclear reactors would endanger the health and safety and economic interests of their members and other people living within 50 miles of the proposed reactors. The costs and risks of the proposed reactors are unnecessary and wholly out of proportion to any possible benefit.

As determined by the ASLB, a contention is admissible when it meets the requirements in 10 C.F.R. § 2.309(f)(1):

- (1) A request for hearing or petition for leave to intervene must set forth with particularity the contentions sought to be raised. For each contention, the request or petition must:
 - (i) Provide a specific statement of the issue of law or fact to be raised or

controverted;

(ii) Provide a brief explanation of the basis for the contention;

(iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;

(iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;

(v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which the requestor/petitioner intends to rely to support its position on the issue; and

(vi) Provide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact. This information must include references to specific portions of the application (including the applicant's environmental report and safety report) that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief.

A thorough recitation of relevant case law regarding the admissibility of contentions was recently presented in *Duke Energy Carolinas, LLC (William States Lee Nuclear Station, Units 1 and 2)*, LBP-08-17, 68 NRC ____ (slip op. at 4-10) (September 22, 2008).

A variety of contentions have been admitted by ASLBs at a number of the latest rounds of petitions on the adequacies of COLAs. See for example, *Tennessee Valley Authority, (Bellefonte Nuclear Power Plant, Units 3 and 4)*, LBP-08-16, 68 NRC ____ (slip op.) (September 12, 2008).

For each contention offered here, CASE demonstrates that the issues raised are within the scope of the proceeding, that the issues are material to the Commission's licensing responsibilities, and that there exists a genuine dispute between the petitioners

and the licensee. In its contentions, the co-petitioners present the specific issues of law or fact to be raised, the bases for the contentions and statements of fact or expert opinion in support of the contentions.

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CONTENTIONS

CONCLUSION

The Petitioner requests that this petition to intervene and request for hearing be granted. The foregoing contentions should be admitted because they clearly satisfy all

of the Commission's requirements in 10 C.F.R. § 2.309.

Respectfully submitted this the 17th day of August 2010.

_____/s/_____
Barry White
Citizens Allied for Safe Energy
[ADDRESS]

CERTIFICATE OF SERVICE

I hereby certify that copies of this CITIZENS ALLIED FOR SAFE ENERGY PETITION TO INTERVENE AND REQUEST FOR HEARING was served on the following via email and via the EIE system:

NEED TO UPDATE

Office of the Secretary
ATTN: Docketing and Service
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This 5th day of February, 2009,

_____ signed _____
Mary Olson

CONTENTION: ONE

CONTENTION: INADEQUATE PUBLIC SAFETY PLAN

(i) The emergency plan on file with Miami-Dade County does adequately protect public health of people in the Turkey Point Plume Exposure Zone following an accidental radiation release from FPL's nuclear reactor facilities at Turkey Point.

(ii) BASIS FOR CONTENTION

The NRC requires the filer to coordinate with local government to adequately protect people in the case of radiation release in a General Emergency. The existing emergency plans on file with Miami-Dade County consists of (1) evacuation and emergency shelter plans, (2) shelter-in-place plans, (3) plans for radiation testing, and (4) treatment of people with potassium iodide (KI) to reduce the significant risk of thyroid cancer. None of these aspects of the emergency plan would be adequate in the event of a significant accidental release of airborne radiation from nuclear reactors at Turkey Point in a General Emergency:

- 1. Evacuation plans are not adequate for timely evacuation of all the people who could be affected in an accidental radiation release.**
- 2. Evacuation screening and shelter provisions lack capacity for the number of people living in the evacuation zone.**
- 3. Potassium iodide (KI) cannot be delivered in a timely manner to provide best protection from thyroid cancer.**
- 4. Reactor design proposed for TPN 6 & 7 elevates risk of radiation release and makes effective evacuation and KI plans more critical.**

(iii) CONTENTION IS WITHIN SCOPE – NRC Regulations 10(CFR) § 50.47

Emergency plans states: that a new license will not be issued unless the operator can show that all safety plans in place by local and state agencies are sufficient to provide for the safety of the public in the event of a radiological emergency:

NRC Regulations 10(CFR) § 50.47

(a)(1)(i) Except as provided in paragraph (d) of this section, no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. No finding under this

section is necessary for issuance of a renewed nuclear power reactor operating license.

(ii) No initial combined license under part 52 of this chapter will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. No finding under this section is necessary for issuance of a renewed combined license.

(iii) If an application for an early site permit under subpart A of part 52 of this chapter includes complete and integrated emergency plans under 10 CFR 52.17(b)(2)(ii), no early site permit will be issued unless a finding is made by the NRC that the emergency plans provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

(iv) If an application for an early site permit proposes major features of the emergency plans under 10 CFR 52.17(b)(2)(i), no early site permit will be issued unless a finding is made by the NRC that the major features are acceptable in accordance with the applicable standards of 10 CFR 50.47 and 10 CFR part 50, appendix E, within the scope of emergency preparedness matters addressed in the major features.

(2) The NRC will base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented. A FEMA finding will primarily be based on a review of the plans. Any other information already available to FEMA may be considered in assessing whether there is reasonable assurance that the plans can be implemented. In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability.

(iv) DEMONSTRATION THAT CONTENTION IS MATERIAL TO THE NRC DECISION

The emergency plans in place in Miami-Dade County cannot be implemented in a timely manner because of logistic problems and thus are not adequate to protect public safety in the event of an emergency release of radiation. Therefore the operator, FPL, has not satisfied the stipulations of NRC Regulations 10(CFR) § 50.47.

(v) STATEMENT OF FACTS & EXPERT OPINIONS:

1. Evacuation plans are not adequate for timely evacuation of all the people who could be affected in an accidental radiation release.

The evacuation routes include only three main roads: U.S. 1, Florida's Turnpike, and Krome Ave. Because the radiation plume may extend 50 miles (Ingestion Exposure Pathway EPZ) or more, people in the Florida Keys and throughout South Dade would further congest the evacuation routes. Even a moderate wind from the south would overtake people fleeing the evacuation area.

The Florida Department of Community Affairs states that up to 17 hours would be required to evacuate coastal areas of Miami-Dade County.

http://www.dca.state.fl.us/fdcp/dcp/hazardmitigation/MapsProfiles/MiamiDade/Miami-DadeProfile_final.pdf

In only two hours, even the lightest breeze would push the radiation plume over residents attempting to evacuate the 10-mile EPZ.

Miami-Dade County explains nuclear emergency evacuation to parents:

“Activation of your plan should begin as early as possible because of the time it takes for parents or guardians to respond to your facility to pick up their children.”

http://www.miamidade.gov/oem/library/preparedness_planning_sheet.pdf

Thus, parents working outside the evacuation zone would have to drive back into the zone to retrieve their children, adding to traffic congestion and further delaying evacuation.

2. Evacuation screening and shelter provisions lack capacity for the number of people living in the evacuation zone.

The Tamiami Park Emergency Reception Center (ERC) intended to hold evacuees in Miami-Dade County has a host capacity for 1000 evacuees and a reported usage capacity of 2450.

<http://www.floridadisaster.org/Response/engineers/documents/2008SESP/2008-SESP-AppxA/2008SESP-AppxA-Miami-Dade.pdf>

Thus, plans to evacuate people in the radiation plume could not accommodate 98% of residents in the 10-mile EPZ, approximately 126,000 people according to the year 2000 U.S. Census for the communities of Cutler Bay, Florida City, Goulds, Lakes by the Bay, Leisure City, Naranja, Princeton, South Miami Heights.

3. KI cannot be delivered in a timely manner to provide best protection from thyroid cancer.

According to both the NRC and the World Health Organization, to achieve protection from atmospheric release of radioactive iodine (I-131), KI should be ingested **prior** to encountering the radiation cloud. Quoting the NRC:

“If radioactive iodine is taken into the body after consumption of potassium iodide, it will be rapidly excreted from the body.”

<http://www.nrc.gov/about-nrc/emerg-preparedness/protect-public/potassium-iodide-use.html>

FPL explains:

“If conditions warrant, the Florida Health Department will make potassium iodide available at the reception centers.”

http://www.fpl.com/environment/nuclear/pdf/turkey_point.pdf

The Modesto Maidique campus of Florida International University, adjacent to the Tamiami Park Emergency Reception Center (ERC), houses the County’s emergency supply of potassium iodide (KI). This ERC is 20 miles from the 10-mile diameter emergency planning zone (EPZ).

In the event of an emergency radiation release, the time required to evacuate the 10-mile EPZ to the ERC at Tamiami Park (up to 17 hours) would be too great to prevent initial exposure to inhaled radioiodines. The county has no effective plan to transport KI from the FIU campus to residents who shelter-in-place in their houses or businesses prior to their exposure from a moving radiation cloud.

4. Reactor design proposed for TPN 6 & 7 elevates risk of radiation release and makes effective evacuation and KI plans more critical.

FPL proposes to build the untested Westinghouse AP1000 reactor design for TPN 6 & 7. Analysis of the AP1000 by nuclear engineer Arnie Gunderson has revealed an elevated likelihood of corrosion leakage in combination with a “chimney effect” in the containment housing that would rapidly vent radiation into the atmosphere during a core meltdown. Thus, the needs for more effective plans for evacuation and KI distribution are more compelling for TPN 6 & 7 than for the existing TPN 3 & 4 reactors. [See Exhibit: Declaration of Arnie Gunderson August 13, 2010, Vogtle COL].

(vi) FPL’s application assumes that the current emergency plans in place with Miami-Dade County for TPN 3 & 4 is likewise sufficient for TPN 6 & 7. It is our contention that the current emergency plans are not adequate to protect public safety for the reasons stated above, and therefore the application should be rejected until plans are in place that are sufficient to assure the safety of the population at risk in a sudden emergency radiation release.

The US Coast Guard, unlike some other emergency response jurisdictions offered the following statement that their ranks require the level of protection that CASE believes all the residents of the area deserve:

*Emergency Preparedness Manager
Turkey Point Nuclear Plant
9760 SW 344 Street.
Florida City, FL 33035
Attn: Larry Hardin*

Dear Sir,

The following information is provided in response to your email request on August 28, 2008, in which you requested the United States Coast Guard provide a new letter of support indicating our ability to meet the requirements of your Radiological Emergency Plan. 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.

*Kenneth C Jones, Commander
Seventh Coast Guard District
909 SE First Ave
Miami, FL 33131
September 29, 2008*

CONTENTION: TWO

A. FAILURE AND OMISSION OF THE FPL COL FOR THE PROPOSED TURKEY POINT NUCLEAR REACTORS 6&7 TO PROVIDE FOR THE SAFE AND ORDERLY EVACUATION OF THE POPULATION DURING OR FOLLOWING A NUCLEAR EVENT (UNUSUAL NUCLEAR OCCURANCE)

A. 1. Statement of the issue:

The evacuation plan does not meet the criteria of protect(ing) the health and safety of the public prescribed by the Atomic Energy Act of 1954, and as exemplified by 10 CFR 50.47. In addition, the increase in population, and findings of studies of actual population and institutional response to actual emergencies are not adequately reflected in the FPL emergency response plan. The plan, particularly with respect to evacuation / population response is therefore incomplete and also does not follow NUREG 0654 guidelines.

ii. brief explanation of the basis for the contention

According to the population statistics provided by the FPL COL there are 187,374 people in the EPZ within 10 miles of Turkey Point 9; that number will increase to 280,000 by 2080. (ETE Table 3-2 EPZ Permanent Resident Population). The COL information ETE states that it will take from 6 to 11.4 hours to evacuate 100% of the population plus up to 6 hours for some of the population to prepare to evacuate. These evacuation and preparation times are too long to protect the health and safety of the public. If you had to evacuate 187,374 people in Kansas, you would have 360 compass degrees in which to do it. But since they are at the end of a peninsula with Everglades National Park as a western boundary, and Biscayne National Park and the Atlantic Ocean as an eastern boundary, there are only 30 compass degrees into which they can evacuate. Only one way to go: north. And only three roads on which to do it; U.S. Highway 1, The Florida Turnpike and Krome Avenue.

NUREG 0654 advocates evacuation over sheltering yet the FPL COL indicates that sheltering is an acceptable alternative for some part of the population. In addition, the use of the existing Turkey Point evacuation plan does not reflect the LARGE expansion in permanent population that has occurred between 1970 and now.

TABLE 1:

2000 Census Population of 10 mile evac radius Turkey Point
 Inland Population of Area in a 10-mile Evacuation Radius of Turkey Point

Zip code	
33030	27 304
33031	5 514
33032	20 716
33033	31 394
33034	15 402
33035	2 762
33157	61 258

33170	8 460
33189	2 280
33190	4 820
Total	179 910

Please note that these are 2000 census figures which account only for residents. These figures do not include seasonal visitors, migrant workers, or people attending sports events and visiting parks and tourist attractions.

TABLE 2 (excerpt from the COL)

Turkey Point Units 6 & 7 Evacuation Time Estimate
KLD Associates, Inc. ES -6 Revision 0

Table 3-2 EPZ Permanent Resident Population
Area 2000 Population 2009 Population

Total 140,668 187,374

Population Growth: 33.2%

The following is a compilation of figures above, and numbers from the 1970 US Census.

	1970	1990	2000	2006-2008 est	2009 est
<i>Florida</i>					
<i>City</i>	5133	5806	7843	na	9935
<i>Goulds</i>	6690	6004	7453	na	7453
<i>Homestead</i>	13674	26866	31909	49818	57936
<i>Lakes by</i>					
<i>the Bay</i>	<1000	525	9055	na	na
<i>Leisure City</i>	<1000	9369	22152	20713	na
<i>Naranja</i>	<1000	1556	4034	na	na
<i>Princeton</i>	<1000	1622	10090	na	na
<i>South Miami</i>					
<i>Heights</i>	10395	8369	33522	34582	na
<i>total</i>		38892	60117		126058
<i>2080 pop estimate</i>			267281		

The 2080 pop estimate is from the FPL ER.

The 1970 – 2009 growth from 38,892 to 187,374 is a 4.8-fold increase in the number of people who will be impacted on any day that Turkey Point has a problem. A four, nearly five-fold expansion is not credible in terms of asserting minor modification to a plan.

(iii) The contention is within the scope of the proceeding

The ATOMIC ENERGY ACT OF 1954 (Public Law 83–703 68 Stat. 919 August 30, 1954 TITLE I– ATOMIC ENERGY, CHAPTER 1– DECLARATION, FINDINGS, AND PURPOSE) states:

d. The processing and utilization of source, byproduct, and special nuclear material must be regulated in the national interest and in order to provide for the common defense and security *and to protect the health and safety of the public.* (Emphasis added).

e. Source and special nuclear material, production facilities, and utilization facilities are affected with the public interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure the common defense and *security and to protect the health and safety of the public.* (Emphasis added).

NRC Regulation 10 CFR Section 52.79 - Contents of applications; technical information in final safety analysis report, states:

“[t]he final safety analysis report shall include the following information at a level of information sufficient to enable the Commission to reach a final conclusion on all safety matters that must

be resolved by the Commission before issuance of the license.”

From Abstract of NUREG 0654: Studies of severe reactor accidents and their consequences since the issuance of NUREG-0654/FEMA-REP-1, Revision 1, have led the NRC staff to conclude that the preferred initial protective action for a severe (core damage) accident is to evacuate promptly rather than to shelter the population near the plant, barring any constraints to evacuation. The guidance in this document is intended to update and simplify the decisionmaking process for protective actions for severe reactor accidents given in Appendix 1 to NUREG-0654/FEMAREP.

Excerpting from NRC regs:

§ 50.47 Emergency plans.

(a)(1)(i) Except as provided in paragraph (d) of this section, no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. No finding under this section is necessary for issuance of a renewed nuclear power reactor operating license.

(ii) No initial combined license under part 52 of this chapter will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. No finding under this section is necessary for issuance of a renewed combined license.

Clearly NRC has the intent of fulfilling the charge of the Atomic Energy Act, even to the point of offering to *decline a license* (rare) as in:

(c)(1) Failure to meet the applicable standards set forth in paragraph (b) of this section may result in the Commission declining to issue an operating license;

And paragraph (b) is very detailed in its specificity:

(b) The onsite and, except as provided in paragraph (d) of this section, offsite emergency response plans for nuclear power reactors must meet the following standards:

(1) Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

(2) On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

(3) Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

(4) A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

(5) Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

(6) Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

(7) Information is made available to the public on a periodic basis on

how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

(8) Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

(9) Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

(10) A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

(11) Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

(12) Arrangements are made for medical services for contaminated injured individuals.

(13) General plans for recovery and reentry are developed.

(14) Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

(15) Radiological emergency response training is provided to those who may be called on to assist in an emergency.

(16) Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

XXXX

(iv) The contention is material to the findings the NRC must make to support the action that is involved in the proceeding:

As is stated in 50.47, NRC will deny a license if the appropriate plan is not in place. The FPL plan is not appropriate. The plans and procedures provided in the subject COL assume a perfect situation where everyone follows them and there is no emotional or situational anxiety present. Experience and studies have shown that in extreme evacuation situations the public will not follow an orderly procedure. Panic and fear prevail and any attempt at planned evacuation is impossible, especially in a nuclear event.

It is also the case that many trained workers on whom the authorities are planning to maintain order and carry out assigned duties do not do so and join the evacuation. If they have families, you must assume that their safety will supersede that of others.

By adding two nuclear reactors to the two already at Turkey Point, the possibility and probability of a nuclear event is increased exponentially. And an event would not have to be catastrophic; even a rumor of a significant leak of radio active gas or vapor could cause panic in the area. Also, since there are two non-nuclear power plants at Turkey Point, a nuclear event could result in shutting them down also due to lack of workers and operators who would most likely not be willing to stay or return to a radioactive site.

(v) Facts or expert opinions

The logistics of evacuating 187,000 people are greater than can be achieved on short notice and in a situation of panic following what is sure to be incomplete and in accurate information. Simply ensuring that there will be sufficient gasoline for that many cars is a major undertaking. Lines at the pumps would be blocks long and the supply of gasoline would soon run out. And who is to guarantee that the station owners or managers will stay around given the threat to themselves and their families. It is an impossible situation. Build the reactors somewhere else.

Evacuation from a nuclear event is far different from evacuation from other events.

Using evacuations from natural and other technological hazards as a basis for comparison, we can conclude that evacuations in response to nuclear power plant accidents are likely to be characterized by an extreme over-response to limited protective action advisories; this phenomenon needs to be considered in behaviorally-based radiological emergency response planning.

The lessons learned from the Three Mile Island accident provide a very important experience for emergency planners to seriously consider in determining the viability of executing their nuclear accident emergency plan. A study into the human response in the aftermath of TMI was published in "Evacuation Behavior In Response To Nuclear Power Plant Accidents," by Donald Zeigler and James Johnson, Jr. in the May, 1984 issue of The Professional Geographer.

Here are some of their findings:

1. To plan for only a 10 mile evacuation is to significantly under plan for a nuclear power station accident.

The 10-mile emergency planning zone is a politically arbitrary distance. It has no bases in meteorology, radiation releases mechanisms and human behavior. In fact studies of human behavior following the Three Mile Island accident in 1979, where a limited evacuation advisory was issued by Pennsylvania Governor Thornberg, provides evidence that people will be spontaneously leaving their homes well beyond the current 10-mile planning zones. This human behavior phenomenon has been termed the "evacuation shadow effect." This evacuation shadow is determined by people who believe themselves to be at risk who evacuate even though they have not been ordered or advised to do so by officials. The study of human behavior around the Three Mile Island accident showed that if only the government advised people, specifically pregnant mothers and pre-school children, had left a 5 mile radius, that number would have been about 3400 evacuees. Instead, up to as many as 200,000 people actually evacuated, approximately 39% of the population within 15 miles of the reactor. The "shadow" evacuation phenomenon is not expected to begin to diminish until approximately 25-miles out from the reactor. The study found that in addition to the high rate of voluntary evacuation, those evacuees tended to travel distances much greater than has been observed in previous studies on non-nuclear related evacuation behavior (hurricanes, floods, etc.). The TMI study evidenced that the median distanced traveled by evacuees was 85 miles. The NRC commissioned a study (Flynn 1979) that evidenced an average distance of 100 miles of travel.

- **To locate all the public shelters and reception centers immediately beyond the 10-mile EPZ is to invite under-utilization and chaos.**

Currently all shelters and reception centers for evacuees within the current planning zone are located in a 10-20 mile range from the reactor. Anyone who takes shelter in them will likely watch the resident population from that zone pack into their cars and heads farther away. Ionizing radiation is such a dreaded invisible threat people will want to put as much distance as possible between them and the accident site.

- **To depend on buses to evacuate populations without cars (school children, the elderly, and prison and hospital populations) is to ignore role conflicts within the emergency personnel designated as drivers and vital to successful evacuation.**

Those people who are depended upon to drive buses are not likely to be professional emergency workers. They may not respond, especially if they have family of their own. They may delay response as a result of role conflict between emergency duty and home. It is reasonable to assume that they are most likely to tend to their families first. Social surveys of personnel with assigned emergency duties indicate the strong potential for role conflict to interfere with the management of a nuclear emergency. Research conducted in the vicinity of the now closed Shoreham nuclear power station on Long Island, NY questioned bus drivers and volunteer fireman "What do you think you would do first if an accident requiring a full scale evacuation of the population within 10 miles of the nuclear reactor were to occur?"

The results found that 68% of 291 fire fighters, 73% of the 246 bus drivers indicated that family obligations would take precedence over emergency duties. The consequence of such choice would be a failed response to the nuclear emergency.

Additionally, during the TMI accident role conflict was documented among many emergency workers including the exodus of physicians, nurses, and technicians required to staff both the short term and long term medical facilities. At one local hospital, only six of 70 physicians who were scheduled for weekend emergency duty reported for work. None of the hospitals researched in the study were in the 5 mile radius of the evacuation advisory. Other instances where role conflict occurred were the Pennsylvania National Guard and even nuclear power plant workers.

4. To package information for radiological accident emergency planning as similar to an emergency response to other disasters (i.e. hurricanes) is to ignore that there are major differences in how people respond to these very different events.

Nuclear power plant operators and emergency planners characterize nuclear power plant disaster planning as no different than that for a hurricane or some other disaster. The public clearly perceives a difference of threat and consequences from a nuclear meltdown and that of a hurricane. But nuclear utilities, emergency planners and the NRC refuse to acknowledge these distinct differences in actual threat, public perceptions and fears of the harm that can occur as the result of a nuclear power accident on scale of the Chernobyl accident in Ukraine, and other catastrophes. The harm derived from a nuclear accident both short term and long term includes deadly radiation sickness, cancer, birth defects and spontaneous abortions. The magnitude of public response to be greater than an evacuation from a natural disaster should be acknowledged and factored into emergency planning.

5) To expect to "manage" the evacuation response is not realistic.

People will manage their own evacuation response. They will head out in their own cars as quickly as possible and try to get on the few available roads and will slow the entire evacuation process down. They will end up in traffic jams in bottlenecks that are beyond the evacuation zones that will likely trap the intended evacuees in traffic jams closer to the nuclear reactor and most immediately under any escaping radiation plume.

Ultimately, the only relevant protection, however, is prevention. If you want real civil defense, then we must shut these dangerous and aging reactors down.

Petitioners' closing statement:

The answer to this difficult situation is to not put people into it in the first place. Build nuclear power plants where evacuation is not a problem and is not in a confined area which the land and roadways surrounding Turkey Point have created. Turkey Point has outgrown its location as a place to produce power which has any potential for a nuclear incident. It is irresponsible for all authorities involved to put the residents and visitors at risk in this manner; the Atomic Energy

Act demands that they not do so. Either build 6&7 somewhere else or use energy conservation and efficiency to reduce the need for power or recommend alternative energy sources and distributed/decentralized production of power. Every home and business should produce its own power. A monolithic, central source of power which must then be transmitted over great distances is nineteenth century technology. Germany and China are doing better. We can do better.

CONTENTION: THREE

A. FAILURE AND OMISSION OF THE FPL COL FOR THE PROPOSED TURKEY POINT NUCLEAR REACTORS 6&7 BY RELEASING AEROSOL WITH 471.6 TONS OF PARTICULATES INTO THE ATMOSPHERE ANNUALLY

A. 1. Statement of the issue

The six cooling towers for the two proposed AP1000 nuclear reactors at Turkey Point will release tons of particulates annually from treated waste water or sea water (plus added chemicals for functional purposes) into the atmosphere per day threatening the health and safety of Turkey Point employees and the surrounding population and visitors and could contaminate all land and water surfaces in the area including 65,000 acres of agricultural land.

ii. brief explanation of the basis for the contention

According to information provided in the FPL COL, the six cooling towers for Turkey Point 6&7 will evaporate 41.5 MGD of water which will include 943 tons annually of particulates) when sea water is used and 55 tons annually of particulates when recycled water is used annually which will be suspended in aerosol dispersed over the surrounding area. An FPL model diagram (presented in a power point presentation on

August 13, 2010 and not yet available on line) shows the dispersion of that vapor in a neat pattern around the plant assuming average wind conditions. However, the average does not fully reflect the many days when the wind blows from the SE at 15 to 25 MPH for hours on end. That would carry the now condensed and concentrated residue over the employees at Turkey Point and the 187,000 people within ten miles of Turkey Point and over 65,000 acres in agriculture in south Miami-Dade County. And the diagram shows that 63% will fall close to the plant, and on Biscayne National Park which abuts the FPL property to the north.

iii. demonstrate that the issue raised in the contention is within the scope of the proceeding

This operation of the cooling towers will violate the criteria of protect(ing) the health and safety of the public prescribed by the Atomic Energy Act of 1954. The ATOMIC ENERGY ACT OF 1954 (Public Law 83–703 68 Stat. 919 August 30, 1954 TITLE I– ATOMIC ENERGY, CHAPTER 1– DECLARATION, FINDINGS, AND PURPOSE) states:

d. The processing and utilization of source, byproduct, and special nuclear material must be regulated in the national interest and in order to provide for the common defense and security *and to protect the health and safety of the public.* (Empahisis added).

e. Source and special nuclear material, production facilities, and utilization facilities are affected with the public interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure the common defense and *security and to protect the health and safety of the public.* (Emphasis added).

NRC Regulation 10 CFR Section 52.79 - Contents of applications; technical information in final safety analysis report, states:

“[t]he final safety analysis report shall include the following information at a level of

information sufficient to enable the Commission to reach a final conclusion on all safety matters that must be resolved by the Commission before issuance of the license.”

iv the contention is material to the findings the NRC must make to support the action that is involved in the proceeding

While the aerosol from Turkey Point 6&7 will meet state air quality standards, the absolute concentrated amount of particulate falling in the area will be create health and air quality problems for those who work at the plant and at near by Biscayne National Park and for area residents and visitors. Low levels of pollutants breathed in every day will present health problems for them over time . The FPL analysis (see FPL public notice reproduced below) shows that “there will be 55 tons (110,000 pounds) of particulate matter annually and 21 tons /year of particulate matter with a mean diameter of 10 microns or less (PM10). when recycled waste water is being used. When using saltwater that contains a much higher solids content as a backup source of cooling water, potential emissions for the cooling towers are estimated to be 943 tons/year of PM and less than 10 tons/year of PM10. The project will also result in the following estimated potential emissions increases from the small serice water cooling towers and diesel engines: 25 tons/year of carbon monoxide; 36 tones/year of nitrogen oxides; 4 tons/year of PM, 3 tons/yeart of pm10; less than 1 ton/year of sulfar dioxide (SO2); and 4tons/year of volatile organic compounds (VOC)”.

While the particulate concentration will be 5 mcg/cu liter, far below the State permitted limit of 150 mcg/cu liter. But the cumulative impact on local workers and residents from continued exposure to a particulate which includes residue from treated waste must be considered.

(v) allegedact on which the petitioner intends to rely to support position on the issue

The particulate will include pesticides, human and animal growth hormones, home and industrial chemicals, and many carcinogens. Studies of waste water show the following substances:

The following information describes some of the chemicals which will be found in the particulate in the aerosol from the six cooling towers for Turkey Point 6&7 reactors:

Contaminants found in municipal waste water:

In general, a partial list the contaminants found in municipal waste-water can be found under the general headings of hydrophobic organic compounds, ² endocrine disrupting compounds, OWCs including surfactant metabolites, steroids, stimulants, metal-chelating agents, disinfectants, antimicrobial agents, and pharmaceutical compounds .⁴

The following is an incomplete list of specific compounds typically found in municipal waste water:

Antibiotics - carbadox, sulfachlorpyridazine, sulfadimethoxine, sulfamerazine, sulfamethazine, sulfathiazole, trimethoprim¹ sulfamethoxazole (SX)³

nonionic surfactant degradation product 4-nonylphenol (NP), the solvent tetrachloroethene (PCE), and the disinfectant 1,4-dichlorobenzene (DCB), and 17 β -Estradiol. ³

HHCB(fragrance component), caffeine, cholesterol, DEET(insect repellent), *para*-nonylphenol(surfactant), TBEP(flame retardant), and triclosan(an antimicrobial which may degrade into highly carcinogenic dioxins).^{6,8}

1, 7-Dimethylxanthine(caffeine metabolite), Acetaminophen ,Caffeine, Carbamazepine (anticonvulsant), Cimetidine (antacid), Codeine, Cotinine (nicotine metabolite),Dehydronifedipine (metabolite of hypertension drug nifedipine), Diltiazem(hypertension drug), Diphenhydramine(antihistamine), Erythromycin(antibiotic), Fluoxetine(antidepressant), Gemfibrozil (antihyperlipidemic), Miconazole(anti-fungal), Salbutamol(albuterol-anti-asthmatic) Sulfamethoxazole (anti-biotic), Thiabendazole (anti-fungal), Trimethoprim (anti -biotic),Warfarin(anti-coagulant).⁷

1. Adams, C., Wang, Y., Loftin, K., and Meyer, M.T., 2002, **Removal of antibiotics from surface and distilled water in conventional water treatment processes**: Journal of Environmental Engineering, v. 128, no. 3,

- p. 253-260, doi:10.1061/(ASCE)0733-9372(2002)128:3(253).
2. Barber, L.B., Keefe, S.H., Antweiler, R.C., Taylor, H.E., and Wass, R.D., 2006, **Accumulation of contaminants in fish from wastewater treatment wetlands**: Environmental Science and Technology, v. 40, no. 2, p. 603-611, doi:10.1021/es0514287.
 3. Barber, L.B., Keefe, S.H., LeBlanc, D.R., Bradley, P.M., Chapelle, F.H., Meyer, M.T., Loftin, K.A., Kolpin, D.W., and Rubio, F., 2009, **Fate of sulfamethoxazole, 4-nonyphenol, and 17 β -estradiol in groundwater contaminated by wastewater treatment plant effluent**: Environmental Science and Technology, v. 43, no. 13, p. 4843-4850, doi:10.1021/es803292v.
 4. Conn, K.E., Barber, L.B., Brown, G.K., and Siegrist, R.L., 2006, **Occurrence and fate of organic contaminants during onsite wastewater treatment**: Environmental Science and Technology, v. 40, no. 23, p. 7358 - 7366, doi:10.1021/es0605117.
 5. Kinney, C.A., Furlong, E.T., Werner, S.L., and Cahill, J.D., 2006, **Presence and distribution of wastewater-derived pharmaceuticals in soil irrigated with reclaimed water**: Environmental Toxicology and Chemistry, v. 25, no. 2, p. 317-326, doi:10.1897/05-187R.1.
 6. Phillips, P.J., Stinson, B., Zaugg, S.D., Furlong, E.T., Kolpin, D.W., Esposito, K.M., Bodniewicz, B., Pape, R., and Anderson, J., 2008, **A multi-disciplinary approach to the removal of emerging contaminants in municipal wastewater treatment plants in New York State, 2003-2004**: Clearwaters, v. 38, no. 3, p. 48-59.
 7. "The 19 Pharmaceuticals in the Study of Pharmaceuticals in Soil Irrigated with Reclaimed Water ", USGS Toxic Substances Hydrology Program http://toxics.usgs.gov/highlights/pharm_soils/listing.html

Circulating Water Chemical Injection (source: Turkey Point Units 6 & 7
COL Application Part 2 — FSAR 10.4-6 Revision 0)

Circulating water chemistry is maintained by a local chemical feed system skid at the CWS cooling tower.

Circulating water system chemical feed equipment injects the required chemicals

into the circulating water at the CWS cooling tower basin. This maintains a noncorrosive, nonscale-forming condition and limits the biological film formation that reduces the heat transfer rate in the condenser and the heat exchangers supplied by the circulating water system.

The specific chemicals used within the system are based on water conditions as determined by CWS water chemistry. The chemicals can be divided into six categories based upon function: biocide, algaecide, pH adjuster, corrosion inhibitor, scale inhibitor, and a silt dispersant. The pH adjuster, corrosion inhibitor, scale inhibitor, and dispersant are metered into the system continuously or as required to maintain proper concentrations. The biocide application frequency may vary with seasons.

The algaecide is applied, as necessary, to control algae formation on the cooling tower. The following chemicals are used to control circulating water chemistry:

- Biocide and algaecide - sodium hypochlorite
- pH adjuster - sulfuric acid
- Corrosion inhibitor/scale inhibitor/silt dispersant - High stress polymer
- Scale inhibitor - sodium salt of phosphonemethylate diamine and/or silicate inhibiting polymer

Addition of biocide and water treatment chemicals is performed by local chemical feed injection metering pumps and is adjusted as required.

Chemical concentrations are measured through analysis of grab samples from the CWS.

Residual chlorine is measured to monitor the effectiveness of the biocide treatment.

Footnote:

The following notice appeared in the Miami Herald on April 23, 2010:

Particles trapped in water droplets may be emitted from the cooling tower as "droplet drift" that is carried out with the warm exhaust air. High-efficiency mist eliminators will be installed to minimize drift. When using reclaimed water, potential emissions from the large cooling towers are estimated to be 55 tons/year of particulate matter (PM) and 21 tons/year of particulate matter with a mean diameter of 10 microns or less (PM10). When using saltwater that contain a much higher solids content as a backup source of cooling water, potential emissions for the cooling towers are estimated to be 943 tons/year of PM and less than 10 tons/year of PM10. The project will also result in the following estimated potential emissions increases from the small service water cooling towers and diesel engines: 25 tons/year of carbon monoxide; 36 tons/year of nitrogen oxides; 4 tons/year of PM, 3 tons/year of PM10; less than 1 ton/year of sulfur dioxide (SO₂); and 4 tons/year of volatile organic compounds (VOC).

Particles trapped in water droplets may be emitted from the cooling towers as "droplet drift" that is carried out with the warm exhaust air. High-efficiency mist eliminators will be installed to minimize drift. When using reclaimed water, potential emissions from the large cooling towers are estimated to be 55 tons/year of particulate matter (PM) and 21 tons/year of particulate matter with a mean diameter of 10 microns or less (PM₁₀). When using saltwater that contains a much higher solids content as a backup source of cooling water, potential emissions from the cooling towers are estimated to be 943 tons/year of PM and less than 10 tons/year of PM₁₀. The project will also result in the following estimated potential emissions increases from the small service water cooling towers and diesel engines: 25 tons/year of carbon monoxide; 36 tons/year of nitrogen oxides; 4 tons/year of PM, 3 tons/year of PM₁₀; less than 1 ton/year of sulfur dioxide (SO₂); and 4 tons/year of volatile organic compounds (VOC).

The proposed new cooling tower project triggers preconstruction review pursuant to Rule 62-212.400, Florida Administrative Code (F.A.C.) for the Prevention of Significant Deterioration (PSD) of Air Quality for PM and PM₁₀ emissions. In accordance with this rule, the Department is required to make a determination of the Best Available Control Technology (BACT) for PM and PM₁₀ emissions. The draft permit includes the following preliminary BACT determinations for PM and PM₁₀ emissions: a maximum design droplet drift rate of 0.0005% of the circulating water flow rate from the cooling towers; and the use of ultra low sulfur diesel (0.0015% sulfur by weight, maximum) in the diesel-powered engines.

(vi) dispute with applicant/licensee

FPL contends that the absolute percentage of particulate which the aerosol from Turkey Point 6&7 will contain is very small, and even within permitted state limits. However, the Atomic Energy Act requires that all parties involved in producing nuclear energy protect public health and safety. And the particulate will, according to the FPL, average wind conditions, stay near the plant and near Biscayne National Park next door. This will threaten the health of employees at both installations and of visitors to Biscayne National Park. On days when stronger than average wind conditions the particulate will be spread over 65,000 acres of agricultural land to the west and north west where the accumulated particulate could threaten health by being absorbed in the fruit and vegetable growing there. At one time Turkey Point might have been a logical place to place a power plant. Today, with over 187,000 people living within 10 miles of the Turkey Point and a conservative projection of 280,000 by 2080, it is no longer a hospitable home for nuclear power. Do not challenge public health in this area. Either recommend that alternative energy sources be used or build the reactors somewhere

CONENTION: FOUR

Turkey Point Units 6 & 7 COL Application Part 3 — Environmental Report 7-i Revision 0 **CHAPTER 7 ENVIRONMENTAL IMPACTS OF POSTULATED ACCIDENTS INVOLVING RADIOACTIVE MATERIALS** 7.2.3.2 p.7.2-5 Surface Water Exposure Pathways

Contention: The COL fails to completely address the radiation exposure that would be caused by a radiological accident. Specifically, there is no radiation dosage given for persons a) fishing and/or b) consuming marine-based food.

The following COL statements are evidence of omitted dosage calculations:

People can be exposed to radiation when deposited airborne radioactivity runs off into or is deposited onto surface water. The exposure pathway can be from drinking the water,

external radiation from submersion in the water, external radiation from human activities near the shoreline, or ingestion of fish or shellfish. MACCS2 only calculates the dose from drinking the water.

Surface water exposure pathways involving swimming, fishing, boating, and performing activities near the shoreline are not modeled by MACCS2.

Shoreline activities of all kinds represent a large, fundamental part of the Miami-Dade tourist-based economy. Because of the climate conditions, these shoreline activities attract many residents and numerous tourists year-round. There then exists an elevated potential for large numbers of people to receive a higher-than background dose of radiation after a radiological accident. The use of an inappropriate or inadequate computer code to evaluate radiological hazards cannot be used as an excuse to avoid calculating the dosage to large at-risk population through one of the most likely and concentrated exposure pathways. Therefore, omitting the analysis of these exposure pathways for shoreline activities is unacceptable and renders the application incomplete.

CONTENTION: FIVE

I, Harold R. Wanless, on behalf of CASE (Citizens Allied for Safe Energy) have the following contentions and concerns over the proposal to add additional nuclear power plant facilities at Turkey Point. The FPL COL application for two new nuclear reactors at Turkey Point must be considered invalid – both the FSAR (for instance Chapter 2) and also the ER analyses (these matters are relevant to nearly every chapter of the ER) because neither considers and neither incorporates any scientifically valid projection for sea level rise through this century and beyond. Doing so will dramatically diminish and likely negate the viability of this proposal.

Such a consideration is expressly required by 10 CFR 52.79

1. Human-induced atmospheric warming is recognized to be rapidly warming the polar regions of Earth (Bindoff et al., 2008; National Research Council, 2010) leading to warming Arctic and Antarctic Ocean waters, accelerating melt of permafrost and tundra (Schuur et al., 2008; and Zimov et al., 2006), destabilization of methane hydrates (Shakhova et al, 2010), and accelerating melting of the Greenland and Antarctic Sheets (Van den Broeke et al., 2009; Velicogna, 2009; Kerr, 2009; and Jiang et al., 2010). This is leading to accelerating global sea level rise.

2. Sea level has been rising at an accelerated rate since about 1930 (Wanless et al., 1994). This has resulted in a about a 9-inch rise of sea level in south east Florida. This rise is about the global rate of sea level rise. Presently global and south Florida sea level is rising at just greater than one foot (30 cm) per century but is accelerating at 0.17 millimeters per year.
3. The Science Committee (of which I am Chair) of the Miami-Dade County Climate Change Advisory Task Force issued a projection of future sea level rise for south Florida, stating that:

“With what is happening in the Arctic and Greenland, many respected scientists⁴ now see a likely sea level rise of **at least** 1.5 feet in the coming 50 years and a total of **at least** 3-5 feet by the end of the century, possibly significantly more. Spring high tides would be at +6 to +8 feet. This does not take into account the possibility of a catastrophically rapid melt of land-bound ice from Greenland, and it makes no assumptions about Antarctica” (MDC-CCATF, 2008).

Since issuing this statement, Ice Sheet melting has dramatically increased on both Greenland and Antarctica (Van den Broeke et al., 2009; Velicogna, 2009; Kerr, 2009; and Jiang et al., 2010). More recent projections of sea level rise through the century are at or above the levels of our 2008 statement (Rahmstorf, 2010).

4. All climate and sea level assessments agree that ice melt, and sea level rise will be accelerating into the next century. This means that we will not be adjusting living with a three- or five-foot sea level rise but one that is continues rising at an accelerating rate. If we have reached plus five feet by the end of the century, sea level will be rising at a foot per decade.
5. Circular No. 1165-2-211 of the United States Army Corps of Engineers, issued July 1, 2009, specifically directs incorporation of “the direct and indirect physical effects of projected future sea-level change in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects. Recent climate research by the Intergovernmental Panel on Climate Change (IPCC) predicts continued or accelerated global warming for the 21st Century and possibly beyond, which will cause a continued or accelerated rise in global mean sea-level. Impacts to coastal and estuarine zones caused by sea-level change must be considered in all phases of Civil Works programs” (USACOE, 2009). Surely a major addition to a nuclear power plant facility should fall under similar scrutiny.
6. I am not aware that sea level rise in all its ramifications has been considered and/or incorporated into the proposal for significant expansion of the Turkey Point nuclear facility.
7. It is critical that a realistic projected sea level rise through this century and beyond an understanding of the rates of sea level rise be carefully considered and incorporated into

the evaluation. Rising sea level will have significantly have changed the coastal environments, base-level elevations, storm surge patterns, and population and demographics of southeast Florida by the time the proposed units come on line – and rising sea level will dramatically diminish southeast Florida and its population by the end of the century.

- a. Incorporating future sea level changes will affect the population trends for the south Florida area and as such the future power needs.
 - b. Incorporating future sea level changes will change the viability of a nuclear power complex that is increasingly isolated from the mainland and sitting in the middle of a combined Biscayne/Florida Bay.
 - c. Incorporating future sea level changes will change the safety of the complex during major storms and terrorist threats.
 - d. Incorporating future sea level changes will dramatically change the ability of the associated cooling complex to function and to remain isolated from and prevent harm to the adjacent marine environment.
 - e. Incorporating future sea level changes will change the ability of the complex to contain any nuclear accidents.
8. Do not see that any of this has been addressed.

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CONTENTION: SIX

Introduction to contentions on so-called “low-level” radioactive waste

So-called “low-level” radioactive waste is the official designation or category for nuclear waste that includes materials generated as byproduct material from the use of uranium. Much of this waste is *not* low risk and can remain radioactively hazardous for literally millions of years. By definition “low-level” radioactive waste is not irradiated fuel, the liquid and sludge from reprocessing irradiated fuel, nor the solid into which that liquid could be converted, but it does include plutonium and other transuranics [up to 100 nanocuries per gram], strontium-90 which concentrates in bones and teeth and iodine-129 which is biologically active and has a 16 million year half life.

So-called “low-level” radioactive waste contains many materials that are far from “low” in terms of measurable radiation, or radiological hazard, thus our use of the phrase “so-called” and the “quotes” on the words “low-level.” Fission products are inevitably generated from splitting uranium atoms to heat water to make electricity. Filters and resins that extract these fission products from the reactor core coolant and fuel pool cooling water become loaded and are classified as “low-level” radioactive waste even though some could give a lethal dose in 20 minutes if a person were exposed unshielded. “Low-level” waste can also include metal components and parts that become radioactive [activated] due to neutron bombardment. These fission product and activated metal wastes dubbed so-called “low-level” wastes are a dedicated outcome of the operation of a nuclear power reactor – it is not possible to operate without generating them as a result.

In July 2008, the one commercial disposal site in the United States open to the whole country for classes A,B and C “low-level” radioactive waste from commercial generators closed

to all but the its 3-state Atlantic compact generators in the states of South Carolina, New Jersey and Connecticut. As discussed below, there is today, no disposal site for the more concentrated Class B and C “low level” radioactive waste generated in Florida. Florida is in the Southeast Compact which does not have a disposal site to which it can send Class B and C, or Greater than C “low level” radioactive waste.

So-called “Low-Level” waste contentions have been filed in interventions on most of the COL applications currently pending before the US Nuclear Regulatory Commission including Calvert Cliffs, North Anna, Bellefonte, Vogtle, Fermi and Levy County. Some of the contentions have been filed with respect to the FSAR, some focusing on the ER, some both. Since one of the early admission of so-called “low-level” waste contentions was at North Anna, and Judge Bolwerk on admitting the concerns created two contentions – one pertaining to environmental, the other pertaining to safety, that convention is followed here.

Due to site-specific environmental concerns tied to the duration of the proposed 40 year license, CASE is filing additional contentions that are associated with the possibility that so-called “Low-Level” radioactive waste generated by Turkey Point 6 and 7 could be stored on-site for decades – indeed for the term of the license. Site-specific concerns include projected sea-level rise as well as issues associated with storm surge.

So-called “low-level” radioactive waste is a class that includes the filters and resins from the processing of liquid and gaseous radioactive waste streams, all components of the reactors that need replacement and/or are removed – including at times very large items, such as steam generators, and extremely radioactive items such as broken control rods or other reactor internals. Some of the radionuclides in this waste will be hazardous (defined as 10 – 20 half-lives) for hundreds of thousands to millions of years.

Efforts to minimize the generation of this waste are laudable – however these processes may, in some cases result in larger volumes of less concentrated waste or ever more

concentrated waste that must be stored with care for workers, the public, CASE members and the Turkey Point biome. The accumulation of this waste on the Turkey Point site – potentially for the duration of its generation, and potentially beyond (pending decommissioning) is not trivial. These concerns are material to the issue of granting a COL to FPL for Turkey Point 6 and 7 since the generation of so-called “low-level” waste cannot be severed from the operation of these reactors.

CONTENTION: SEVEN

Environmental Impact of Extended Storage of So-Called “Low-Level” Waste at Turkey Point

The Florida Power and Light (FPL) COL application is inadequate because the Environmental Report (Chapter 3 section 3.5.3) assumes that the classes B and C so-called “low-level” radioactive waste (LLRW) generated by proposed Turkey Point Units 1 and 2 will be promptly (e.g., in approximately two years) shipped offsite and fails to address the environmental impacts in the event that PEF will need to manage such LLW on the Turkey Point site for a more extended period of time. In addition it is assumed that extended storage and forms of so-called “low-level” waste management on the site that might be triggered by or associated with extended storage, such as processing, treatment or possible burial or incineration will have no environmental impact – and FPL omits any reference to these in Chapter 5 of the ER, Environmental Impacts.

The information, references and bases of Contention 4-SA are incorporated here by reference. Please see the declaration of Diane D’Arrigo in support of this contention.

The extended storage of radioactive waste generated if the COL for TP Units 6 & 7 is granted is likely. The waste storage plan which would result if the merits of Contention 4-SA are won, should be subject to the analysis of both the FPL ER and eventually the NRC’s EIS for Turkey Point. The absence of such a plan leads to the absence of such an analysis.

Of particular importance in an analysis of environmental impacts are any treatment or other processes that FPL may use to concentrate or otherwise alter this waste stream. Of particular concern is any plan to bury on-site or incinerate this material – both of which may be

disguised by other names, such as “heat treat” or “pyro process.” Such activities are not currently reflected in the FPL ER Chapter 3, section 5 nor is the impact of an accumulation of waste longer than the anticipated months or years.

The additional basis is this: a so-called “low-level” waste storage plan must anticipate the possible inundation of the site during a storm surge in the not-so-distant future. The lack of inclusion of this analysis violates 52.79(iii) and would jeopardize the health, safety and well being of CASE member and TP workers as well as the general public and the biome of South Florida.

The elevated inundation of the Turkey Point site with extended storage, and therefore decades accumulation of so-called “Low-Level” waste (either processed or not) has not been adequately analyzed in the FPL ER Chapter 2, section 7 or the site description in chapter 3, or in the sections on radiological consequences in Chapter 5, section 4.

Some so-called “low-level” waste plans considered in the COL process have included storing the waste outdoors on a concrete pad. Such a plan (not mentioned by FPL) is an example of the sort of situation that could result in the unplanned, wide dispersal of radioactive materials from Turkey Point, beyond the Turkey Point site boundary.

The lack of inclusion of a thorough analysis of the potential for elevated storm surge, site inundation and the possible dispersal of so-called “Low-Level” waste off the TP site violates 52.79(iii) and would jeopardize the health, safety and well being of CASE member and TP workers as well as the general public and the biome of South Florida.

Hurricanes, cyclones and other severe weather are well understood in South Florida. What history is teaching us is that we assume that we must be informed by the recent past – but today this is not sufficient – today we must also be informed by future projections – or

alternately look at the past in deep time. Sea levels have been significantly different in deep time. We have huge bodies of government – both local, regional, national and international projecting that the sea level is going to be significantly different at Turkey Point during the term of the proposed licenses for Units 6 and 7. The fact that these issues have not been addressed in the impact assessment of adding two more reactors at Turkey Point points to a large and obvious hole in the analysis.

CONTENTION # _____

So-Called “Low-Level” Radioactive Waste Extended Storage Plan Missing

FPL’s application (FSAR Chapter 11, section 4.6) is inadequate because the Safety Analysis Report assumes that the Class B and C so-called “low-level” radioactive waste generated by the proposed Turkey Point Units 6 & 7 will be promptly (e.g. in approximately 2 years per the AP1000 DCD: page 11.4-6) shipped offsite despite lack access for disposal. The FSAR fails to address compliance with Part 20 and Part 50 Appendix I (ALARA) in the event that PEF will need to manage such waste on the Turkey Point Site for a more extended period of time, possibly its entire licensed operating period or longer.

The invocation of a letter with a third party for off-site management of waste generated by Turkey Point 6 and 7 does not validate that an actual transfer of title and physical transfer of the waste will occur; return of such waste to the Turkey Point site is required in the absence of disposal site access. The waste could come back from 3rd party processors since they are only licensed to store for 365 days and have limited storage capacity.

In order to meet the requirements of 52.79, NRC staff must be able to assess “a level of information sufficient to enable the Commission to reach a final conclusion on all safety matters that must be resolved by the Commission before issuance of a combined license,” 10 CFR 52.79(a)(3) specifies that the FSAR must include: “The kinds and quantities of radioactive materials expected to be produced in the operation and the means for controlling and limiting radioactive effluents and radiation exposures within the limits set forth in part 20 of this chapter.”

Discussion

Please see the declaration of Diane D’Arrigo of Nuclear Information and Resource Service offered in Support of this contention addressing the non-viability of off-site and “third party” options that FPL cites in the COL for proposal for two reactors at Turkey Point. There is

today no option to send Florida-generated so-called “low-level” waste off site for disposal, and there is also no option, including Studsvik that will deliver an iron-clad guarantee that the same waste will not return to the generator under the terms of the contract.

Section 11.4.6 “COMBINED LICENSE INFORMATION FOR SOLID WASTE MANAGEMENT SYSTEM PROCESS CONTROL PROGRAM” of the FPL Final Safety Analysis Report for Turkey Point 6 and 7 states: “No additional onsite radwaste storage is required beyond that described in the DCD.” DCD means the “Design Control Document” provided by Westinghouse for the AP 1000 – now in revision 17 (so much for standardized designs). The AP1000 DCD, section 11.4-6 states:

The packaged waste storage room provides storage for more than two years at the expected rate of generation and more than a year at the maximum rate of generation. One four-drum containment pallet provides more than 8 months of storage capacity for the liquid mixed wastes and the volume reduced liquid chemical wastes at the expected rate of generation and more than 4 months at the maximum rate.

In consideration of the range of options provided here, CASE has used the phrase “e.g. approximately 2 years” when referring to the FPL short-term plan for so-called “low-level” radioactive waste in an effort to capture the uncertainty in the DCD.

The real-world situation that is not reflected in the Westinghouse DCD nor in the FPL Final Safety Analysis Report (FSAR) is that there is not currently a so-called “Low-Level” radioactive waste disposal site available for any Class B, C or Greater-Than-C so-called “low-level” radioactive waste that would be generated at Turkey Point Units 6 or 7. The three sites that accept so-called “low-level” waste for disposal in the United States are restricted – either to the level of radioactivity accepted (a site in Clive Utah accepts only Class A) or to the geographic area of generation – (a site in Richland Washington accepts waste generated within the Rocky Mountain and Northwest Compacts, a site in South Carolina accepts waste from the

Atlantic waste compact), and a potential new site in Texas has numerous unresolved license conditions and would only be licensed for disposal of so-called “low-level” radioactive waste generated in VT or TX. These restrictions create a barrier to the acceptance of waste generated in Florida at any existing disposal site.

As demonstrated in the D’Arrigo Declaration, PEF lacks a credible basis for its assertion that it will definitely be able to ship so-called “low-level” radioactive waste generated at the proposed TP units 6 and 7 sites off of the site permanently within two years. No such disposal option exists today and two years is not a credible time span to generate a new off-site disposal option.

In violation of 52.79(a)(3) the FPL COLA fails to offer any details whatsoever about waste management and storage beyond two years. As discussed in the D’Arrigo Declaration, neither the NRC nor the public therefore has any basis for evaluating the adequacy of the COLA with respect to long-term radioactive waste storage.

As stated above --

10 CFR 52.79 (a) The final safety analysis report shall include the following information, at a level of information sufficient to enable the Commission to reach a final conclusion on all safety matters that must be resolved by the Commission before issuance of a combined license....

In addition to the matter of storage details, any and all future treatment and processing that could add to the routine and accidental radioactive and chemical releases and exposures from the operation of the reactors, management of high and so-called “low-level” radioactive waste and all of the accompanying activities, is necessary in order to assess the compliance with both 10 CFR 20 (for both workers and the public) as well as ALARA (10 CFR 50 Appendix

l). It is incumbent upon the applicant to provide sufficient information to demonstrate compliance with all applicable regulations for the radioactive waste generated by Turkey Point 6 & 7. The following regulations are offered as a context of the level of consideration and analysis that the NRC must engage with in order to “reach a final conclusion on all safety matters...before issuance of a combined license...” these include: 10 CFR 20, 10 CFR 30, 10 CFR 50, 10 CFR 61, 10 CFR 71, 10 CFR 100, 40 CFR 190 and 49 CFR 171-180. Petitioner is not framing the contention with respect to these regulations, merely noting them since a certain level of specificity is required in a plan in order for the NRC to make a “final conclusion” with respect to all of these relevant regulations.

The FPL FSAR Chapter 11, section 4-2 makes assertions that the waste generated at Turkey Point units 6 and 7 will be transferred to a third party, a Swedish corporation named Studsvik operating in Tennessee:

Consistent with current commercial agreements, a third-party contractor processes, stores, owns, and ultimately disposes of low-level waste generated as a result of operations. Activities associated with the transportation, processing, and ultimate disposal of low-level waste comply with applicable laws and regulations in order to ensure the public’s health and safety. In particular, the third party contractor conducts its operations consistent with NRC regulations (e.g., 10 CFR Part 20).

Under 10 CFR 20.2001, reactor licensees may transfer low-level radioactive waste material to another licensee that is specifically licensed to accept and treat waste prior to disposal. Studsvik, Inc., has a licensed low-level radioactive waste treatment facility in Erwin, Tennessee. FPL has signed a letter of intent with Studsvik to enter into negotiations for a contract for the performance of work by Studsvik to include the shipment, processing, storage, and disposal of low-level radioactive waste produced by Units 6 & 7 ([Reference 205](#)). Under the proposed contract, Studsvik would treat the Class B and C waste at its Erwin, Tennessee facility and thereafter take responsibility for storage and final disposal.

Regardless of ownership, the Studsvik license limits storage at its facility to 1 year. Even if Studsvik were to become owner of the waste, neither it nor other TN processors and waste

generators have access to disposal for Class B and C so-called “low-level” radioactive wastes. The Studsvik waste can be stored for one year at the WCS site in TX but waste stored longer than that violates the TX WCS storage license. The WCS commercial disposal site is A) not operating and B) limited to TX and VT waste—not TN or Florida- generated waste. Although any compact can consider accepting out-of-compact waste, they have all rejected it. Importantly, the licensed capacity of the storage and disposal sites at WCS TX are too limited to take Florida’s or Tennessee’s generated nuclear waste. (See declaration of Diane D’Arrigo in support of this contention). Finally, there are still unresolved conditions and a question as to whether the WCS will operate. Texans have raised concerns with the whole licensing of the WCS site with federal agencies.

It is fair to say that FPL has an aspiration to hand-off the so-called “low-level” waste Turkey Point 6 & 7a would generate as quickly as possible, but it has not demonstrated conclusively that this is going to be possible.

CASE is concerned that authorizing the production of this waste (by granting the COL) when there is no disposal site or assured other option, will result in the Turkey Point site becoming a long-term so-called radioactive storage site. It is reasonable to protect CASE members to require a plan that addresses this circumstance in such a way to protect their health and safety, as well as workers at TP 6 and 7, as well as the older existing units.

Introduction to contentions on so-called “low-level” radioactive waste

So-called “low-level” radioactive waste is the official designation or category for nuclear waste that includes materials generated as byproduct material from the use of uranium. Much of this waste is *not* low risk and can remain radioactively hazardous for literally millions of years. By definition “low-level” radioactive waste is not irradiated fuel, the liquid and sludge from reprocessing irradiated fuel, nor the solid into which that liquid could be converted, but it does include plutonium and other transuranics [up to 100 nanocuries per gram], strontium-90 which concentrates in bones and teeth and iodine-129 which is biologically active and has a 16 million year half life.

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CONTENTION: SIX

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The real-world situation that is not reflected in the Westinghouse DCD nor in the FPL Final Safety Analysis Report (FSAR) is that there is not currently a so-called “Low-Level” radioactive waste disposal site available for any Class B, C or Greater-Than-C so-called “low-level” radioactive waste that would be generated at Turkey Point Units 6 or 7. The three sites that accept so-called “low-level” waste for disposal in the United States are restricted – either to the level of radioactivity accepted (a site in Clive Utah accepts only Class A) or to the geographic area of generation – (a site in Richland Washington accepts waste generated within the Rocky Mountain and Northwest Compacts, a site in South Carolina accepts waste from the Atlantic waste compact), and a potential new site in Texas has numerous unresolved license conditions and would only be licensed for disposal of so-called “low-level” radioactive waste generated in VT or TX. These restrictions create a barrier to the acceptance of waste generated

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As stated above --

10 CFR 52.79 (a) The final safety analysis report shall include the following information, at a level of information sufficient to enable the Commission to reach a final conclusion on all safety matters that must be resolved by the Commission before issuance of a combined license....

In addition to the matter of storage details, any and all future treatment and processing that could add to the routine and accidental radioactive and chemical releases and exposures from the operation of the reactors, management of high and so-called "low-level" radioactive waste and all of the accompanying activities, is necessary in order to assess the compliance with both 10 CFR 20 (for both workers and the public) as well as ALARA (10 CFR 50 Appendix I). It is incumbent upon the applicant to provide sufficient information to demonstrate compliance with all applicable regulations for the radioactive waste generated by Turkey Point 6 & 7. The following regulations are offered as a context of the level of consideration and analysis that the NRC must engage with in order to "reach a final conclusion on all safety matters...before

issuance of a combined license...” these include: 10 CFR 20, 10 CFR 30, 10 CFR 50, 10 CFR 61, 10 CFR 71, 10 CFR 100, 40 CFR 190 and 49 CFR 171-180. Petitioner is not framing the contention with respect to these regulations, merely noting them since a certain level of specificity is required in a plan in order for the NRC to make a “final conclusion” with respect to all of these relevant regulations.

The FPL FSAR Chapter 11, section 4-2 makes assertions that the waste generated at Turkey Point units 6 and 7 will be transferred to a third party, a Swedish corporation named Studsvik operating in Tennessee:

Consistent with current commercial agreements, a third-party contractor processes, stores, owns, and ultimately disposes of low-level waste generated as a result of operations. Activities associated with the transportation, processing, and ultimate disposal of low-level waste comply with applicable laws and regulations in order to ensure the public’s health and safety. In particular, the third party contractor conducts its operations consistent with NRC regulations (e.g., 10 CFR Part 20).

Under 10 CFR 20.2001, reactor licensees may transfer low-level radioactive waste material to another licensee that is specifically licensed to accept and treat waste prior to disposal. Studsvik, Inc., has a licensed low-level radioactive waste treatment facility in Erwin, Tennessee. FPL has signed a letter of intent with Studsvik to enter into negotiations for a contract for the performance of work by Studsvik to include the shipment, processing, storage, and disposal of low-level radioactive waste produced by Units 6 & 7 ([Reference 205](#)). Under the proposed contract, Studsvik would treat the Class B and C waste at its Erwin, Tennessee facility and thereafter take responsibility for storage and final disposal.

Regardless of ownership, the Studsvik license limits storage at its facility to 1 year. Even if Studsvik were to become owner of the waste, neither it nor other TN processors and waste generators have access to disposal for Class B and C so-called “low-level “radioactive wastes. The Studsvik waste can be stored for one year at the WCS site in TX but waste stored longer than that violates the TX WCS storage license. The WCS commercial disposal site is A) not operating and B) limited to TX and VT waste—not TN or Florida- generated waste. Although any compact can consider accepting out-of-compact waste, they have all rejected it. Importantly, the

licensed capacity of the storage and disposal sites at WCS TX are too limited to take Florida's or Tennessee's generated nuclear waste. (See declaration of Diane D'Arrigo in support of this contention). Finally, there are still unresolved conditions and a question as to whether the WCS will operate. Texans have raised concerns with the whole licensing of the WCS site with federal agencies.

It is fair to say that FPL has an aspiration to hand-off the so-called "low-level" waste Turkey Point 6 & 7a would generate as quickly as possible, but it has not demonstrated conclusively that this is going to be possible.

CASE is concerned that authorizing the production of this waste (by granting the COL) when there is no disposal site or assured other option, will result in the Turkey Point site becoming a long-term so-called radioactive storage site. It is reasonable to protect CASE members to require a plan that addresses this circumstance in such a way to protect their health and safety, as well as workers at TP 6 and 7, as well as the older existing units.