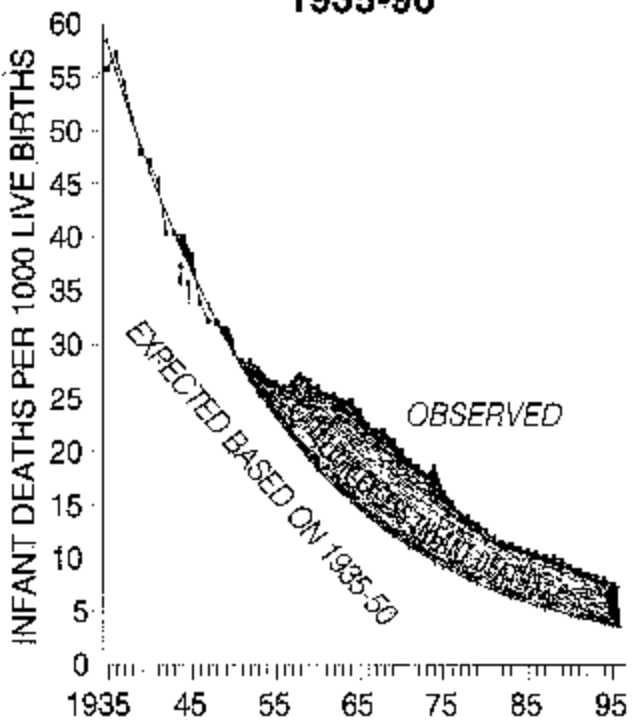


United States of America INFANT MORTALITY RATES 1935-96



US Crude Mortality Rates, 1900-93
Observed and Expected Rates per 1000

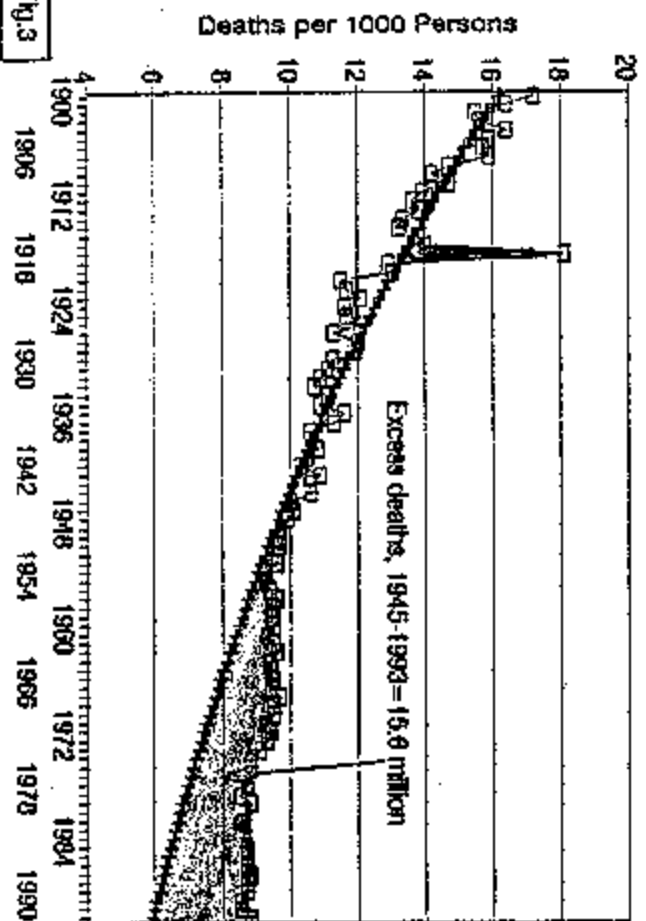
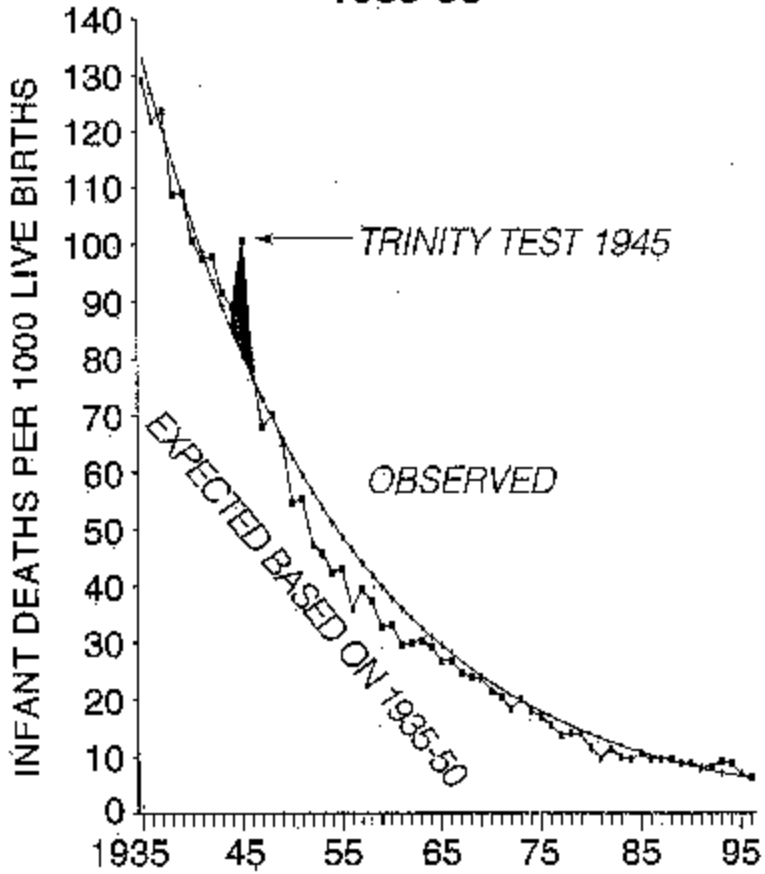


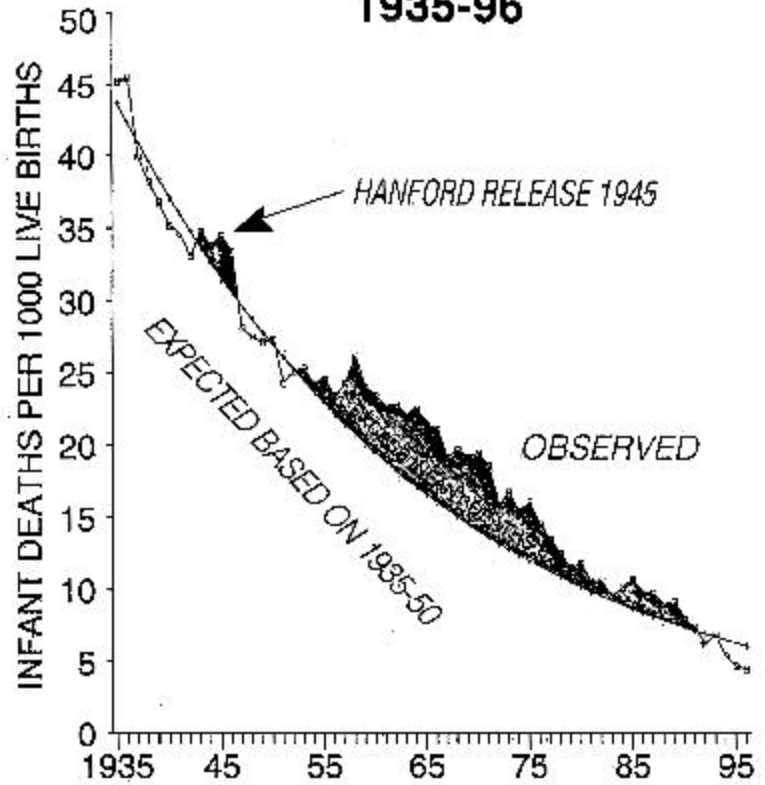
Fig. 3

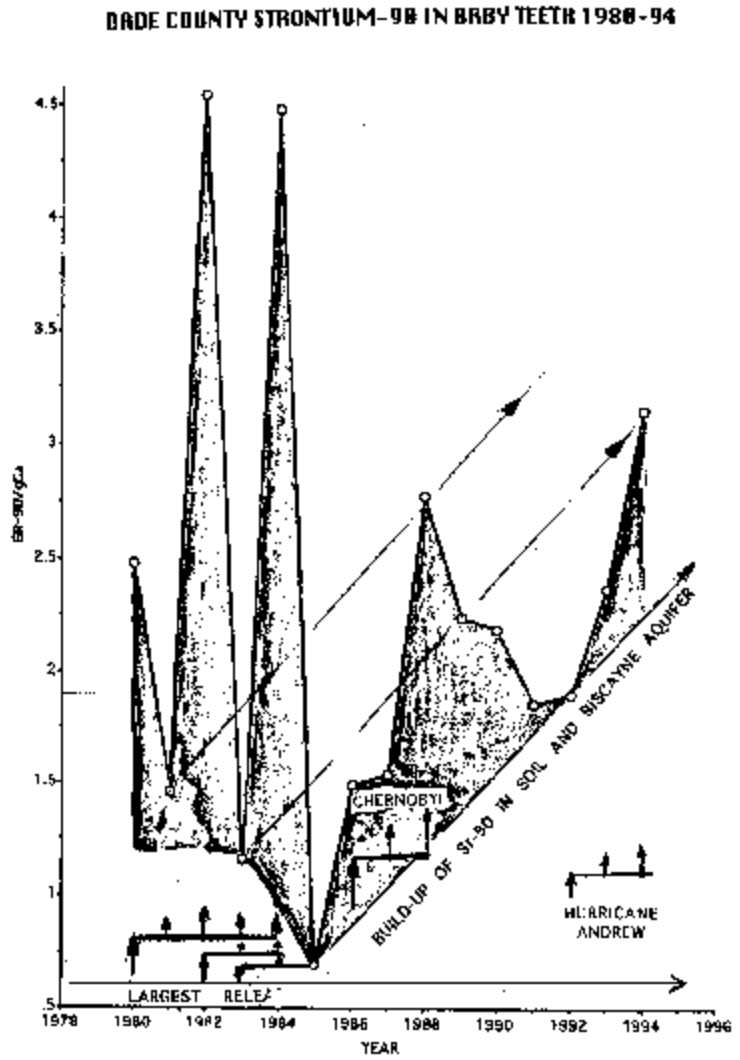
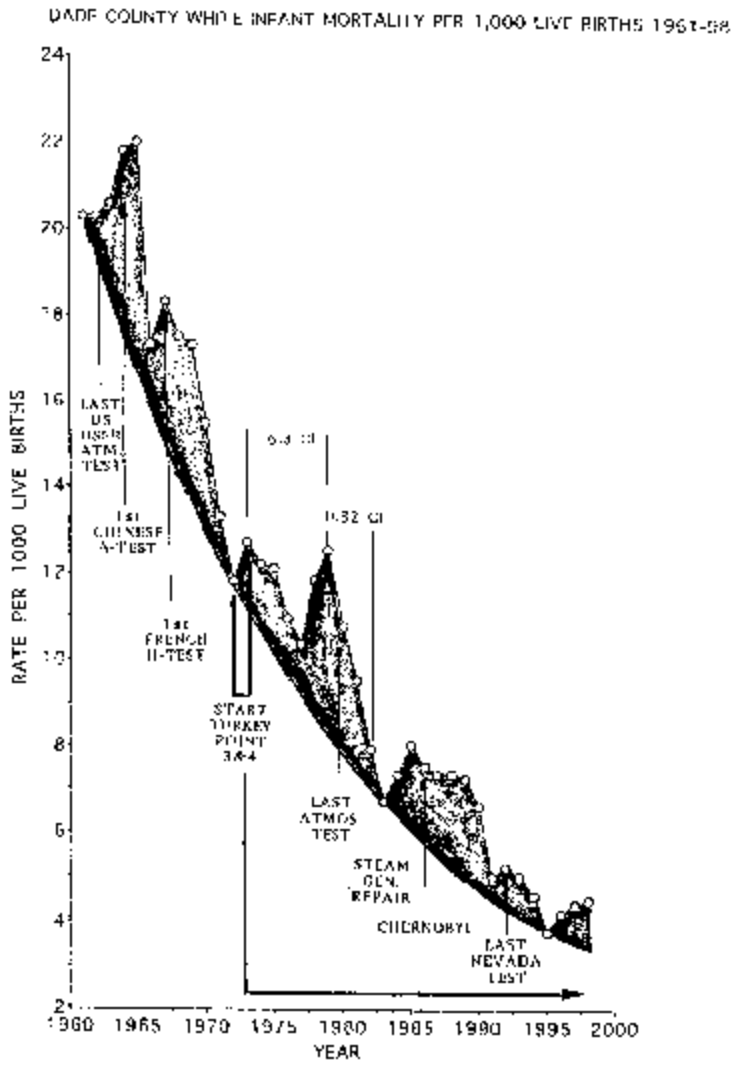
TPD 17

NEW MEXICO INFANT MORTALITY RATES 1935-96

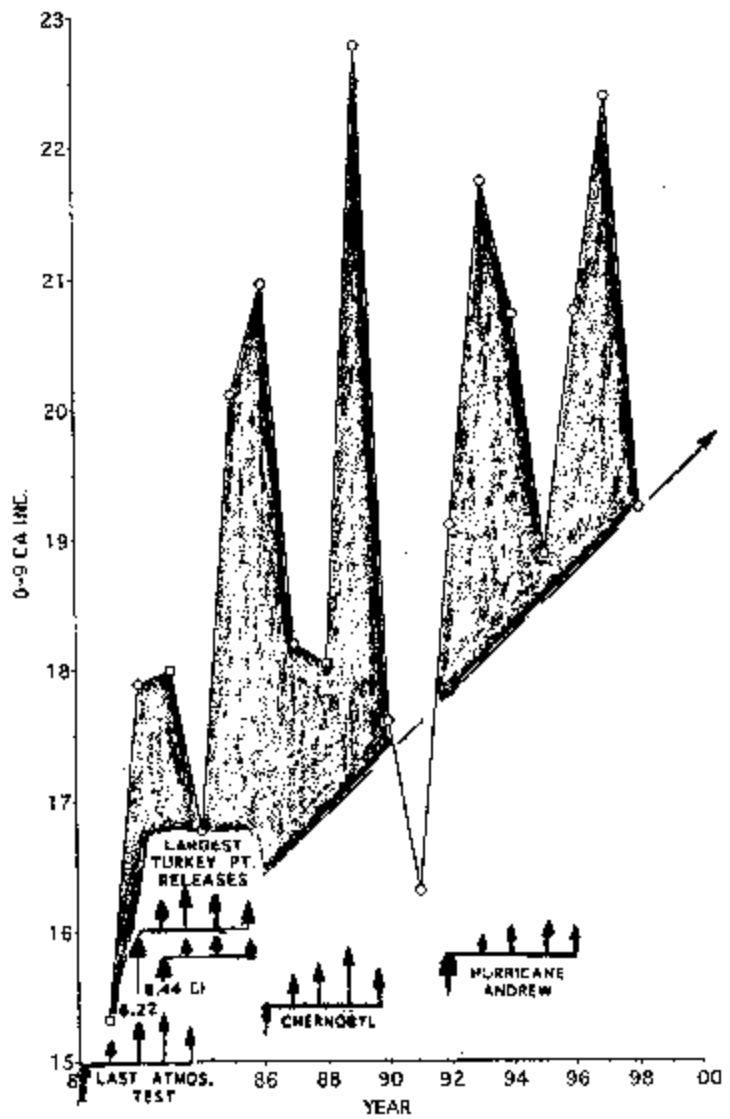


Washington State INFANT MORTALITY RATES 1935-96

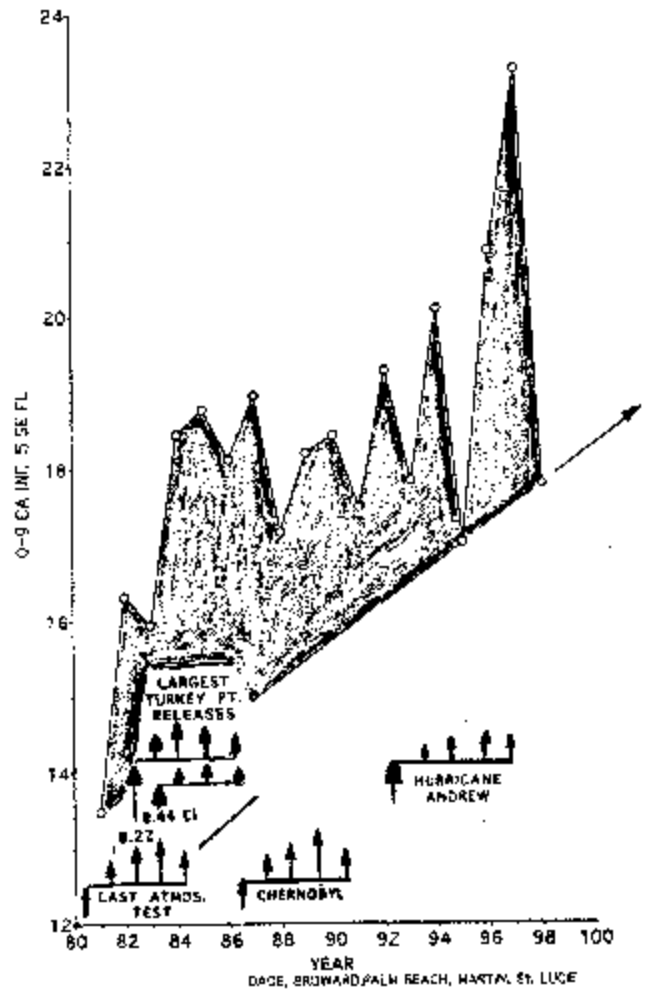




DADE 0-9 CANCER INCIDENCE PER 100,000 '81-'98



FIVE SOUTH-EAST FLORIDA 0-9 CANCER INCIDENCE PER 100,000 '81-'98



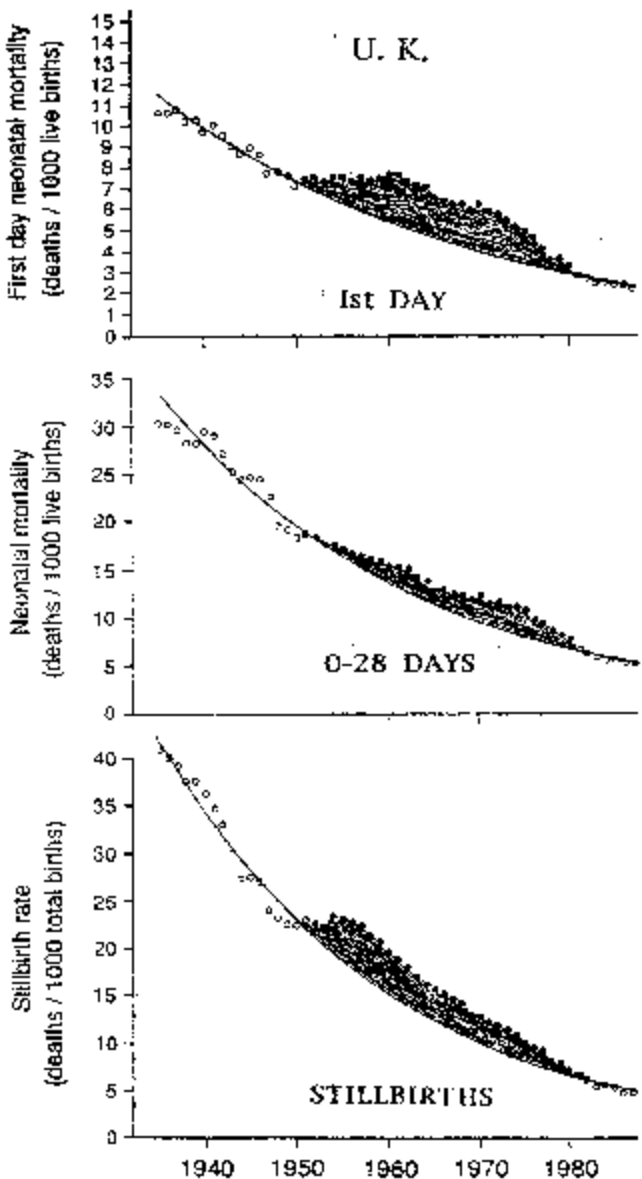
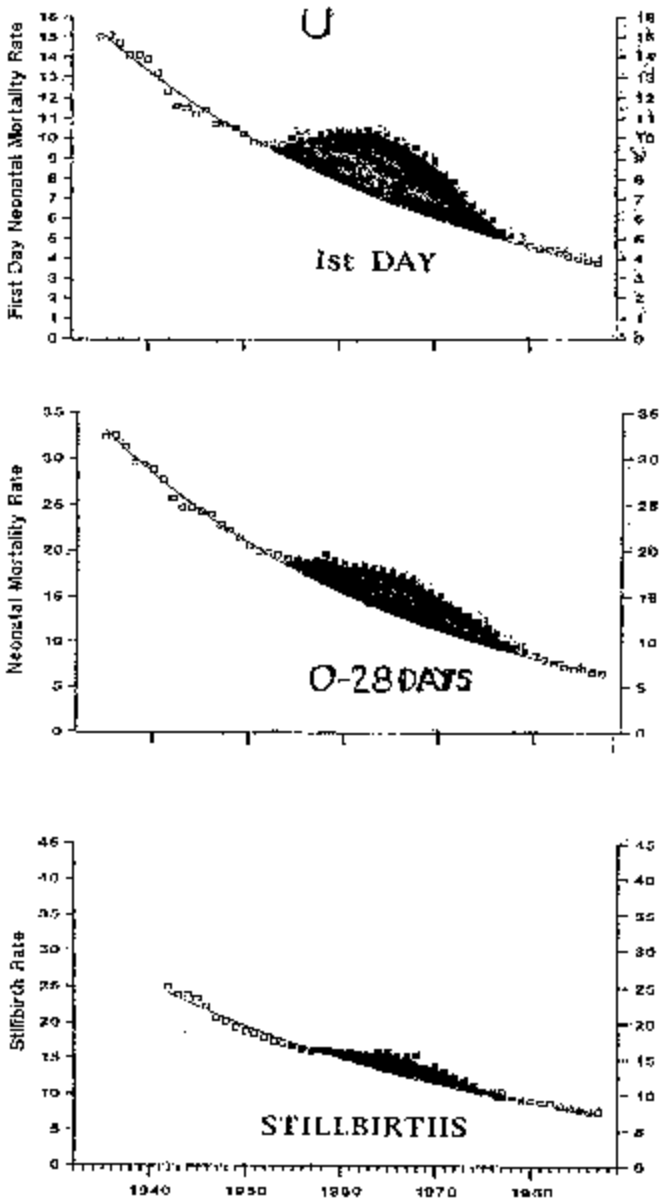


FIG. 2—First day mortality, neonatal (0-28 days) mortality, and stillbirth rates for England and Wales.

TPD 32

Thomas A. Brestlin
10440 S.W. 60 St.
Miami FL 33173-2826

August 5, 2001

Mr. James H. Wilson
Mail Stop 01131
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20277-2904

Dear Mr. Wilson,

I would like to comment on the subject of the July 17, 2001, Public Meeting to Discuss the Draft Supplemental Environmental Impact Statement for Turkey Point Units 3 and 4.

I have been a resident of Miami-Dade County for more than 25 years; I hold a Ph.D. in history and have been director of sponsored research and then Vice President for Research at Florida International University, the state university in Miami-Dade County, for nineteen and a half years. In addition, since 1994 I have been a member of the Council of Sponsoring Institutions of the Oak Ridge Associated Universities (ORAU), manager of the Oak Ridge Institute for Science and Engineering (ORISE).

I was impressed by the professional behavior of the Commission staff who conducted the meeting and made technical presentations and also by the friendliness of the staff members who greeted the public at the door of the meeting room. All who wished to speak publicly were treated with consideration. All were invited to speak privately with Commission representatives if they so chose. I did so and found Commission representatives willing to discuss matters in some detail.

The renewal process was very clearly outlined for the audience. I was concerned to learn from the discussion of the license renewal process that the focus of this particular meeting would be narrowly focused on matters that pertained only to the Turkey Point plants 3 and 4 and would not address general environmental issues that involved them.

Nothing in the handout, "Preliminary Results of Environmental Review of Turkey Point Units 3 and 4," or the discussion indicated that the looming shortage of technical and scientific personnel in the nuclear industry had been addressed in the general environmental impact statement. At this meeting, numerous FP&L employees, most over 45 or 50 years of age, spoke about the enthusiasm of the workers at the plants and their determination to work with management to operate the plants safely. Having seen at first hand the operation of FP&L's St. Lucie plants and the intense dedication of company management and employees to safety and ongoing training, I was not surprised by the statements to that effect made by company officials and workers. I do believe, however, that the looming shortage of technical and scientific personnel in the nuclear industry will affect FP&L and must be addressed as part of its relicensing review. Adequate numbers of properly trained workers are essential to the operation

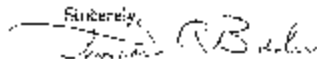
of the industry as a whole and individual plants as well, including Turkey Point 3 and 4. Across the country, the number of students studying for work in the nuclear industry has been dropping and university reactors have been fewer and fewer. What steps has FP&L taken and what steps will it take to ensure adequate numbers of workers under such industry-wide conditions?

I might add here that the very last speaker from the public attending the meeting, a Mr. Ruben Rothschild (sp?), an FP&L employee, 26 year veteran of the US Navy and nuclear power industry, and Scoutmaster, raised a warning flag that might give the Commission grounds for concern. The speaker said that he had worked at more than one nuclear facility and contrasted the fine management of the Turkey Point reactors by FP&L with poor management at one or more other sites. I believe that the Commission should, for the public good, follow up on that public testimony, informal though it may have been, about the alleged poor management at these other plants.

I hope that the Commission will carefully consider the statement made by one of the speakers, a mathematician employed by Miami-Dade Community College, who questioned the validity of the statistical methodology used in the General Environmental Impact Statement.

Over and over, speakers made the point that nuclear power plants made for cheaper energy and freed us from dependence on foreign oil. I am not sure that such arguments are germane to the general or specific environmental impact issues but, if they are, then I have to enquire whether the nuclear industry is subject to a monopolistic source of fuel at home. I understand that the American Nuclear industry could turn to European countries including Russia for fuel. World markets for petroleum, however, are more broadly based and thus presumably less risky for energy consumers.

I left the meeting with a strong concern that the division of the review process into General and Specific Environmental reviews was efficient but left something to be desired from a systems perspective, as I mentioned afterwards to Mr. Grant of the Commission. The lack of political will to solve the problem of long-term storage of spent fuel, for example, makes the assumption that on-site storage of spent fuel at Turkey Point will be temporary seem increasingly weak. And, as I mentioned above, the work force issue is another general issue with inescapable implications for Turkey Point 3 and 4. I also came away puzzling over the following statement in the handout. In the section, "Radiological Impacts on Human Health," National Cancer Institute examined cancer mortality rates around 57 nuclear plants, including Turkey Point, and found not only a link to deaths from leukemia or other cancers in nearby populations." I was under the impression that, in the absence of a specific catastrophic instance, causal determinations were exceptionally hard if not impossible to make using public health data. Thus the inability to demonstrate causality should not necessarily be grounds for complacency.


Thomas A. Brestlin

32-3

32-4

32-5

32-6

32-1

32-2

TPD 33



United States Department of the Interior

OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL, POLICY AND COMPLIANCE
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

July 31, 2001

HR-01594

James H. Wilson
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5 Regarding Turkey Point Units 3 and 4

Dear Mr. Wilson:

The Department of the Interior has reviewed the referenced document and has no comments at this time. If you have any questions I can be reached at 404-331-2524.

Sincerely,

[Handwritten signature]

Gregory Hogau
Acting Regional Environmental Officer

33-1

TPD 60



STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS

"Dedicated to making Florida a better place to call home"

100 N. GULF
GAINESVILLE

STEVEN W. GOODE
GOV.

August 23, 2001

Mr. David B. Matthews
Division of Regulatory Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Nuclear Regulatory Commission - Florida Power and Light Company - Turkey Point Units 3 and 4 - Notice of Availability of Draft Supplement 5 to the Generic Environmental Impact Statement and Public Meeting for the License Renewal of Turkey Point Units 3 and 4 - Miami-Dade County, Florida
SAI: FL200106200431C

Dear Mr. Matthews:

The Florida State Clearinghouse, pursuant to Governorial Executive Order 95-359, the Coastal Zone Management Act, 16, U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4231, 4331-4335, 4341-4347, as amended, has coordinated a review of the above-referenced project.

Based on the information contained in the Draft Supplement 5 to the Generic Environmental Impact Statement and the enclosed comments provided by our reviewing agencies, the state has determined that, at this stage, the license renewal for the Turkey Point Power Plant units 3 and 4 is consistent with the Florida Coastal Management Program. However, all future environmental documents prepared for this project must be forwarded to the State Clearinghouse for inter-agency review.

The South Florida Regional Planning Council (SFRPC) notes that the project should be consistent with the goals and policies of the Miami-Dade County comprehensive plan and corresponding land development regulations. SFRPC recommends that impacts to the natural systems be minimized to the greatest extent feasible. SFRPC also requests that the goals and policies of the Strategic Regional Policy Plan for South Florida be observed when making decisions regarding this project. Please refer to the enclosed SFRPC comments for further details.

1956 SHUMARD OAK BOULEVARD - TALLAHASSEE, FLORIDA 32399-2192
Phone: 850.488.8666/Secretary 278.8466 FAX: 850.921.0784/Secretary 271.0701
Internet address: http://www.wdca.state.fl.us

SEVERAL STATE AGENCIES HAVE OFFICE
3700 SHUMARD OAK BOULEVARD, SUITE 117
TALLAHASSEE, FLORIDA 32309-2127
352.316.6163
COMMUNITY PLANNING
3700 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32309-2127
352.316.6163
FLORIDA DEPARTMENT OF TRANSPORTATION
2225 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32309-2127
352.414.1534
FLORIDA DEPARTMENT OF REVENUE
5005 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32309-2127
352.414.1534

Appendix A

Mr. David B. Matthews
August 23, 2001
Page Two

Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Ms. Jasmin Raffington at (850) 922-5438.

Sincerely,

Shirley W. Collins
Shirley W. Collins, Acting Administrator
Florida Coastal Management Program

SWC/dc

Enclosures

cc: Carlos Andres Gonzalez, South Florida Regional Planning Council

TPD 61



July 30, 2001

Mr. Jack Gaskins
Florida State Clearinghouse
Department of Community Affairs
2535 Shumard Oak Boulevard
Tallahassee, FL 32399-2100

RE: SFRPC #01-0634, SAJWFL200106200431C, Request for comments on the notice of availability of Draft Supplement 5 to the Generic Environmental Impact Statement and Public Meeting for the License Renewal of Turkey Point Units 3 and 4, Nuclear Regulatory Commission, Florida Power and Light Company, Miami-Dade County.

Dear Mr. Robbins:

We have reviewed the above-referenced application and have the following comments:

- The project should be consistent with the goals and policies of the Miami-Dade County comprehensive plan and its corresponding land development regulations. It is important for the applicant to coordinate permits with all governments of jurisdiction. 61-1
- Staff recommends that, if this permit is granted, 1) impacts to the natural systems be minimized to the greatest extent feasible and 2) the permit grantor determine the extent of sensitive wildlife, marine life, and vegetative communities in the vicinity of the project and require protection and/or mitigation of disturbed habitat. This will assist in reducing the cumulative impacts to native plants and animals, wetlands, and deep-water habitat and fisheries that the goals and policies of the Strategic Regional Policy Plan for South Florida (SRPP) seek to protect. 61-2
- The project is located immediately adjacent to the Biscayne National Park and Biscayne Bay Surface Water Improvement and Management Area (SWIMA), natural resources of regional significance designated in the SRPP. The goals and policies of the SRPP, in particular those indicated below, should be observed when making decisions regarding this project. 61-3

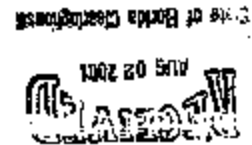
Strategic Regional Goal

- 3.1 Eliminate the inappropriate uses of land by improving the land use designations and utilize land acquisition where necessary so that the quality and connectedness of Natural Resources of Regional Significance and suitable high quality natural areas is improved.

Regional Policies

- 3.1.1 Natural Resources of Regional Significance and other suitable natural resources shall be preserved and protected. Mitigation for unavoidable impacts will be provided either on-site or in identified regional habitat mitigation areas with the goal of providing the highest level of

3440 Highway 90, Southwood, Suite 140, Hollywood, Florida 33021
E: (850) 922-5438; F: (850) 922-5435



July 30, 2001
Page 2

resource value and function for the regional system. Endangered faunal species habitat and populations documented on-site shall be preserved on-site. Threatened faunal species and populations and species of special concern documented on-site, as well as critically imperiled, imperiled and rare plants shall be preserved on-site unless it is demonstrated that off-site mitigation will not adversely impact the viability or number of individuals of the species.

3.1.9 Degradation or destruction of Natural Resources of Regional Significance, including listed species and their habitats will occur as a result of a proposed project only if:

- a) the activity is necessary to prevent or eliminate a public hazard, and
- b) the activity is in the public interest and no other alternative exists, and
- c) the activity does not destroy significant natural habitat, or identified natural resource values, and
- d) the activity does not destroy habitat for threatened or endangered species, and
- e) the activity does not negatively impact listed species that have been documented to use or rely upon the site.

3.1.10 Proposed projects shall include buffer zones between development and existing Natural Resources of Regional Significance and other suitable natural resources. The buffer zones shall provide natural habitat values and functions that complement Natural Resources of Regional Significance values so that the natural system values of the site are not negatively impacted by adjacent uses. The buffer zones shall be a minimum of 25 feet in width. Alternative widths may be proposed if it is demonstrated that the alternative furthers the viability of the Natural Resource of Regional Significance, effectively separating the development impacts from the natural resource or contributing to reduced fragmentation of identified Natural Resources of Regional Significance.

Strategic Regional Goal

3.2 Develop a more efficient and sustainable allocation of the water resources of the region.

Regional Policies

- 3.2.5 Ensure that the recharge potential of the property is not reduced as a result of a proposed modification on the existing uses by incorporation of open space, pervious areas, and impervious areas in ratios which are based upon analysis of on-site recharge needs.
- 3.2.6 When reviewing proposed projects and through the implementation of the SAPP, discourage water management and proposed development projects that alter the natural wet and dry cycles of Natural Resources of Regional Significance or suitable adjacent buffer areas or cause functional disruption of wetlands or aquifer recharge areas.
- 3.2.9 Require all inappropriate inputs into Natural Resources of Regional Significance to be eliminated through such means as: redirection of offending outfalls, suitable treatment improvements or retrofitting options.
- 3.2.10 The discharge of freshwater to Natural Resources of Regional Significance and suitable adjacent habitat/buffer areas shall be designed to imitate the natural discharges in quality and quantity as well as in spatial and temporal distribution.

Dr. Jack Cassano
July 30, 2001
Page 3

3.2.11 Existing stormwater outfalls that do not meet or improve upon existing water quality or quantity criteria or standard, or cause negative impacts to Natural Resources of Regional Significance or suitable adjacent natural buffer areas shall be modified to meet or exceed the existing water quality or quantity criteria or standard. The modification shall be the responsibility of the outfall operator, permittee or applicant.

Strategic Regional Goal

3.4 Improve the protection of upland habitat areas and maximize the interrelationships between the wetland and upland components of the natural system.

Regional Policies

- 3.4.1 Require the utilization of vegetation and wildlife surveys in project review which include the identification of listed species habitat quantity and quality.
- 3.4.2 Utilize the results of the vegetation, wildlife and listed species habitat surveys in the reduction of project related impacts to identified wildlife populations or communities. The results of the surveys will be utilized to ensure that the proposed project is compatible with identified or otherwise documented on-site viable populations or communities by retaining those populations or communities on-site.
- 3.4.4 Require the use of ecological studies and site and species specific surveys in projects that may impact natural habitat areas to ensure that rare and state and federally listed plants and wildlife are identified with respect to temporal and spatial distribution.
- 3.4.5 Identify and protect the habitats of rare and state and federally listed species. For those rare and threatened species that have been scientifically demonstrated by past or site specific studies to be relocated successfully, without resulting in harm to the relocated or surviving populations, and where re-entr preservation is neither possible nor desirable from an ecological perspective, identify suitable receptor sites, guaranteed to be preserved and managed in perpetuity for the protection of the relocated species that will be utilized for the relocation of such rare or listed plants and animals made necessary by unavoidable project impacts. Consistent use of the site by endangered species, or documented endangered species habitat on-site shall be preserved on-site.
- 3.4.8 Remove invasive exotics from all Natural Resources of Regional Significance and associated buffer areas. Require the continued regular and periodic maintenance of areas that have had invasive exotics removed.
- 3.4.9 Required maintenance shall insure that re-establishment of the invasive exotic does not occur.
- 3.4.10 Local governments shall be encouraged to require invasive exotic removal as a condition of development approvals.

Strategic Regional Goal

7.6 Achieve flexible and comprehensive emergency planning for a variety of emergencies

Mr. Jack Gaskins
July 30, 2001
Page 4

Regional Policies

- 7.6.1 Emergency plans should coordinate responses to interruptions to the general supply of each basic necessity for the equivalent of 25% of the region's population within 72 hours.
- 7.6.2 Local governments should devote increased attention to regulation and enforcement of operations and maintenance of man-made systems such as pumps and pipelines for extremely high hazardous materials to mitigate emergencies.
- 7.6.3 Promote the federal, state and regional coordination of a public information and awareness program concerning various types of hazards and appropriate response.

Thank you for the opportunity to comment. We would appreciate being kept informed on the progress of this project. Please do not hesitate to call if you have any questions or comments.

Sincerely,


Carlos Andres Gonzalez
Senior Planner

CAG/cp

cc: Ralph Central, FCOMT
Dianne O'Quinn Williams, Miami-Dade County Planning and Zoning
Juan Esvoy, Miami-Dade Environmental Resources Management

TPD 62



RECEIVED

ES 4030 PM 8/07

Regulatory Services
Branch
8/7/01

Florida Power & Light Company, 6750 W. 13th St., Ft. Lauderdale, FL 33305

L-2001-184
10 CFR 51
10 CFR 54
AUG 27 2001

66 PG. 004057
4/18/01
①

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop 7-50 59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: Florida Power & Light Company Comments
on Draft Supplemental Environmental Impact Statement for
License Renewal of Nuclear Plants
Supplement 5 Regarding Turkey Point Units 3 and 4
66 Fed. Reg. 12853 (June 18, 2001); 66 Fed. Reg. 5528
(July 3, 2001)


Florida Power & Light Company (FPL), the applicant for the
renewal of operating licenses for Turkey Point Nuclear Plant,
Units 3 and 4, provides the following comments on the referenced
draft supplemental environmental impact statement (SEIS).

FPL agrees with all of the conclusions and proposed findings in
the SEIS. FPL offers the following comments largely as
clarifications. FPL urges the Commission to issue a final EIS
addressing the environmental impacts of the proposed renewal of
the Turkey Point operating licenses as soon as possible.

Should you have any questions concerning FPL's comments, please
contact E. J. Thompson at (305) 245-6321.

We appreciate the opportunity to comment on the SEIS.

Sincerely yours,


T. O. Jones
Acting Vice President - Turkey Point

EOJ/BAT/hlo
Attachment

Template = ADM-013

R-245-ADM-013
Call = J.H. Williams (5/10/01)

cc: U.S. Nuclear Regulatory Commission, Washington, D.C.

Chief, License Renewal and Standardization Branch
Project Manager - Turkey Point License Renewal
Project Manager - Turkey Point

U.S. Nuclear Regulatory Commission, Region II

Regional Administrator, Region II, NRC
Senior Resident Inspector, USNRC, Turkey Point Plant

Other

Mr. Robert Bunterworth
Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, FL 32399-1050

Mr. William A. Bassetti, Chief
Department of Health
Bureau of Radiation Control
2920 Capital Circle, SE, Bin #C21
Tallahassee, FL 32310-1741

Mr. Joe Meyers, Director
Division of Emergency Management
2555 Shumard Oak Drive
Tallahassee, FL 32399-2100

County Manager
Miami-Dade County
111 NW 1 Street 23rd Floor
Miami, FL 33128

Mr. Douglas J. Walters
Nuclear Energy Institute
1776 I Street NW
Suite 400
Washington, D.C. 20005

**ATTACHMENT 1
COMMENTS ON DRAFT GENERIC ENVIRONMENTAL IMPACT
STATEMENT (NUREG 1437 SUPPLEMENT 5)
TURKEY POINT UNITS 3 AND 4
LICENSE RENEWAL APPLICATION**

PAGE	LINE NUMBER	COMMENT
1-5	26-27	Should read "contain an analysis of any Category 1 listed unless there is new and significant information on a specific issue - this is pursuant to 10 CFR 51.53 (c) (3) (ii) and (iv)."
1-5	4	The number 13,000 houses is incorrect. The correct number is "over 250,000 houses."
2-4	17-18	The stacks related to Turkey Point Units 1 and 2 and their environmental impacts are not within the scope of this major Federal action and this discussion should be omitted from the DSIS.
2-5	17	Delete the words "equilibrium core" and "rate". This clarifies the sentence.
2-7	15	Revise sentence to read, "FPL does not use biocontrol chemicals in the circulating water system."
2-7	23	The canal system is bordered by the Everglades Mitigation Bank not the Everglades. Directional descriptions toward or away from the Everglades are accurate. Revise the wording accordingly.
2-13, 4-24	15, 38	Change "an additional" to "Up to an additional ...".
2-20	1	It is unclear what boilers are being referred to. The nuclear plant does not have boilers.
2-21	8	Replace "Within southern Biscayne Bay, Card Sound, and the Turkey Point cooling canal system are..." with "Within the vicinity of Turkey Point are..." As written, this sentence implies that there are 11 protected species within the cooling canal system, an implication that is incorrect and inconsistent with the rest of the paragraph.
2-37	Table 2-8	Because Turkey Point is located in a high population area that has no growth control measures (Page 4-21, beginning on line 14), the Table 2.8 housing information is immaterial and should be deleted.
2-39	1	Education information is pertinent only if an applicant plans refurbishment. Because FPL plans no refurbishment (Chapter 3), the education information should be deleted.

62-2

62-3

62-4

62-5

62-6

62-7

62-8

62-9

62-10

62-11

62-12

PAGE	LINE NUMBER	COMMENT
2-41	Table 2-11	Because FPL plans no refurbishment (Chapter 3) and Turkey Point tax payments are small relative to the taxing jurisdiction's tax base (Section 4.4.3, beginning at line 30), the Table 2-11 land use information is immaterial and should be deleted.
2-43	2-3	It should be noted that the stacks related to Turkey Point Units 1 and 2 and their environmental impacts are not within the scope of this major federal action.
2-45	Table 2-13	The age distribution information is immaterial and should be deleted.
2-45	13	The transient population information is immaterial and should be deleted.
2-47	Section 2.2.8.6	The low-income information (page 2-48, lines 18 - 26) is demographic information that is pertinent only to the Section 4.4.6 environmental justice analysis and should be moved to this section. With the exception of the tax information (on page 2-50), the economic information is not relevant and should be deleted.
2-50	1-7	FPL is described here as a "major" property taxpayer, while Section 4.4.3 states that FPL pays two percent of the Miami-Dade property taxes. This discussion should be revised to factually state that FPL pays two percent of Miami-Dade property taxes without characterizing the nature of the tax payment.
4-7	36	For the reasons stated in FPL's Environmental Report submitted with its application for renewed license, FPL disagrees with NRC's conclusion that all Category 2 issues pertaining to plants with cooling ponds are applicable to Turkey Point Units 3 and 4.
4-22	24	Change the wording to read, "FPL assumed an increase of 60 employees during the license renewal period."
4-22	25	Change 125 to 154. The environmental report states that there will be 154 new jobs.

PAGE	LINE NUMBER	COMMENT	
62-13	4-25	35	As the environmental report indicates, the Turkey Point site was subject to daily tidal inundations before plant construction. DSEBS Section 2.2.9.1 indicates that the area has been subjected to a rising water table and has at one point been characterized as being too swampy to survey. Section 2.2.9.2 indicates that a cultural resources survey was conducted on land adjacent to the Turkey Point site, with no cultural resources identified. All these observations make it reasonable to conclude that cultural resources are unlikely to be found at the Turkey Point site. Therefore, it is unclear why the Turkey Point DSEBS contains the wording, "However, additional care should be taken ... to ensure that historic properties are not inadvertently impacted." There does not appear to be a reasonable basis for including the cautionary wording in the Turkey Point DSEBS and it should be deleted.
62-14	4-31	29	Revise the bullet to read, "Continue to deny public access to the canal." Other bullets should also be stated in terms of continuing action.
62-15	4-36	5	The word "states" should be "asserts."
62-16	4-36	6	The words "referred to" should be "alleges."
62-17	4-36	8	The word "states" should be "asserts."
62-18	4-37	31, 32	"FPL 2000c" is an incorrect reference for the REMP Report.
62-19	4-40	6	Insert the following: "The Florida Department of Health's Bureau of Environmental Epidemiology has also reviewed the allegations of Gould, et al. (DOE 2001). The Department used the data cited by Gould, et al. to reconstruct calculations and was not able to identify unusually high rates of cancer in counties nearby nuclear power facilities. The Department concluded that, "Careful analysis and observation of the data presented here does not support the alarming claim made by the RMEP [Radiation and Public Health Project] regarding cancer mortality rates and trends in southeastern Florida counties when compared with the rest of the state of Florida and the nation."
62-20	4-42	32-41	The GDC are not applicable to Turkey Point as stated. The Criterion 2 reference is correct as it is referenced in the SAR. The SRP is not applicable to Turkey Point which was licensed before issuance of the SRP in 1987.
62-21			

PAGE	LINE NUMBER	COMMENT
5-2	21	Delete "and Section 5.1 of the SEIS" and add at the end of the sentence " and briefly discussed in Section 5.1 of this SEIS."
5-3	29	Insert after the word "events", "including for example hurricanes and flooding".
5-6	28	Change "core melt accidents" to "postulated core melt scenarios".
5-10	8-15	Modify the wording to read as follows: "The EPL approach in doubling of core damage frequency to account for the calculated benefits for external events provides a nonconservatively reasonable estimate of the potential impact of external events. The staff believes the search for external event vulnerabilities as a part of the Turkey Point IPEEB, did not identify any risk contributors that would benefit from potential SAMAs and considers the EPL approach to be adequate."
5-14	13-18	Strike the sentences beginning with "The preliminary review" on line 17 and ending with "modeled in the current PSA" on line 18.
5-16	Table 5.5	Three SAMAs (50, 54, 116) listed in the ER are not listed in Table 5.5.
5-19	See 5.2.5 second line	Change sentence to read: "The most estimates conservatively excluded the cost...".
5-19	2 nd paragraph 5 th line	Delete "EPL responded... attributes" and insert the following at the beginning of the sentence: "In its original submittal, supplemented with responses to NRC Staff's requests for additional information, EPL provided a summary of the key risk-reduction attributes...".
5-23	1 st paragraph under Sec 5.2.6.2 2 nd line	Strike the words "Although there could have been more attention given to evaluating social costs,".
5-24	6	Insert the word "partially" between the words "pipeline through".
5-24	29	Replace the word "approximately" with "more than...". North of Lake Okechobee to Turkey Point would be between 100 and 200 miles.
5-60, 5-61 See also Table 5-9	25, 3 respectively	The 186 MW(e) shortfall (1386-1200) would have to be made up by MW and not MW-Ins. Raising Turkey Point 1 & 2 at a higher capacity factor will not affect peak megawatt output.
5-61	7	Insert the word "direct" between "from" and "environmental."



July 17, 2001

Mr. Jim Wilson, Nuclear Regulatory Committee
OWBN
11555 Rockville Pike
Rockville, MD 20852

RE: Turkey Point Plant License Renewal

Dear Mr. Wilson:

I strongly support the Turkey Point Re-licensing effort. Turkey Point has been an excellent neighbor, as witnessed by myself, my company and community.

They are the single largest private employer of the South Dade Community with over 800 full time employees who annual base salaries over \$62,000. I know, and have known, several employees who work at the Plant and live in the surrounding areas who participate in numerous civic organizations and support our local community events.

The economic impact of Turkey Point on the local area community is felt in payroll, property taxes and support of area local services and their product purchases.

Turkey Point has an excellent environmental record. It has been demonstrated over the years with their strong commitment to the environment, which is represented by their support of the South Florida Biotopes, and demonstrated most recently by their safety record.

They are rated as one of the most reliable nuclear power plants in the United States and have consistently had "excellent" ratings from the regulators, you - the NRC.

The Plant is located approximately 8-9 miles east of my home. I have worked and resided in the general vicinity during this entire period. Never have I had any alarm or concern as a result of the Power Plant's location, but only found them to be quiet, outstanding neighbor that serves the local community, and beyond. I believe strongly that the re-licensing should be granted.

Sincerely,

Eric S. Johnson
Eric S. Johnson, President
Community Bank of Florida
Homestead, FL 33030

Post Office Box 85040, Homestead, Florida 33060-0400
28001 S.W. 157th Avenue, Homestead, FL 33033 • 305-265-2211 • <http://www.communitybankfl.com>
FDIC Member

*Given to
Rosekety
on
3 Aug 01*

TPD 64

September 6, 2001

U.S. Nuclear Regulatory Commission
 Division of Administrative Services
 Office of Administration
 Mailstop T-6D 59
 Washington, DC 20555-0001

Via e-mail and regular mail

Re: Objections and Comments on the Draft Generic Environmental Impact Statement (GEIS) for the License Renewal of the Turkey Point Nuclear Power Plant Units 3 and 4.

INTRODUCTION

I am a resident of South Florida and an environmentalist who has dedicated many years of my life working to protect and preserve the Florida Everglades and the South Florida ecosystem. The effect that the failure to adequately assess the environmental impacts that the relicensing of Turkey Point will have on the South Florida ecosystem in the Turkey Point Draft Generic Environmental Impact Statement (GEIS) will directly impact me and my family and friends who use the South Florida ecosystem for hiking, boating, bird watching, fishing, contemplation and observation of the diverse plants and animal species that frequent this fragile ecosystem. The human environment could also be adversely impacted by the offsite consequences of the NRC's proposed action to operate these old nuclear power reactors for twenty years beyond the original license.

A 1982 study (CRAC2) provided by the Congressional Subcommittee on Oversight and Investigations showed that in certain weather conditions, a meltdown at Turkey Point could cause 29,000 early deaths within a twenty mile radius of the plant, 4,000 delayed cancer deaths and 43,000 injuries within a seventy mile radius of the plant, and 43 billion dollars in property damage. Additionally, according to NUREG CR 4982, *Nuclear Accidents in Spent Fuel Pools in Support of Generic Issue 82*, a worst case accident to a spent fuel pool could result in an interdiction area (an area with such a high level of radiation that it is assumed that it can never be decontaminated) of 224 square miles. The adverse impacts to my property in particular, and the ecosystem as a whole, that may be caused by the NRC's proposed action demonstrates that I have a particularized legally protected interest in the outcome of this proceeding that falls within the zone of interest protected by the National Environmental Policy Act (NEPA).

The operation of these aged and embrittled nuclear power reactors for twenty beyond the

original license will cause more radioactive fission products to accumulate and could increase the probability and consequences of a nuclear accident, thereby increasing the threat of harm to me, my family, our property and the South Florida ecosystem, which includes priceless Everglades and Biscayne National Parks. These cumulative impacts, which should have been analyzed in a site-specific SCIS, have not been adequately addressed in the Draft GEIS, as required by NEPA. Nor did the Draft GEIS undertake a fair and objective NEPA analysis of alternatives to the relicensing proposal, as evidenced by page 8-55 of the Draft GEIS which amazingly concludes that the environmental impacts of solar power are LARGE, while those of continued operation of the Turkey Point nuclear power reactors, which create large amounts of nuclear waste and radioactive fission products, are SMALL.

The Draft GEIS for the License Renewal of the Turkey Point Nuclear Power Plants appears to "rubber stamp" Florida Power & Light's (FPL or Licensee) license renewal request, rather than permit the full and objective evaluation required under the National Environmental Policy Act (NEPA). The NRC's failure to prepare a full and objective site-specific Environmental Impact Statement (EIS), or Supplemental EIS (SEIS), prior to conducting the license renewal process (reportedly estimated to cost between \$75 to \$19 million dollars), is an irretrievable commitment of resources designed to prejudice the process prior to a full environmental analysis, and does not comply with the spirit or intent of NEPA. While, this may be the Commission's protocol for relicensing, I contend that this type of "end run" proceeding, apparently designed to skirt NEPA, does not meet the spirit or intent of the Act.

The NRC appears to be likely unaware that South Florida is the scene of the largest ecosystem restoration project in human history. This is evidenced by a few scant paragraphs and a line on page 2-52 of the Draft GEIS that states that "The Federal Government is also participating in the Comprehensive Everglades Restoration Plan." The analysis of potential impacts that the proposed action may have on the Everglades Restoration plan was conducted. In one short line, the Draft GEIS has glossed over the effort to restore the Florida Everglades that will take decades and cost at least \$8 billion dollars. As pioneer conservationist Mervyn Stedman Douglas reminded me, "There are no other Everglades in the world." Yet, the NRC, seemingly oblivious to the federal government's commitment to the South Florida ecosystem, has refused to analyze any impact that its major federal action may have on the major federal Everglades restoration effort that did not exist when Turkey Point was licensed. This failure to address and analyze the impacts that the relicensing could have on the restoration effort does not meet the requirements of NEPA.

Turkey Point was licensed in the early 1970's, shortly after NEPA became our national charter for environmental protection, 40 CFR 1500.1(a). The original environmental review at Turkey Point was very limited and failed to consider substantial environmental issues. Even more important, changed circumstances and significant new information concerning the South Florida ecosystem in which Turkey Point is licensed, require the NRC to conduct a site specific SCIS prior to any major investment of resources into the relicensing assessment under 10 C.F.R. Part 54 of the relicensing process. Despite the fact, that these substantial environmental issues

64-6
 64-7
 64-8
 64-9
 64-10
 64-5

and significant information has been brought to the NRC's attention, the NRC refused to adequately analyze these issues in the requisite SEIS or the woefully inadequate Draft GEIS that they performed.

I hereby incorporate by reference all of the written comments that I have provided to the NRC by letters dated November 23, 2000 and December 21, 2000, and comments made at the two public meetings and preparing conference that were held by the NRC in Homestead, Florida. I ask that these letters and comments, along with this letter, be made an official part of the record on the GEIS proceedings.

I. NRC RELICENSING PROCESS MUST COMPLY WITH NEPA

A. NEPA Requirements

The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 et seq., "is our basic national charter for the protection of the environment. NEPA was enacted in 1969 to create and carry out a national policy designed to encourage productive and enjoyable harmony between man and his environment . . . [and] promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." 42 U.S.C.A. § 4321 (1994). NEPA aims to achieve these goals by focusing the attention of the federal government decision-makers and the public on the likely environmental consequences of a proposed federal action so that the environmental effects can be identified and understood before the action is implemented and potential negative environmental impacts can thus be avoided. Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 371 (1989). (Emphasis supplied.)

NEPA requires all federal agencies to prepare a detailed statement, known as an Environmental Impact Statement (EIS) for any major federal action which will significantly affect the quality of the human environment. The EIS must detail i) the environmental impact of the proposed action; ii) any adverse environmental effects which cannot be avoided should the proposal be implemented; iii) alternatives to the proposed action; iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long term productivity; and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. See, 42 U.S.C. 4332 (C); 40 C.F.R. 1501.4, 1502.

NEPA does not set out substantive environmental standards, but instead establishes "action-forcing" procedures that require agencies to take a "hard look" at environmental consequences. See Robertson v. Methow Valley Citizens Council, 490 U.S. 322, 348, 104 L. Ed. 2d 351, 109 S. Ct. 1835 (1989); Kleppe v. Sierra Club, 427 U.S. 390, 404, 45 L. Ed. 2d 576, 96 S. Ct. 2713 (1976); ("NEPA does not mandate particular results, but simply provides the necessary process to ensure that federal agencies take a hard look at the environmental consequences of their actions.") Muckleshoot Indian Tribe v. United States Forest Serv., 177 F.3d 800, 814 (9th Cir. 1999).

NEPA's goals are to place upon agencies "the obligation to consider every significant aspect of the environmental impact of a proposed action" and to "ensure that the agency will *inform the public* that it has indeed considered environmental concerns in its decision-making process." Baltimore Gas, 462 U.S. at 97. "[T]he comprehensive "hard look" mandated by Congress and required by the statute must be timely, and it must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made." Metcalf v. Dole, 214 F.3d 1135, 2000 WL 732909, (9th Cir. 2000). (Emphasis supplied).

NEPA assumes as inevitable an institutional bias within an agency proposing a project and erects the procedural requirements of §102 to insure that "there is no way [the decision-maker] can fail to note the facts and understand the very serious arguments advanced by [a] plaintiff." Environmental Defense Fund v. Corps of Eng'rs of the U.S. Army, 470 F.2d 289, 295 (8th Cir. 1972). This comprehensive hard look mandated by Congress and required by the statute *must be timely*, and it must be taken *objectively and in good faith*. The statute is "primarily procedural," and courts have held that "agency action taken without observance of the procedure required by law will be set aside." Save the Yule, 840 F.2d at 717. (Emphasis supplied.)

Like all federal agencies, the NRC is required to implement the policies of NEPA in its decision making. See 42 U.S.C. § 4332; 40 C.F.R. § 1507.1. NEPA requires the NRC to prepare a detailed statement, known as an Environmental Impact Statement (EIS) prior to any "major federal action significantly affecting the quality of the human environment." 42 U.S.C. 4332(C). The NRC's failure to prepare a site-specific SEIS and take the requisite "hard look" necessary to evaluate the consequences of this major federal action *prior* to commencing the relicensing process under 10 C.F.R. Part 54 is designed to "rubber stamp" its predetermined decision and deprives me, and other similarly situated individuals, of my statutory rights under NEPA. Additionally, it raises the important question as to whether the relicensing of nuclear power plants beyond their design basis should continue, since Congress has never resolved the important public policy issue of whether it is in the national and public interest to run old nuclear power plants beyond their original license.

R. NRC'S First-Come-Verdict Then the Trial Relicensing Process Fails to Comply with NEPA

Renewal of an operating license for the Turkey Point Nuclear Power plants is identified under 10 C.F.R. Part 51 of the Commission's regulations as a major federal action significantly affecting the quality of the human environment, within the meaning and provisions of the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4332(2)(C). As such, the NRC has a statutory obligation under NEPA to take certain procedural steps to assess the environmental damage that renewing operating licenses for up to 20 years beyond the 40 year term of the initial license would inflict.

The NRC avers to meet its NEPA requirements by improperly conducting a bifurcated process in which it purports to analyze environmental impacts in a generic process under 10 C.F.R. Part 51, while simultaneously conducting relicensing activities under 10 C.F.R. Part 54. The NRC has conducted a Generic Environmental Impact Statement (GEIS), rather than a site-specific SEIS

64-11

64-12

64-13

64-42

that should have reviewed the original Turkey Point Environmental Statement. In my opinion, under NEPA the NRC was required to prepare, publish, and seek public comment on a site-specific SEIS on Turkey Point prior to commencing other costly activities in the relicensing process. It appears that the process conducted by the NRC was an attempt to evade any meaningful review of its actions under NEPA by streamlining the process under 10 C.F.R. Part 51, so that it could conduct an environmental analysis concurrent with a relicensing process. The NRC NEPA process appears to be designed to "end run" NEPA and "rubber stamp" the relicensing decision, and does not allow a meaningful choice among alternatives.

The NRC's Draft GEIS process, which was conducted concurrent with the relicensing process, fails to meet NEPA requirements that an environmental impact assessment must be "prepared early by such an agency...so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made." 40 C.F.R. § 1502.3. Finally, it continues to be my contention that this so-called "relicensing" proceeding should be treated as though it is a new request for an initial construction permit and operating license and that the range of alternatives, or their analysis, should not be limited.

Section 1502.2 states that, "agencies shall not commit resources prejudicing selection of alternatives before making a final decision (1506.1)." 40 C.F.R. 1502.2(f). The Commission's conducting of this relicensing review under 10 C.F.R. Part 54, while at the same time averting to conduct an objective NEPA process under 10 C.F.R. Part 51, raises a serious question. Having already begun to invest substantial resources in the relicensing process, can the NRC be trusted to have taken the objective "hard look" at alternatives that is required by NEPA? Or will the Commission's EIS process, in the words of one judge in another NEPA case, "be a classic Woodward case of first-the-verdict, then-the-trial?" See, *Metcalf v. Daley*, 214 F.3d(9th Cir. 2000). It is my contention that the Draft GEIS is fatally defective and does not meet the requirements of the Act, because the Commission's evaluation of the environmental impact of the relicensing proposal has been tainted by the process.

C. Site-specific SEIS on Turkey Point Should Have Been Conducted Before 10 C.F.R. Part 54 Relicensing Activities Were Undertaken

NEPA requires an agency to prepare a supplemental EIS (SEIS) if "there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. 1502.9(e)(1). It is my contention that, as part of this process, the NRC should have conducted a site-specific Supplemental Environmental Impact Statement (SEIS), that should have included a review of the original Environmental Statement that was conducted on Turkey Point, before irretrievably committing resources on relicensing activities under 10 C.F.R. Part 54. The original EIS on Turkey Point, that was issued only a short time after NEPA was passed in 1969, does not address "substantial environmental issues," such as the proposed project's impact on the 7.8 billion dollar Everglades restoration effort, the largest environmental repair job in human history. The Licensee's current Environmental Report does not even discuss the proposed action's impact on this important Congressionally authorized project and the Draft GEIS fails to adequately analyze any adverse impacts on the project that may occur.

64-14

64-15

64-16

Government support for Everglades restoration, and the clearly defined federal interest in the protection of Biscayne National Park, Everglades National Park, the Big Cypress National Preserve, and Micoosakee Indian Reservation, along with the endangered and threatened species that inhabit these lands, changes the likely environmental harms by a "considerable magnitude" and could significantly alter the costs and benefits of the proposed project. The Comprehensive Everglades Restoration Plan (CERP) passed by Congress in WRDA 2000 discussed the environmental importance of the area surrounding the Homestead Airbase located in the vicinity of Turkey Point. In authorizing the restoration plan, Congress demonstrated the government's commitment to protection of the fragile environment in this area, including Everglades National Park located fifteen miles west of Turkey Point and Biscayne National Park located two miles from Turkey Point.

This significant new information, and the clear Congressional intent concerning the protection of the Everglades ecosystem, seriously alters the environmental picture and required that a site-specific SEIS on the impact that the proposed project may have on the human environment around Turkey Point nuclear power plant be conducted. This was not done. In fact, the Draft GEIS contains only a scant mention of the restoration plan. Moreover, in its Order dated February 26, 2001, the Atomic Safety and Licensing Board (ASLB) made the incredible ruling at page 29-30 that, "By seeking to have the NRC and the Applicant specifically consider the environmental impacts of license renewal on the restoration project for the Everglades, the contention goes beyond the information the applicant needs to provide in its environmental report pursuant to 10 C.F.R. 51.53(c) and the issues the NRC must consider in preparing the draft and final SEIS..." The ASLB cited no federal case law or NEPA statutory authority to support their conclusion on this important environmental issue and, in fact, also concluded that they were not authorized to determine whether the Commission's license renewal regulations violate NEPA. (See Board Order at page 17.) Thus, in one fell swoop, the ASLB swept a very important environmental issue that should be analyzed in a site-specific SEIS under the proverbial rug.

Moreover, there were other issues not adequately addressed, or not addressed at all, in the original EIS on Turkey Point, the Licensee's Environmental Report, and even the Draft GEIS that raise questions about the agency's proposal to relicense a nuclear power plant in this area. These issues include, but are not limited to the following: the intense population growth and ability to evacuate in the case of a or hurricane; the siting of Turkey Point in a hurricane zone in light of Hurricane Andrew, the redevelopment of the Homestead Air Base site within five miles of the plant, the siting of a school two miles from the plant. NEPA also requires the consideration of "cumulative impacts" in assessing the proposed action, such as the impact that radioactive emissions from the plant may have had, and may continue to have, on wildlife and the human environment. These issues should have been addressed in an SEIS and were not addressed, or not adequately analyzed or discussed in the Draft GEIS that was conducted.

The NRC's Draft GEIS did not conduct a full and objective study of alternatives to the proposed action prior to an irretrievable investment of resources. NEPA requires not merely a

64-17

64-18

64-19

64-20

64-21

64-22

detailed statement of alternatives but also presentation of environmental risks incidental to reasonable alternative courses of action...and they should not be limited to measures which a particular agency or official can adopt." *NRDC v. Morton*, 458 F.2d (1972). The environmental risks for the continued operation of the Turkey Point reactors, (including the significant environmental effects that may result from offsite radiological impacts from the fuel cycle and the storage of nuclear waste were not analyzed in the Draft GEIS on a site specific basis, which resulted in a skewed analysis of alternatives that caused things like solar power to be rated more environmentally harmful than nuclear power. (See Draft GEIS at 9-7 and 8-55.) Clearly, a fair and objective analysis, which was not the case in the Draft GEIS, would have identified alternatives that are more environmentally friendly than the continued operation of this aged nuclear power plant located in one of the most environmentally sensitive areas in the world.

64-23

II. DRAFT GEIS IMPROPERLY NARROWED THE SCOPE UNDER THE ESA

Over 61 threatened and endangered species inhabit the South Florida Ecosystem, more than any state except California. The proposed action could adversely impact many of these species and subspecies. The NEPA process requires compliance with the Endangered Species Act (ESA), 16 U.S.C. 1531 et seq. The ESA dictates that federal agencies shall "utilize their authorities in furtherance of the purposes of the ESA...by carrying out programs for the conservation of endangered and threatened species listed." 16 U.S.C. 1536 (i). In particular, all federal agencies that plan, undertake, or authorize actions that "may affect" listed species or critical habitat must consult with the U.S. Fish and Wildlife Service, or other relevant agency, to insure that any action authorized, funded, or carried out by such any agency...is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat of such species...." 16 U.S.C. 1536 (a) (3).

The ultimate responsibility for Section 7 obligations remains with the federal action agency. The NRC did not properly define the scope for interagency section 7 consultation for the project. The NRC failed to ask the FWS to study the impact that offsite consequences from a radiological accident could have on at least a fifty mile radius of the plant; and instead allowed the review to be limited to the area directly surrounding the plant. There are a myriad of threatened and endangered species that inhabit this vast ecosystem, and that could be adversely affected by the proposed action. Also, due to the environmental importance of this area and the vast ecosystem restoration effort being undertaken here, I asked the NRC to request that the Fish and Wildlife Service, Everglades National Park, Biscayne National Park, the Environmental Protection Agency, and the Army Corps of Engineers become cooperating agencies on the Draft GEIS. The NRC, again ignoring the Everglades restoration plan, determined that there were no federal project activities that would make that desirable. See Draft GEIS at 2-53.

64-24

64-41

III. ISSUES THAT SHOULD BE SUBJECT THE SUBJECT OF A SITESPECIFIC SEIS AND THAT WERE NOT ADEQUATELY ADDRESSED IN THE DRAFT GEIS

The following issues should be analyzed in a site-specific SEIS process and were not

adequately addressed in the Draft GEIS:

PRESSURE VESSEL INTEGRITY AND OTHER AGE-RELATED CONCERNS SHOULD HAVE BEEN ANALYZED IN A SITE SPECIFIC SEIS

An analysis of the aging reactor pressure vessels at Turkey Point and any impacts that such aging could have on the human environment were not analyzed in the Draft GEIS. Such an analysis was necessary, not only to ensure the public health and safety, but also for the cost/benefit analysis of alternatives required by NEPA. The replacement cost of the reactor pressure vessels at Turkey Point could be prohibitive and unending would create further environmental issues that should have been addressed. It is my understanding that no nuclear power plant has ever replaced its vessel.

64-25

Additionally, the Draft GEIS did not analyze in a site specific fashion whether the age-related degradation of multiple components at Turkey Point could increase the chance that several components will fail simultaneously, thereby decreasing the safety margin of the plant and increasing the probability of an age-related accident and resultant radiological emergency that would have an extremely adverse impact on the human environment.

64-26

THE DRAFT GEIS DID NOT ANALYZE WHETHER HURRICANES AND AGING EQUIPMENT COULD INCREASE THE RISK, PROBABILITY, AND MAGNITUDE OF A RADIOLOGICAL ACCIDENT WITH ITS ASSOCIATED ENVIRONMENTAL IMPACTS

The fact that the Turkey Point reactors are located in a hurricane region presents "special circumstances" in that the radiological threat from such an accident would be potentially greater than for another plant because of the inability to evacuate. In the case of a maximum hurricane, it is essential to ensure that critical components do not lose the ability to perform their intended safety function. Age related stress, corrosion and metal fatigue of both safety related and non-safety related equipment could make Turkey Point more susceptible to hurricane induced damage and make the risk, probability, and magnitude of a radiological accident more severe than other plants.

64-27

It is my contention that the operation of the aged Turkey Point beyond its original license could increase the risk that a hurricane could cause an age-related accident and radiological emergency and complicate emergency response, thereby making an accident more likely and the results more catastrophic. Turkey Point is located in an area of high hurricane activity. In 1992, a direct hit by Hurricane Andrew caused extensive damage to the plant and the surrounding area was unable to evacuate if it had become necessary. Hurricanes are "frequently occurring natural phenomena" in our area that has a long hurricane season, thus accidents that could be caused by them, or occur contemporaneously with them, are not remote or highly speculative. Neither is the already proven possibility that such an event could disrupt offsite emergency response,

64-28

thereby causing potentially serious consequences to public health and safety. Thus, impacts of hurricanes on the proposed project should have been analyzed, but they were not among the external phenomena that were analyzed in either the Draft OGIS or NUREG-1437. See Draft GEIS at 4-43 and NUREG-1437.

DRAFT GEIS DID NOT ADEQUATELY ANALYZE POTENTIAL IMPACTS OF THE PROPOSED ACTION ON THE GROWING SOUTH FLORIDA POPULATION

The South Florida population, including the Miami Area, has increased dramatically since Turkey Point was built. According to the Licensee's application, there is a high population of 2,572,526 people presently living within 50 miles of the Turkey Point plants. According to a chart entitled "Regional Population Distribution Year 2025," there will be 3,952,897 people living in a fifty mile radius of the plant during the license renewal period. This figure appears to be much lower than other figures that have been cited for estimated population growth in South Florida. Additionally, the current proposal to rebuild the Homestead Air Base site would greatly increase the population in the vicinity of the plant and could stress the evacuation capability of the surrounding community. The Draft OGIS did not adequately analyze the impacts that the proposed action may have on the rapidly growing population in the South Florida area.

The Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437, Vol. 1, Page 5-11 states that as "the population around the plant increases, the potential risk and the increase in risk must be specifically examined. The NRC should have adequately analyzed whether the population in the rapidly growing South Florida area that is in the path of the highest frequency wind direction could safely evacuate in the event of a nuclear accident during the extended twenty year operation before relicensing this plant as required by 10 C.F.R.50.4(a)(1). Such an analysis should include an accident analysis in which a hurricane (an external event) effectively eliminates or prolongs emergency response. According to NUREG-1437, Volume 1, page 5-17, success of evacuation depends on the warning time available and the time it takes to carry out the evacuation. The Draft GEIS did not adequately analyze this site-specific issue and did not address evacuation in a hurricane at all.

Moreover, the NRC is aware that Turkey Point is a coastal/ocean plant with shoreline, aquatic and drinking water pathways, and that contaminants from an accident would be deposited on an open body of water that could increase the dose to the population after the accident. According to NUREG-0769, Addendum I; NUREG-0440, interdiction has the potential to reduce the dose by factors of from 2 to 10. Interdiction, which according to NUREG-1437, page 5-63, could consist of "preventing use of the water or making contaminated food difficult to obtain" may be difficult at this site on Biscayne Bay. NUREG-1437 page 5-94 states that ocean and estuarine sites would be the hardest to effect interdiction because of the food pathway." The Draft GEIS did not adequately address this coastal/ocean plant issue, nor the potential impacts that the proposed action that the permeable Biscayne Aquifer is an EPA designated sole source of drinking water for millions of people in South Florida.

The Draft GEIS on Turkey Point should also analyze whether the dose from an accident

64-29

64-30

64-31

64-32

at Turkey Point could exceed those in Section 5 of NUREG 1437, Volume 1 in a site-specific GEIS. For instance, Section 5.3.3.4.5 entitled "Ocean Sites" says that Seabrook has the "potential for producing a larger maximum individual dose than that of the LPGA generic ocean site" because of the high shoreline user rates and large annual surfed catch. It further states that "the unrestricted total population dose estimate for Seabrook is 6 times that of the LPGA generic ocean site. Page 5-85 of NUREG 1437 says that based on certain site specific assumptions, "it can be concluded that Seabrook represents the largest unrestricted population dose at ocean sites other than Turkey Point." It does not appear that Turkey Point was part of the "Current ocean site severe liquid pathway analyses compared with Liquid Pathway Generic Study (LPGA) results" contained in Table 5.24 and, thus, those issues should have been analyzed in the Draft GEIS Supplement or in a site-specific GEIS. Turkey Point does appear in Table 5.25 of NUREG-1437 entitled, "Earlier ocean sites without severe accident liquid analyses compared to Seabrook." This table identifies the location and groundwater pathway for Turkey Point as permeable limestone to a large canal and the Atlantic Ocean. Indeed, this would also contradict the statement on page 1-8 in the Draft OGIS that the cooling canal system at Turkey Point, which is dug into porous limestone rock, is a closed system that does not discharge water to Biscayne Bay. The failure to recognize that water does migrate to Biscayne Bay caused the Draft EIS to inappropriately narrow the scope of its analysis on fish and shellfish only to the cooling canal system itself which would skew the analysis of environmental impacts. Id at 4-8.

Additionally, page 5-95 of NUREG-1437 states that "the Seabrook analysis provides a larger groundwater population dose than all but Turkey Point," but concludes that "the population dose from Turkey Point at MVR would not be expected to exceed Seabrook." NEPA requires that the NRC take a "hard look" at this unsupported conclusion by analyzing it in a site-specific GEIS and/or the Draft GEIS. It is unclear to me why Turkey Point, a coastal plant subject to hurricanes, was not included in the current severe accident liquid pathway analyses. Especially since it appears that including it may have allowed the generic conclusions in NUREG-1437, Volume 1, concerning radionuclide exposure risk in the event of a severe reactor accident in which radioactive contaminants are released into the atmosphere and deposited on large bodies of water. I could find no adequate analysis in the Draft GEIS of the environmental impacts of a severe accident at Turkey Point on the aquatic food, shoreline, swimming, air, and surface and groundwater pathways.

DRAFT GEIS DID NOT ADEQUATELY ANALYZE THE ENVIRONMENTAL JUSTICE IMPACTS OF THE PROPOSED ACTION ON THE MICOOSUKEE TRIBE AND OTHERS

Section 4.4.6 of the Draft GEIS does not adequately analyze the environmental justice impacts of the proposed action. For instance, it does not address the significant environmental and cultural impacts that could be caused in the Micoosukee Tribe of Indians who live in the Florida Everglades. A radiological accident at Turkey Point has the potential to adversely impact the Micoosukee Tribe's culture and way of life, which depends on a healthy Everglades ecosystem. Because it fails to address the Micoosukee Tribe and other Native Americans, it incorrectly concludes that "no unusual resource dependencies or practices, such as subsistence

64-33

64-34

agriculture, hunting or fishing through which the populations could be disproportionately high and adversely affected." It is clear that the Tribe's centuries old culture and way of life would be adversely impacted by the proposed action.

Additionally, there is no analysis of the minority populations that live around the plant's dependence on fishing and agriculture for food through which they could be adversely affected by the proposed action. These issues must be analyzed before the NRC can make a conclusion as to the level of impact from an environmental justice perspective.

DRAFT GEIS PROCESS FAILS TO ADEQUATELY ANALYZE THE PROPOSED ACTION'S NUCLEAR WASTE AND RADIOACTIVE BY PRODUCTS THAT COULD ADVERSELY IMPACT THE HUMAN ENVIRONMENT

Nuclear Waste:

According to an FPL response to a Sierra Club Miami Group member, there are presently about 1700 spent fuel assemblies being stored at Turkey Point, and they will run out of space for spent fuel in 2010 for Unit 3 and 2011 for Unit 4. According to the Licensee's application, the license for Unit 3 will expire on July 19, 2012 and the Unit 4 license on April 19, 2013. This shows that the Licensee barely has enough room to store the high-level wastes created from the original forty year operation of these plants, let alone the wastes from an additional twenty years operation being contemplated by the proposed action. According to this same response, Barnwell reportedly could be closed to low-level waste from FPL in the next few years.

The proposed action which would increase both the amount and toxicity of the high-level and low-level nuclear waste that will be created by at least half and will exceed the plant's original storage capacity for the high level waste that must be isolated from the environment for at least ten of thousand of years. Wherever these wastes are stored will have a profound long term effect on the environment. The fact that after over forty years of nuclear power operation, the government still has not found a place to safely and permanently dispose of nuclear waste, means that, in all likelihood, the high-level waste will remain stored permanently on site at Turkey Point. And, if the Licensee is no longer able to send low-level waste to Barnwell, and another site is not found, low-level waste could also be stored on site. The fact that this is an area of high hurricane frequency could increase the risk and probability that nuclear wastes stored on site could contaminate the human environment and would increase the consequences if they did.

As was stated in the above discussion of hurricanes, the Turkey Point site presents special circumstances in that these spent fuel rods being stored on site, and not in the reactor containment building, could be distributed to the environment by a hurricane and age related accident that disrupts emergency response. Such an accident could cause severe and irreversible contamination of the surrounding environment and disrupt emergency response. The Licensee's Turkey Point site is probably the most unsafe site to store nuclear wastes in the country, and the NRC should have analyzed the impact that the relicensing of this plant will have on the South

64-35

Florida environment as it pertains to both the high level and low level nuclear waste that will be created. The special circumstances that occur at Turkey Point are far too important to be dismissed generically and should have been addressed in a site-specific SEIS and even the Draft CPIS that was conducted.

Draft GEIS Did Not Adequately Analyze the Cumulative Impacts of Radiation in the Surrounding Environment:

The Draft GEIS did not adequately analyze and foreclose the impact that the current operation of Turkey Point is having on the cooling canals and the aquatic and human environment surrounding the plant and assess the cumulative impacts of past, present and future operations as is required by NEPA. Relicensing of the Turkey Point reactors will mean that adverse impacts to the human environment (if occurring) will continue for an additional twenty years beyond the current license period. The impacts that the accumulation and biological magnification of radiation may be having on plant, animal and marine life and the immune system, as well as human health, and the potential cumulative impacts that may occur during the twenty years extended operation must be analyzed under NEPA.

64-37

The impact of radionuclides and any bioaccumulation or biomagnification that may be occurring in the food chain, marine life, plant, and humans from plant emissions and the coastal disposition and dispersion should have been analyzed in the Draft GEIS. This analysis should have included research on any build-up of strontium-90 and cesium-137 in the surrounding environment, including Biscayne Bay. The sediments of the Turkey Point cooling canals should have also been analyzed for any build-up of bromine and other fission products. The potential radiation exposure through the sand, soil, dust, air, food chain, and marine life may increase as the plant ages and its life is extended by the relicensing. Analysis of any current impact that may exist, as well as the cumulative impacts that could result from the extended operations, were not adequately analyzed on a site specific basis in the Draft GEIS.

64-38

THE DRAFT GEIS DID NOT ADEQUATELY ANALYZE WHETHER THE PROPOSED RELICENSING POSES UNIQUE THREATS THAT MAY BE INCOMPATIBLE WITH THE RESTORATION OF THE EVERGLADES AND SOUTH FLORIDA ECOSYSTEM

The power that we get from Turkey Point can easily be replaced by more environmentally benign sources of energy that do not contain the uncertain risks associated with the operation of these nuclear reactors beyond their original lives, and longer than any nuclear power plants have ever operated in this country. It is my contention that the NRC's Draft GEIS process failed to adequately analyze the impacts of this major federal action on the fragile South Florida environment, because the NRC failed to take the "hard look" required by NEPA. "General statements about "possible" effects and "some risk" do not constitute a "hard look" absent justification regarding why more definitive information could not be provided." Neighbors of Cuddy Mountain v. United States Forest Service, 137 F.3d 1372,1380 (9th Cir. 1998.)

64-39

64-36

In closing, it is my contention that the NRC's Draft GEIS does not support the premature

64-40

conclusion that "the adverse impacts of continued operation are considered to be of SMALJ significance." It appears to me that it is more a case of "No look = No harm." The people of South Florida, and the beautiful Everglades ecosystem where they live, deserve to know the potential environmental impacts that may be caused by the proposed relicensing action...environmental impacts that can only be known through legally sufficient NEPA process that takes the "hard look" required by NEPA. In my opinion, the NRC has not taken the requisite "hard look" at the Turkey Point relicensing process and should do so.

Sincerely,

Jesse Lorton, pro. or
13015 SW 90 Court
Miami, Florida 33176
(305) 281-0429
(305) 971-4832 or 279-5082 fax

TPD 65

Mark P. Oncavage
12200 SW 110th Avenue
Miami, FL 33176

January 31, 2001

Mr. George A. Mulley, Jr.
Office of the Inspector General
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Mulley:

I have a problem with the NRC. In Miami, Florida we have a contentious issue of the disposal of the former Homestead Air Force Base. I am a member of the Sierra Club and we oppose turning the former base into a commercial airport as it would degrade Biscayne National Park and Everglades National Park. I have contacted the NRC numerous times since the runway is located 4.9 miles from the Turkey Point Nuclear Plant and I feel there is a significant safety hazard.

65-1

The NRC wrote a "Safety Assessment", June 13, 2000, for the Final SEIS for the base disposal. I identified numerous problems before the assessment was written and after. I wrote a FOIA request asking for the formulae, data, assumptions, and line-by-line calculations that were used in reaching their conclusion. I believed the NRC wrongly used a DOE aircraft formula instead of their own Standard Review Plan, NUREG-0800. The twin 400 foot smokestacks were omitted from the calculations, the bird airstrike hazard was underestimated, and foreign general aviation as a crash prone category was completely ignored.

65-2

January 2002

Now comes the complication. After I wrote the FOIA request, 9/16/00, Turkey Point filed for license renewal and I petitioned for Leave to Intervene, 10/24/00. One of my proposed contentions deals with accidents at the spent fuel pits, including aircrashes. An Atomic Safety and Licensing Board has not yet ruled on my standing and contentions.

Here's the problem. The NRC Staff can't comply with my FOIA request because they never did the calculations. They took the data sent by the Air Force and sent it to the licensee asking them to do the calculations. Apparently, the licensee never sent all the relevant information back to the NRC. This is contained in the attached letter from Kathryn M. Barber, Counsel for the NRC Staff. I am upset that I cannot get the necessary information that was used to calculate air crashes into Turkey Point.

1. Isn't there a NEPA requirement for the NRC, not the licensee, to provide a safety evaluation for an Final SEIS ?
2. How can the NRC ignore its own Standard Review Plan ?
3. How can the NRC ensure the public health and safety and approve airport development when it doesn't possess all the data and assumptions that were used in the calculations and cannot verify the licensee's conclusions ?
4. How can a citizen, concerned for his own safety, get information that's exclusively held by the licensee ?
5. Shouldn't the lead agency for base disposal, the Air Force, be told that there are major safety discrepancies with NRC methodology concerning the closeness of the proposed commercial airport to the nuclear plant ?

65-3

65-4

65-5

65-6

65-7

65-8

6. If the licensee, which is a large landholder in the area, is the only entity with all the safety related information, how can the NRC be sure there is no conflict of interest ? Developing land near a new commercial airport could be an extremely lucrative enterprise.
7. Another conflict of interest may arise if the licensee thinks that a negative safety assessment would damage its chances of obtaining a license renewal.

65-9

65-10

There may be criticism of my efforts due to the fact that President Clinton and USAF Secretary Peters have already decided that a commercial airport will not be developed at the Homestead site. The outcome is still uncertain. The major decisionmakers, President Clinton, USAF Secretary Peters, and even Interior Secretary Babbitt have been or will be replaced by a Republican administration. Also, there is a federal lawsuit by the airport developers challenging the decision. Lastly, President Bush is the brother of Florida Governor Bush. Neither has made a public statement on their plans for the base disposal.

Sincerely,

Mark P. Oncavage

enc: NRC letter
FOIA request
Sierra letter

A-275

NUREG-1437, Supplement 5

Appendix A



UNITED STATES
NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D.C. 20542-0001

January 24, 2001

Mr. Mark P. Oncoyaga
 32200 SW 130th Ave.
 Miami, FL 33178

Dear Mr. Oncoyaga:

This letter is in reference to your November 14, 2000 correspondence directed to Mr. Lawrence J. Chandler, Office of the General Counsel, at the Nuclear Regulatory Commission. Your letter requested assistance in obtaining response to your September 13, 2000 e-mail question sent to the NRC E-mail Question Service, and your September 16, 2000 Freedom of Information Act request directed to Carol Ann Reed, Freedom of Information Act Officer. The matter was referred to me in order that I could aid you in your inquiries. I apologize for the delay in responding.

In regard to your September 13, 2000 e-mail, it is my understanding that Robert Jasinski, Office of Public Affairs, responded to your question in an e-mail dated September 14, 2000. In your e-mail you ask if there are any commercial reactors in the U.S. that are within 10 miles of a commercial airport, and if so, which reactors, which airports, and what the distance between the two are. Mr. Jasinski stated in his response that the NRC does not have any report containing this type of information. The NRC's publication, "Information Digest 2000 Edition (NUREG 1350, Vol. 12)," Appendix A, which can be accessed on the NRC web site at <http://www.nrc.gov/NRC/NUREGS/SR1350V12/index.html> may assist you in determining the location of reactor facilities, but does not contain any information on airport locations.

With respect to your September 15, 2000 FOIA request, I believe Carol Ann Reed provided a final response to your request on October 18, 2000. You had requested the formulae, data, assumptions and line-by-line calculations that were used to compute the aircraft crash frequency found in the Safety Assessment concerning Turkey Point Units 3 and 4 and the disposal of Hontelaad Air Base. Ms. Reed states in her response that the calculation you refer to was performed by Florida Power & Light, and consequently, that the NRC does not possess the information requested. Ms. Reed does include in her response, however, 17 pages of handwritten notes and calculations made by Kazimeras M. Campe of the NRC in his review of the licensee's analyses in reaching the crash frequency. If you have not received a copy of this response, I would be happy to provide you with one or it can be located in ADAMS using Accession #ML003761380.

I hope this information proves helpful. Please let me know if I can be of any assistance in the future.

Sincerely,

Kathryn M. Barber
 Counsel for NRC Staff

cc: Service List

TPD 66

For Immediate Release

Contact Frank Pitz
 (954) 552-3200

FrankPitz@hultpad.com

July 17, 2001

Upon the global environment and health we have a monster waiting to be unleashed. I am talking about 400 million metric tons of spent nuclear fuel festering like a boil upon the face of humanity. This beast poses a danger for a half-million years, and no one knows what to do with it, or how to contain it. It is certainly not "out of sight, out of mind" so we cannot ignore it. It is not something tucked away in the depths of a closet, so that we forget it. No, it is here, it is real, and it is extremely dangerous to humanity. In addition to the day to day adverse health effects posed by nuclear power, we also have this gargoyic hanging over our heads, waiting to be unleashed.

66-1

You are here today to talk about relicensing a 29-year-old nuclear plant, a renewal that isn't even up for another nine years. When the current renewal is up for review in 2010, this plant will be 37-years old. Longevity in humans is admirable; longevity in nuclear power plants is hazardous. Add this increase in plant life span to the present day-to-day perils associated with radioactivity release from it and we have a ticking time-bomb right here in south Florida.

66-2

Why the rush to relicense? The current operating permit does not expire for nine years. Why can't we wait until then? There certainly is not a pressing need to go through this process at this time, unless of course it is political expediency. These aging reactors pose more of a threat to civilization than all of the supposed missiles that President Bush covetous while he lies sleeping in his bed. The tens of billions of dollars he would spend to build a missile defense system would best be spent on sustainable energy programs, which would wean us from fossil fuel consumption as well as the radioactive nightmare of nuclear power. Leave this license in place until its original expiration date, then come back to the people and talk about renewal. For the sake of political opportunism you would further endanger the health of residents of south Florida. No, to relicensing!

66-3

66-4

66-5

66-6

66-7

66-8

TPD 67



43 North Home Avenue
Homesboro, FL 33039
813-947-5091
Fax 260-247-7076

Nuclear Regulatory Commission, Attn: Mr. Jim Wilson

July 17, 2001

Gentlemen:

On behalf of the Vision Council, we wish to register our support for the relicensing of the turkey Point Nuclear Power Plant.

The Vision Council is an economic development agency headquartered here in Homesboro with a mission to encourage the expansion of existing businesses and to recruit appropriate new businesses to the local area. We face a number of obstacles in our efforts including remoteness from major markets and lack of a major technical base or raw materials.

One of the things we do have is adequate power. We are fortunate not to be facing rolling brownouts or wondering each day whether we will have lights and cooling. Many of us remember the weeks after Andrew when the sound of generators was a constant reminder of how much we had taken our normal power sources for granted.

In addition to providing needed power to our locale, the Turkey Point Nuclear Facility is an important economic engine in itself. The number of people employed and their wage base is unparalleled in our area. Mr. William Fruth, a well-known economic development planner has stated that the single best industry a community can have is a nuclear power facility, because of its generating capacity for other businesses, it's non polluting power and its tremendous payroll impact.

Perhaps as important to a community such as ours is the fact that the plant's employees are our neighbors, our friends and important contributors to the life of our community. They are active in our little leagues, churches, civic and government organizations. FPL corporate at Turkey Point is also a responsible citizen. Just one example is the remarkable job they have done in protecting and increasing the population of the endangered American Crocodile.

You are aware that much of Europe has directed its present and future power needs to nuclear energy to relieve dependence on imported oil. We all should be aware of the proven safety record of the nuclear power industry and the safeguards and security required at such installations. Thousands upon thousands of South Florida residents are confident of the plant's safety, its management and security and they prove it every day, because they, like us, live here in close proximity to the plant. Thank you for your attention.

Sincerely,

Robert S. Anderson, Chairman

J. L. Curdian, President

67-1

67-2

67-3

67-4

67-5

67-6

67-7

TPD 68

My name is Brian Thompson; I am the Business Manager for System Council U-4 of the International Brotherhood of Electrical Workers, representing eleven different Local Unions and over three thousand Union employees throughout the state on Florida Power and Light property.

One of those Local Unions, Local 359, is located here in Dade County, which represents over three hundred of the Union Employees employed at the Turkey Point Nuclear Plant. Which include highly skilled and professional craft workers in the Operations, Maintenance, Electrical and Instrument and Control trades.

I am here today to speak in favor of the twenty-year license renewal and continued operation of the Turkey Point Nuclear Facility.

68-1

As Business Manager for the Union, three of my most important priorities are, the safety and well being of the employees and the public, training of our employees and the environment in which we all live.

On Florida Power and Light property we have what is known as Joint Safety Program. This is a program through Committees, that ensures both the Company and Union have an equal say to provide for the safety of the employees, safe plant operation, safety to the public and environmental protection.

I am proud to say that as Business Manager, I have actively participated on the Corporate Joint Safety Committee for the past eight years in the Nuclear Joint Safety Program. This Committee is responsible for setting and constantly reviewing safety rules, policies and procedures for which the plant employees must adhere to and which the plant must operate under.

68-2

As a result of our efforts and the true dedication to these rules, policies and procedures by the employees, the Turkey Point Nuclear Facility has been consistently recognized as being:

- One of the safest and most reliable nuclear power plants in both the United States and in the World.
- The only nuclear power plant in the United States to receive three consecutive superior ratings from its regulator, the Nuclear Regulatory Commission, spanning the years of 1994 to 1999.
- Safety performance indicators consistently in the top percentile of Nuclear Plants throughout the United States

68-3

68-4

68-5

- And the "Quest for Excellence" award from an independent assessor in 1995, 1998, and 2000 for excellence in Nuclear Plant performance.

In the area of training, both the Company and Union have developed and constantly oversee some of the most rigorous training programs within the Company for its employees.

Operators must undergo fourteen months of intense initial training to even qualify for their jobs and must re-qualify for their positions every six weeks throughout their careers in a one-week training course to ensure proper and safe plant operation.

Most of the skilled craft workers were trained through a four-year Apprentice Program in which they were taught their skills an technical ability and must undergo

68-6

routine annual training to ensure outstanding performance skills are maintained to keep the plant reliable an well maintained.

68-7

All employees are also trained on a regular basis's for even the unlikely event of an emergency. Quarterly, the plant employees conduct drills to practice their emergency response readiness. They also conduct drills, which include representatives from Local, State and Federal agencies who coordinatc activities for public safety, as well as regular Safety training each and every month.

68-8

Environmentally, the plant must meet very strict and stringent radiation safety standards designed to protect the employees and ensure the community health and safety. The Company consistently monitors the air and water quality at the plant and surrounding communities to ensure these standards are maintained.

68-9

EIGHT

Over the past twenty-five years since the plant has been operational, I believe the Employees of the Turkey Point Nuclear Facility and the Company have established themselves as good stewards of our environment. They have clearly demonstrated their commitment of managing and achieving a careful balance between the environment and producing a very cost effective, clean, safe and reliable source of electricity is possible at all times.

For these reasons, and in closing, I am asking that the license renewal for the Turkey Point Nuclear Facility be approved so that we can keep this very valuable source of energy for the community well into the future.

Thank You

TPD 69

68-10

Dea's W. Mceller
June 10, 2001
(8-18-00)

CIGARETTES AND RADIATION

Some 30 years ago, scientists at the Harvard School of Public Health discovered that tobacco contains relatively high concentrations of relatively occurring radioactive materials. Although this is common knowledge within a limited segment of the scientific community, few members of the public are aware of this fact. Even fewer people are aware of the relatively high radiation doses to a person who smokes and inhales these materials into his/her lungs.

From the standpoint of the exposure to the lungs, the principal radioactive material of concern is polonium-210 (²¹⁰Po). Although initially it was assumed that the ²¹⁰Po was taken up through the roots of the plant, it was later shown that this deposited from the air, the source being radioactive materials in the soil.

68-11

One might innocently ask "How could this be so?" The process is as follows: Measurements show that the first top five feet of soil within each square mile of U.S. soil contain an average of about 30 tons of uranium. Although uranium is a solid, it decays through a chain of radioisotopes (commonly called its "decay products"), one of which is radon. Since radon is a gas, it evolves from the soil into the air. Radon, in turn, decays into other radioactive materials, all of which are solid. Although the initial decay products of radon are short-lived - existing on average for less than an hour - these products soon decay into ²¹⁰Po, which has a half-life of about 140 days. Since one of the characteristics of all the airborne radon decay products is that they are electrically charged, as the wind blows them around they come into contact with, and adhere to, the large leaves of the tobacco plant. After the tobacco is cured and processed, these materials are incorporated into the cigarettes. When the smoker lights up, the radioactive products are volatilized and are inhaled into his/her lungs.

According to John B. Little, M.D., a leader in the studies at Harvard, he and his colleagues found that the inhaled polonium deposits preferentially in the bifurcations of the bronchial epithelia. These are exactly the locations where lung cancer originates among cigarette smokers. As the polonium ²¹⁰ subsequently decays, it yields a substantial dose to these critical parts of the lungs. On the basis of their work, the Harvard scientists (Little et al., 1985) concluded that polonium 210 may be an important factor in the initiation of bronchial carcinoma in man (Little et al., 1985).

During the years after the initial Harvard studies, more detailed analyses of the impacts of polonium-210 in smokers have been performed by the National Council on Radiation Protection and Measurements (NCRP, 1987). On the basis of their calculations, the NCRP estimated that the annual dose to the bronchial epithelium in a person who smokes 1.5 packs of cigarettes per day is about 16,000 millirem. The significance of this estimate can be demonstrated by the following comparisons.

1. The *daily* dose to these critical segments of the lungs of the assumed smoker is more than he/she would have received from four chest x-ray examinations. The *annual* dose to these segments is equivalent to that from about 5,500 chest x-ray examinations.
2. The annual dose is in excess of 1,000 times the limit permitted by the U.S. Nuclear Regulatory Commission to the lungs of a member of the public who resides just outside the fence of a commercial nuclear power plant.
3. On an effective (whole-body equivalent) dose basis, the annual dose to the 1.5 packs per day smoker is 20 times that received by the average member of the U.S. public from all other man-made radiation sources combined. These include medical applications of x-rays and radiopharmaceuticals, radioactive materials released from commercial nuclear power plants, exposures accompanying the shipment and disposal of radioactive wastes, fallout from past atmospheric nuclear weapons tests, and exposures from radioactive consumer products (such as luminous watches, building materials, airport luggage inspection systems, and uranium glazed ceramics).
4. The annual dose to a 1.5 packs per day smoker is over 10 times the total annual limit recommended by the U.S. Environmental Protection Agency, the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy, for a member of the public. It is over 40 times the annual limit recommended by these agencies for a single source of radiation exposure and it is about three times the average annual dose currently being received by medical x-ray personnel and workers at commercial nuclear power plants.

Additional perspective is provided by the following information. As part of its work in developing Report No. 95 (see reference below), the NCRP estimated the total annual dose to average members of the U.S. population from all consumer products combined. Since the dose from ²¹⁰Po to cigarette smokers

was so overwhelming (and since this dose was largely limited to smokers), the NCRP decided to compute and present the total annual dose to the average member of the U.S. public from all consumer products for the non-smoker only. The average when computed on this basis was about 10 millirem (mrem) per year. The dose to the 1.5 packs per day smoker is more than 100 times this value.

References:

- Little, John B., Radford, Edward P., McCombs, H. Louis, and Hunt, Wilma R. "Distribution of Polonium-210 in Pulmonary Tissues of Cigarette Smokers," *New England Journal of Medicine*, Vol. 273, pages 1343 - 1351 (December 12, 1965).
- National Council on Radiation Protection and Measurements. "Radiation Exposure of the U.S. Population from Consumer Products and Miscellaneous Sources," Report No. 95, Bethesda, MD (December 30, 1987).
- U.S. Nuclear Regulatory Commission, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low As Reasonably Achievable' for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents," Code of Federal Regulations, Title 10, Part 50, Appendix I, Washington, DC.

COMMENTS BY DADE W. MOELLER
Professor Emeritus, Harvard University

Introduction

This report is based on my review of the following reports:

1. The Radiation and Public Health Project, "Environmental Radiation from Nuclear Reactors and Increasing Children's Cancer in Southeastern Florida, A Special Report on the Florida Baby Tooth Study" (The so-called "Tooth Fairy" report). Miami, Florida (March 26, 2001).
2. Gould, J. M., Sternglass, E. J., Sherman, J. D., Brown, J., McDonnell, W., and Margano, J. J. "Strontium-90 in Deciduous Teeth as a Factor in Early Childhood Cancer," *International Journal of Health Services*, Vol. 30, No. 3, pages 515-539 (2000).
3. U.S. Nuclear Regulatory Commission, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," Draft Report for Comment, Report NUREG-1437, Office of Nuclear Reactor Regulation, Washington, DC 20555-0001 (May, 2001).

The comments that follow are divided into five sections. First is a review of the procedures used by the authors in preparing the "Tooth Fairy" report (reference #1 above). It is simply not good science. Second is a summation of several of factual distortions Dr. Sternglass and his associates use to support their unfounded claims. Third is a summary of some of the statements by various scientific and professional organizations regarding the credibility of the studies that have been conducted by Dr. Sternglass and his associates over the past 35 years. The fourth section provides information on the health effects of strontium-90. The fifth and final section provides commentary and conclusions. In short, these conclusions are:

1. The U.S. Nuclear Regulatory Commission (U.S. NRC) has, in its draft Environmental Impact Statement (reference #3 above), not only rejected the allegations listed in the "Tooth Fairy" report but has also itemized a host of errors made by the authors in reaching their conclusions. The bottom line of the U.S. NRC is that the observed concentrations of strontium-90 in the samples of teeth are actually lower than would be

- expected from levels known to be in the soil from world-wide fallout from past atmospheric weapons tests." I concur.
2. The methods used over the past 35 years by Drs. Gould and Sternglass to support their claims do not conform to the principles of good science. It is little wonder therefore that their claims have been rejected by multitudes of scientists and public health officials.
3. Dr. Sternglass and his associates have displayed no apparent interest in the mass of scientific evidence that rejects their methods of research, their observations, and their conclusions.
4. They are guilty of carefully selecting only those data that they find will support their desired conclusions. When questioned, Dr. Sternglass invariably changes the subject or offers to provide "new data" which seldom, if ever, appear.
5. Their analytical methodologies and their conclusions are just plain wrong. No amount of tinkering or repetition will make them right. Dr. Sternglass and his associates consistently violate the basic principles of good science in pursuing their primary objective of shutting down all commercial nuclear power plants.

Principles of Good Science

The "Tooth Fairy" report, prepared by Drs. Gould and Sternglass and their associates, is replete with errors and misconceptions. This can be best demonstrated by comparing their approaches to those dictated by the "principles of good science." These principles can be identified and addressed through the following series of questions:

1. Is there a plausible biological/medical/scientific explanation for the cause-effect relationship being discussed? Unless there is such an explanation, the subject matter under discussion should be treated with skepticism.

Comment: In many cases, the alleged health effects that Dr. Sternglass is describing have never been shown to have a relationship to radiation exposures. Key examples are his claims that radiation is responsible for increases in prostate cancer; that it has "mutated the spirochete" responsible for Lyme disease; and that it is responsible for AIDS, "a newly mutated sexually transmitted disease." In the majority of cases, the case rates from the sources that Dr. Gould and Sternglass have studied have never been shown to cause any detrimental health effects whatsoever, much less the ones they allege.

2. Did the claimants consider all the data, or were they selective? And were all the data factored into their conclusions? In this regard, it is important to note that any credible scientific theory must prove to be consistent with all the data. When inconsistencies are found, the theory must be considered to be suspect and subject to revision, until such time as a theory is formulated that is consistent with the data.

Comment: Dr. Sternglass consistently and selectively uses only those data that support his claims. He also changes the facts, such as the direction in which the wind blows, to suit his purposes. He also is not reluctant to misquote his sources, if that is necessary to accomplish his goals.

3. Did the people conducting the analyses take time to evaluate the validity and reliability of the data they used? Oftentimes, unjustified claims are based on data generated by others. One of the primary duties of claimants is to confirm the accuracy and validity of the data they are using.

Comment: Not only is Dr. Sternglass careless in the selection of his data, as noted by the observations of the EPA staff (see below), he often misinterprets the data that he uses. He also does not provide an accurate estimate of the errors and uncertainties in the data he uses, a primary example being the concentrations of strontium-90 in the teeth that have been analyzed in the "Tooth Fairy" project. Additional commentary on this matter is presented in the section that follows.

4. Did the investigators evaluate all possible explanations for the observations that they reported? If there were other possible causes, were they evaluated one by one and removed from consideration, only if justified.

Comment: The failure of Dr. Sternglass to confirm that the strontium-90 in the samples of teeth he had analyzed came from nuclear power plants is a good example of his neglect of this basic principle of good science.

5. Did the investigators seek to reach convergence on the subject? That is, did they attempt to determine if a detailed evaluation of the direct, indirect, and anecdotal evidence would enable them to reach a scientifically valid conclusion? In this same regard, were the claimants careful to identify inconsistencies in the data and did they attempt to explain the reasons and/or revise their conclusions to make them more consistent with the data?

Comment: In no case in the examples cited, did Dr. Sternglass and his associates apply other methods of analysis to determine if they led to the same conclusion. Other items that he might have analyzed include urine, feces, human bones (from accident victims) and hair.

6. Finally, were the statements and conclusions subjected to independent review, evaluation and confirmation? This is mandatory in any type of scientific endeavor. Only through such a process can readers be assured that the conclusions in a report are acceptable and are based on approaches that have been approved by national and international advisory groups.

Comment: Dr. Sternglass seldom, if ever, subjects his findings to peer review. When knowledgeable people review his reports, he summarily rejects their comments. Carrying this to an extreme, he even rejects the comments of the authors of the reports he is citing. In the few cases in which he has published an article in a peer-reviewed journal, he fails to mention the devastating reviews of these articles that have appeared in subsequent issues of that same journal. Not only does he not subject his own reports to peer review, he seldom uses peer-reviewed publications as sources of information for his studies. Rather, he commonly seeks to corroborate his findings by quoting from his own previous reports, even when they have been shown not to be correct. He works alone and outside the mainstream of science because his work is not credible.

Misleading Information

In seeking to support his allegations, Dr. Sternglass and his associates distort the facts and leave out important information that would invalidate their conclusions. *The Enemy Within*, which he co-authored with Dr. Jay Gould, as well as in the "Tooth Fairy" report, are good examples of what can only be described as "junk science."

The Enemy Within

Referring to the 1979 accident at the TMI nuclear plant, they stated that mortality data for neighboring population groups "basically demonstrate" that their health was damaged by the accompanying radioactive releases. Compounding this error, they state that the case is "so strong" that the defendant (the operators of TMI) was reluctant to let it come to trial. The case never came to trial because a

federal judge, in a pretrial hearing, dismissed the lawsuits of the plaintiffs due to the "prejudice of proof alleged in support" of their case.

At another point in the book they cite "a confidential memo circulated on January 5, 1995, by the National Cancer Institute" as confirming their findings that "women living close to reactors are significantly at greater risk of dying of breast cancer than those living farther away." Having cited such supporting evidence, one would have assumed that they would have included a copy of the memorandum in their book. The probable reason that they did not is that the memorandum did not confirm their findings. In fact, the memorandum states that it is the conclusion of epidemiologists at the National Cancer Institute (NCI) that the "Gould-Sternglass study has little epidemiological credibility," and that re-analyses of the data by the NCI staff "in no way support the conclusions of Gould and Sternglass."

The Tooth Fairy Report

In this report, Drs. Gould and Sternglass state that they need at least 5,000 teeth from all parts of the U.S. Presumably, this is their estimate of the number required to confirm their findings. Based on the reported concentrations of strontium-90 in the samples of teeth they analyzed, and the associated radiation doses that would result, it would require careful observations of several million people over a period of at least 100 years to confirm a significant increase in mortality.

Although Drs. Sternglass and Gould provide an estimate of the concentrations of strontium-90 in the teeth of children living near the Turkey Point Nuclear Plant, they never provide even a hint of the radiation dose that such concentrations would produce either in the tooth or elsewhere within the body. One of the basic tenets of toxicology is that the "dose makes the poison." Without a dose, there can be no effects. In reality, the annual doses that would result from the reported concentrations of strontium-90 in the teeth are less than those one would receive from cosmic radiation during a cross-country flight in a commercial airliner.

Although in the paper published in the International Journal of Health Services (reference #7 above), Drs. Sternglass and Gould provide estimates of the uncertainties in the concentrations of strontium-90 in the teeth they had analyzed, no such estimates are provided in the "Tooth Fairy" report. Even in the case of the International Journal article, where they do provide such estimates,

their method of quantifying them is wrong. In fact, essentially all of their lower range data are suspect because the numbers reported are less than the analytical capabilities of the counting equipment used in the measurements.

Statements by Scientific and Professional Organizations

Readers of the above comments need not take my word as to the lack of credibility of the statements by Drs. Gould and Sternglass. This literature is filled with statements by well-respected and highly-qualified scientists, government agencies, and professional organizations, all of whom have refuted the claims of Drs. Gould and Sternglass. Several examples are listed below.

American Academy of Pediatrics -- 1970

Beginning as early as the mid-1960s, Dr. Sternglass issued reports in which he claimed that exposures to low-level radiation had led to increased infant mortality and a host of other health effects. One of the first professional societies to refute his claims was the American Academy of Pediatrics which, in 1970, stated that Dr. Sternglass' conclusions were "completely unfounded and unsubstantiated." The Academy concluded that Dr. Sternglass "selected data to prepare his hypothesis without considering the far more extensive data that do not support it" and that his assumptions were "shown to be erroneous."

Michigan Department of Public Health -- 1971

In 1971 the Michigan Department of Public Health evaluated claims by Dr. Sternglass that there was a connection between increases in infant mortality in areas near the Big Rock Point Nuclear Plant. The Department concluded that Sternglass's assertions were not "based on scientific tests, but rather on a statistical data evaluation of infant mortality rates and reactor plant emissions, selecting and rejecting figures to arrive at an apparently biased conclusion..." In short, the Department rejected Sternglass's contention that there was a connection between infant mortality and radioactive releases from the Big Rock Point Plant.

Health Physics Society -- 1971

At the annual meeting of the Health Physics Society, held in New York City in July, 1971, Dr. Sternglass presented a paper in which he summarized the

charges he had been made over the past four years. Included was his assertion, once again, that he had detected that activities, such as the operation of nuclear power plants, had resulted in an increase in infant mortality. Because of their concern for the multitudes of errors in his paper, the past-Presidents of the Society took a most unusual step. They prepared a joint statement that was promptly shared with the media. Highlights were as follows:

"On the third such occasion since 1968, Dr. Ernest J. Sternglass has, at an annual meeting of the Health Physics Society, presented a paper in which he associates an increase in infant mortality with low levels of radiation exposure. The material contained in Dr. Sternglass' paper has also been presented publicly at other occasions in various parts of the country. His allegations, made in several forms, have in each instance been analyzed by scientists, physicians, and bio-statisticians in the Federal government, in individual States that have been involved in his reports, and by qualified scientists in other countries.

"Without exception, these agencies and scientists have concluded that Dr. Sternglass' arguments are not substantiated by the data he presents. The United States Public Health Service, the Environmental Protection Agency, the states of New York, Pennsylvania, Michigan and Illinois have issued formal reports in rebuttal of Dr. Sternglass' arguments. We, the President and Past Presidents of the Health Physics Society, do not agree with the claim of Dr. Sternglass that he has shown that radiation exposure from nuclear power operations has resulted in an increase in infant mortality."

U.S. Environmental Protection Agency – 1978

In 1977, Dr. Sternglass claimed that operation of the Connecticut Yankee and Millstone Nuclear Plants had contributed to significant levels of strontium-90 and cesium-137 in milk in nearby areas. In response to a request from a member of Congress, the U.S. Environmental Protection Agency (EPA) conducted a detailed review of Dr. Sternglass's claims and concluded that the data did not support Dr. Sternglass's contentions and that his assertions contained incorrect assumptions and misinterpretations. In fact, analyses proved that the strontium-90 and cesium-137 were from weapons testing fallout, not from the nuclear plants.

National Academy of Sciences – National Research Council – 1980

During the preparation of its third report, the Committee on the Biological Effects of Ionizing Radiation, provided an opportunity for Dr. Sternglass to share his thoughts on the health effects of low-level radiation on humans. In the course of his presentation, Dr. Sternglass presented data on fallout in the U.S. from nuclear weapons tested by China in 1976 and concluded that this had led to an increase in infant mortality in the eastern-seaboard states from Delaware to New England shortly after these events occurred. On the basis of his presentation and a review of the materials provided, the Committee concluded that "the alleged association did not fit the time course for radionuclide movement into the cow-milk food chain, nor was there clear evidence of a universally applicable change in infant-mortality rates." The Committee went on to state that they "do not believe that the allegation was substantiated."

National Cancer Institute – 1990

The claims of Dr. Sternglass and his associates were also inconsistent with the findings of a study conducted by the National Cancer Institute (NCI) in which a detailed examination was conducted of longer term cancer mortality rates in counties throughout the U.S. in which nuclear reactors have operated. The NCI "found no systematic difference in rates of breast cancer nor any other cancer in these counties compared to similar counties located farther away from the plants."

Minnesota Department of Public Health, 1995

Continuing his crusade, in June, 1994, Dr. Sternglass claimed that radionuclide releases from the Prairie Island Nuclear Generating Plant had led to a 45% to 49% increase in breast mortality rates in the seven nearby "nuclear" counties. On the basis of a review of the Sternglass report, the staff of the Minnesota Department of Public Health concluded that "Breast cancer mortality trends over the period 1950-1992 in the ten counties near nuclear power plants show no discernible difference from statewide trends ... Furthermore, no difference in mortality trends or recent incidence rates could be found for several other cancers sensitive to exposures to ionizing radiation."

The Minnesota Department of Public Health also observed that Dr. Sternglass and his associates were continuing to distort the facts to reach their desired conclusions. In their report, for example, they indicated that:

counties selected for study were those "within roughly 40 or 50 miles of each reactor, giving preference where possible to contiguous downwind counties lying to the north and northeast of each reactor." An examination of the map of the counties included in their analyses, however, revealed that neither the "adjacent" criterion nor the "50-mile" radius criterion was consistently applied in selecting the counties for study relative to the two nuclear plants in Minnesota.

Health Effects of Strontium-90

In Report 110 issued in 1991, the National Council on Radiation Protection and Measurements provided the following information on the health effects of strontium-90:

No statistically significant excess of biological effects due to strontium-90 exposures at levels characteristic of world-wide fallout has been demonstrated.

Most of the damage from isolated ionizations appears to be readily repaired if sufficient time is available before additional radiation events are received.

The incidence of bone carcinoma and other malignant diseases at low doses and dose rates in animals has been remarkably low. Such effects have not been seen in excess of the normal incidence except at dose levels in the thousands of rem. (Note: This is equivalent to almost a million times the annual doses to the teeth that were analyzed as part of the "Tooth Fairy" project.)

Commentary and Conclusions

The U.S. Nuclear Regulatory Commission (U.S. NRC) has concluded in the draft Environmental Impact Statement (reference #3 above) that the environmental impacts of offsite radioactive releases from nuclear plants are small. Equally important, the U.S. NRC has rejected the allegations of proponents of the "Tooth Fairy" project that increased levels of strontium-90 emitted from nuclear plants are causing adverse health effects. As noted by the information presented above, I fully concur with these conclusions.

The claims that have been made for the past 35 years by Drs. Gould and Stenglass have been studied and refuted by statisticians, radiation

epidemiologists, and public health officials. Despite the long-standing consistency and uniformity of the scientific community's views, Dr. Stenglass and his associates have displayed no apparent interest in the mass of scientific evidence that rejects their methods of research, their observations, and their conclusions. Instead, they continue to carefully select only those data that they find will support their desired conclusions. When questioned, Dr. Stenglass invariably changes the subject or offers to provide "new data" which, seldom, if ever, appears.

As a result, Dr. Stenglass and the tooth fairy proponents continue to stand alone and with good reason. Their methods and conclusions are just plain wrong. No amount of tinkering or repetition will make them right. Their claims have been repeatedly evaluated and rejected. The basic reason for this, as noted above, is that Dr. Stenglass consistently violates one or more of the basic principles of good science. His primary objective is to shut down all commercial nuclear power plants, and he will stop at nothing in pursuing this goal.

The public has the right to know the truth about these biased and unsupported claims. The next time you hear the allegations of the tooth fairy proponents, I would urge that you ask hard questions. Go along the basis for their assertions. Don't accept their theories simply because they tell you that scientists are working on the issue. You might also ask if they are board certified, just the same as you do in selecting your personal doctor. The bottom line is that for over 30 years real scientists have reviewed their claims and have found them to be baseless.

Deke W. Moeller, Ph.D.
147 River Island Road
New Bern, NC 28562-3356

Telephone: (252) 634-3352
e-mail: deke@moeller@connect.net

69-1

Dade W. Moeller, Ph.D.

Dade W. Moeller received a bachelor's degree in civil engineering and a master's degree in environmental engineering from the Georgia Institute of Technology, and a doctorate in nuclear engineering from North Carolina State University. He retired in June, 1993, as Professor Emeritus of Environmental Health at the Harvard School of Public Health, where he had served for 15 years as Chairman of the Department of Environmental Health Sciences, followed by 12 years as Associate Dean for Continuing Education. Prior to joining the Harvard faculty, he served for 18 years as a commissioned officer in the U.S. Public Health Service. His duty stations included the Oak Ridge and Los Alamos National Laboratories; the headquarters offices of the Public Health Service in Washington, DC; the Robert A. Taft Sanitary Engineering Center in Cincinnati, OH, where he served as Director of Radiological Health Training; and the Northeastern Radiological Health Laboratory in Winchester, MA, where he served as Officer in Charge.

From 1973 to 1989, Dr. Moeller was a member of the Advisory Committee on Reactor Safeguards, and from 1988 through 1992, he chaired the Advisory Committee on Nuclear Waste. Both of these committees reported to the Commissioners of the U.S. Nuclear Regulatory Commission. Dr. Moeller was a member of the Subcommittee on Environmental Effects, Committee on the Biological Effects of Ionizing Radiation (the BEIR-I Committee), National Research Council, and a member of the BEIR-III Committee. For eight years, he represented the U.S. on Committee 4 of the International Commission on Radiological Protection. In 1997, he was elected an honorary member of the National Council on Radiation Protection and Measurements (NCRP), after having served on the Council for 30 years. He is a past President of the National Health Physics Society, and a fellow in the American Nuclear Society, the American Public Health Association, and the Health Physics Society. He is a registered professional engineer, is certified by the American Board of Health Physics, and is a Diplomate in the American Academy of Environmental Engineers. In recognition of his accomplishments, he has been awarded the Distinguished Achievement Award by the Health Physics Society, and the Meritorious Achievement Award by the U.S. Nuclear Regulatory Commission. He was elected to the National Academy of Engineering in 1978 and to the Georgia Tech Engineering Hall of Fame in 1999. Dr. Moeller is the author of a widely used textbook on *Environmental Health*, now in its second edition.

TPD 70



The undersigned, The Greater Homestead/Florida City Chamber of Commerce, does here certify that the following resolution was duly adopted at a meeting duly called and held on August 17, 2000.

A resolution from the Board of Directors of the Greater Homestead/Florida City Chamber of Commerce, in support of the license renewal for Florida Power and Light's Turkey Point plant to allow the plant to continue to safely produce electricity for an additional 20 years beyond the year 2013. 70-1

WHEREAS, The Board of Directors of the Greater Homestead/Florida City Chamber of Commerce is aware of the proposed license renewal for Turkey Point,

WHEREAS, Florida Power and Light's Turkey Point Plant is located in the Homestead/Florida City area and provides 900 jobs, and 70-2

WHEREAS, Turkey Point generates over 1,400 million watts of electricity, enough to supply the annual needs of approximately 250,000 homes, and 70-3

WHEREAS, Since 1995, Turkey Point is the only nuclear plant in the nation to consistently achieve the highest performance rating from the Nuclear Regulatory Commission, 70-4

WHEREAS, We believe Turkey Point is both safe and cost efficient, ensuring safe, high-quality, low-cost power, and 70-5

THEREFORE, BE IT RESOLVED this 17th day of August, 2000, that the Board of Directors of the Greater Homestead/Florida City Chamber of Commerce does hereby support the renewal of the operating license of Turkey Point, 70-6

**Greater Homestead/Florida City Chamber of Commerce
Board of Directors Meeting August 17, 2000
Members Present**

David Peyton
First National Bank of Homestead

Thomas Weller
Weller & Losner

Mario Espinosa, Jr.
Deco Truss Company

Jane McMillan
Stokes, McMillan, Schiller & Maracini

Marlene Porter
Community Bank of Florida

Lynn Hunt
South Dade High School

Cory Gold
Homestead Hospital

Steve Bateman
Two Brothers Construction Company

Ada Bill
Florida Power and Light

Ignacio Fiallos
Ground Zero Communications

Joe Hunt
Farm Credit of South Florida

David Passmore
Carl Pelt & Sons, Inc.

Darryl Lipe
Community Bank of Florida

David Cunigan
TIB Bank of the Keys

Dr. Roy Phillips
Miami-Dade Community College

Curtis Ivy
City of Homestead

General Charles Stenner
Homestead Air Reserve Base

Mary Fulan
Chamber of Commerce

TPD 71

**License Renewal Is the Best Option for Turkey Point
Ralph T. Andersen
Chief Health Physicist
Nuclear Energy Institute**

June 17, 2001
Homestead, Florida

Good afternoon. My name is Ralph Andersen and I am the chief health physicist at the Nuclear Energy Institute. I am pleased to have the opportunity to join the discussion today among interested citizens of Southern Florida, state and local officials, NRC staff, and other parties on license renewal for Turkey Point.

The Nuclear Energy Institute coordinates energy policy for U.S. energy companies that own a nuclear power plant. The Institute also represents industry suppliers, fuel cycle companies, universities and colleges, and other organizations are involved in the beneficial uses of nuclear technologies – such as medicine, agriculture and food safety and space exploration.

Nuclear energy provides electricity for one of every five homes and business in America. Here in Florida, electricity customers get about 19 percent of their electric power from five nuclear reactors, including Turkey Point, as well as Florida Power and Light's St. Lucie and Progress Energy's Crystal River nuclear plants.

The purpose of today's meeting is to discuss environmental issues related to the license renewal application for Turkey Point that Florida Power and Light submitted to the NRC last year.

Florida Power and Light is the fourth utility to seek nuclear plant license renewal. In March 2000, the NRC for the first time approved a 20-year license extension for two reactors at the Calvert Cliffs Nuclear Power Plant on the shores of the Chesapeake Bay in Maryland. That approval was a landmark for the industry and evidence of the tremendous long-term energy and environmental benefits of nuclear power. To date, six reactors have

already received 20-year license extensions from the NRC and the agency is reviewing requests from fourteen others, including Turkey Point.

About one-third of all U.S. reactors are expected to submit applications over the next several years. Many more are expected to join them.

Renewing nuclear plant licenses for an additional 20 years is economical compared to the development of alternative energy sources. As both the Nuclear Regulatory Commission and stakeholders become more familiar with the process, we expect the license renewal process to become even more efficient.

Moreover, there is growing recognition among the public and policymakers both in the United States and internationally that we must maintain the clean air and other environmental benefits of nuclear energy.

The White House recognizes very clearly the clean air benefits of nuclear energy in its comprehensive energy strategy. Vice President Dick Cheney has said—"If you're really serious about reducing greenhouse gases, one of the solutions to the problem is to go back and take another look at nuclear power."

There are tremendous air quality advantages from nuclear energy both for the health of Florida's citizens and from an economic view, given the state's tourism industry.

License renewal for nuclear power plants is important to our nation's future energy security and environmental needs. Today's public meeting is part of an extensive process that helps ensure that no important environmental issues are overlooked as the NRC continues to evaluate the Turkey Point license renewal application. Throughout its review, the NRC will continue to keep interested citizens and stakeholders apprised of its progress.

One of the requirements of the environmental report is for Florida Power and Light to compare the impacts of alternative energy sources as part of evaluating possible alternatives to relicensing Turkey Point.

The results of that evaluation are worth noting. For example, photovoltaic cells generating 1,886 megawatts of power ... the same amount of electricity produced at Turkey Point ... would require about 46,000 acres of land. And wind-powered plants are simply not economically feasible as an alternative because the state of Florida is in a wind power Class 1 region, which means it has the lowest potential for wind energy generation.

The draft GEIS also evaluates other alternatives for providing electricity to the people of South Florida, including power plants that burn coal, natural gas, or oil, as well as hydropower, geothermal energy, and biomass-derived fuels. The GEIS even considers an action alternative which means "do nothing." The report concludes that these alternative actions, including the no-action alternative, are reasonable or may have environmental impacts of moderate to high significance. In contrast, the report concludes that the environmental impacts associated with renewing the Turkey Point license are small.

What exactly does license renewal mean?

With the extension of the license, it means 20 more years of environmental and economic benefits and continued reliable electricity for consumers and businesses in South Florida.

I happen to think it's a necessary option. Let me give you three key reasons why:

- **First**, license renewal will maintain economic electric generation that does not produce greenhouse gases or other air pollutants, such as sulfur dioxide, nitrogen oxide and particulates. 71-1
- **Second**, license renewal will preserve good jobs for this area. And communities like Homestead, where these plants are located, will continue to gain substantial tax revenue. 71-2
- **Third**, renewal of Turkey Point's license is far more economical than building a new power plant. 71-3

Many people don't realize that nuclear energy is the largest source of emission-free electricity generation in America. It represents nearly 50 percent of our nation's emission-free generation.

Hydroelectric power is second at 29 percent. Photovoltaic cells and wind power each represent less than 1 percent of emission-free generation.

It's obvious from these figures that nuclear energy provides vital clean air benefits to Florida and the United States, considering that each state must control emissions from electric generating sources through the Clean Air Act. In your community, Turkey Point also provides stable jobs, a strong tax base, and safe, reliable, and affordable electricity.

I mentioned earlier that I am a health physicist—which means that my profession is radiation safety. So I'd like to talk for a moment about radiation.

The draft EIS for Turkey Point includes an assessment of environmental impacts associated with radiation from plant operations. This can be found on page 2-21 of the report. The NRC characterizes that impact as small. Drawing on the information provided in the draft EIS, I'd like to offer a comparison to better illustrate what the NRC means by small.

This public meeting is scheduled to last about three hours.

During this meeting ... the amount of radiation each of us receives will be more than anyone living near the Turkey Point nuclear plant will receive during the entire 20 years of operation associated with license renewal.

During this meeting, each of us is receiving natural radiation—including natural radiation in our own bodies from the food we eat and water we drink, from the air we breathe, from the ground we're standing on and the materials used to construct this building, and even cosmic radiation reaching us from the stars and distant galaxies.

71-4

I want to close by saying that the draft EIS is factual and complete, and should contribute to a fair and objective review of the environmental impacts of license renewal at Turkey Point. And I'd like to commend Florida Power and Light and the nuclear professionals at Turkey Point for their continued excellent record of safety performance and commitment to protecting public health and safety and the environment. Together, these are key factors in the NRC's conclusion in the draft EIS that supports a positive decision on renewing the license for an additional 20 years.

Thank you.

TPD 72

COMMENT ON DRAFT REPORT
AND SUBMISSION OF NEW INFORMATION

GENERIC ENVIRONMENTAL IMPACT STATEMENT, SUPPLEMENT 5
REGARDING FLORIDA POWER AND LIGHT COMPANY'S PROPOSAL
TO THE U.S. NUCLEAR REGULATORY COMMISSION
TO RE-LICENSE THE TURKEY POINT 3 AND 4 REACTORS
(NUREG-1437, SUPPLEMENT 5)

JULY 17, 2001

By the Radiation and Public Health Project
New York, NY

Principal Author:

Joseph Mangano, MPFI, MBA, National Coordinator
(718) 857-9825

Research Associates

Jay M. Gould, PhD, Director
Ernest J. Sternglass, PhD, Chief Scientist

Larry Birnson, PhD
William McDonnell, MA
Marcia Marks, ACSW, LCSW
Janette Sherman, MD
William Reid, MD

TABLE OF CONTENTS

	Page
A) Executive Summary	3
B) Comments on the Generic Environmental Impact Statement	7
C) Responses to NRC Comments in the Generic Environmental Impact Statement	15
D) Comments on other Health-Related Topics	19
Appendices	
1. RPHP Recent Professional Publications	21
2. Rhabdomyosarcoma and Its Link with Radiation	22
3. Mechanism of Nuclear Radiation Injury	23
4. Risk from Low-Dose Radioactive Nuclides	34
5. Radioactive Strontium-90 (Sr-90) in Baby Teeth	25
6. Nuclear Radiation and Childhood Cancer	26
7. The Relationship between PicoCuries and Dose in Millirems	27
8. Statement of Dr. Sidel and Dr. Geiger on the baby teeth study	28
References	30
Fig 1. Duval County Beta Activity and Cancer (0-4 years)	34

Attachment - Environmental Radiation from Nuclear Reactors and Increasing
Childhood Cancer in Southeastern Florida. A Special Report on the Florida Baby
Teeth Study. RPHP, March 28, 2001.

EXECUTIVE SUMMARY

The Radiation and Public Health Project (RPHP) welcomes the opportunity to comment and submit new and significant information to the U.S. Nuclear Regulatory Commission (NRC). Draft Report, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5 (GEIS)*.

This information is being submitted with reference to the Turkey Point 3 and 4 nuclear reactors, located in south Miami-Dade County, Florida. However, RPHP findings of a link between in-body radiation levels and increased childhood cancer risk should be considered in the NRC's review of all applications to extend the operating licenses of aging nuclear power plants throughout the United States.

A. General

1. Need to protect public from radioactive emissions from nuclear reactors

- From 1980 to 1999, electricity generated from America's nuclear power reactors increased from 248 to 727 million gigawatt-hours.
- Electric utilities have requested that the U.S. Nuclear Regulatory Commission (NRC) extend the operating licenses of 43 of 103 aging nuclear reactors for 20 years beyond the existing 40-year license period.
- The nuclear industry has declared a goal of building 50 new U.S. nuclear reactors.

2. Current Health Risk Assessment Policies are Deficient

- The NRC requires that electric utilities measure emissions of radioactive chemicals from nuclear reactors, and levels of these chemicals in the air, water, soil, and food. If these levels fall below federal "permissible limits," the NRC presumes there is no detectable health risk to residents living near reactors.
- The NRC does not require environmental measurements of Strontium-90, one of the most toxic radioactive chemicals emitted by nuclear reactors.
- The NRC, electric utilities, and public health departments have never measured levels of Strontium-90 or any other radioactive chemical in bodies of persons living near nuclear reactors.
- The NRC, electric utilities, and public health departments made no studies of cancer in persons living near nuclear reactors from 1957 to 1990. The only study, by the National Cancer Institute in 1990, made a controversial conclusion that nuclear reactors did not affect local cancer rates, a result that would be expected based on the methodology used.

- The NRC has approved the first five applications for extending the operating licenses of nuclear reactors an additional 20 years without examining the possible impact of federally-allowed emissions of radioactive chemicals on local cancer rates.

3. RPHP Information on In-body Levels of Radiation and Cancer Risk

- The Radiation and Public Health Project's (RPHP) baby teeth study ("Tooth Fairy Project"), which measures Strontium-90 (Sr-90) in baby teeth (and thus in their bones) is the first to study in-body radioactivity levels of persons living near nuclear power reactors and in more remote locations. Proximity to nuclear power reactors is one of several controls built into the baby teeth study.
- During the 1950s and 1960s, concerns about increased Sr-90 levels in St. Louis baby teeth, which corresponded to increased childhood cancer and leukemia rates, were factors in President John F. Kennedy's decision to sign the 1963 Partial Test Ban Treaty, which ended all atmospheric testing of nuclear weapons.
- RPHP has collected over 5000 teeth, and has measured Sr-90 levels in about half of these. Current concentrations of Sr-90 near nuclear power plants have risen to levels similar to those measured in St. Louis children born in 1956, during the period of above-ground atomic bomb testing in Nevada.
- In Suffolk County New York, which is within 60 miles of eight nuclear power reactors, RPHP has analyzed over 500 teeth and documented a 40.0% rise in average Sr-90 concentrations and a nearly similar 48.9% rise in leukemia and cancer among children under 10 from the early 1980s to the mid-1990s.
- Results of the baby teeth study have been published in three peer-reviewed medical journals.

B. Radiation and Childhood Cancer in Miami-Dade County

1. Turkey Point operations and environmental radioactivity

In March, 2001, RPHP released a Special Report on the Florida Baby Teeth Study, entitled "Environmental Radiation from Nuclear Reactors and Increasing Children's Cancer in Southeastern Florida," (the "Florida Report") which noted that:

- The Turkey Point 3 and 4 nuclear reactors located approximately 25 miles south of Miami have been operating since 1972 and 1973, respectively.
- From 1972 to 1993, Turkey Point reported the emission of 6.69 trillion picocuries of radioactive chemicals (including Sr-90) into the air, nearly half of the total released during the 1979 accident at Three Mile Island.

The highest average Sr-90 concentration in any U.S. state has been documented in 86 baby teeth from persons born after 1979 in Miami-Dade County.

- For persons born in Miami-Dade during the period 1988-94, the average Sr-90 level in baby teeth was 21.5% greater than the average for the seven previous years.
- 2. The Link Between Radiation and Cancer in Southeastern Florida Children**

- The rate of childhood leukemia and cancer in Miami-Dade County plus four counties to its north has risen to become one of the highest in the U.S., suggesting a link with the area's high Sr-90 levels.
- The cancer incidence rate in Miami-Dade children under age ten rose 6.8% from 1981-87 to 1988-94, an increase roughly commensurate to the Sr-90 trend.
- Annual rises and declines in cancer incidence in Miami-Dade children under age five match those in radiation detected in local precipitation.
- Infant mortality declined 19.1% in Dade and Broward Counties in 1983-84, when Turkey Point's defective steam generators were being replaced and the reactors were mostly inactive. The following two years, when the reactors re-started, the infant death rate increased 1.2%.
- Cancer in children under age 15 in Miami-Dade and four other southeastern Florida counties (the region where four nuclear reactors are located) rose 35.2% from the early 1980s to the late 1990s, but declined 8.1% in the rest of the state (which has only one nuclear reactor).

C. NRC's Environmental Impact Statement is Flawed

1. The NRC has prepared a draft Generic Environmental Impact Statement, Supplement 5 (GEIS), on the application to extend the Turkey Point licenses, as required by law. The NRC's conclusion that the application represents no threat to local health included numerous comments about RPIHP research that are not based in fact or are misleading.
 - The GEIS statement that the baby teeth study represents no new information on the issue of radiation and public health does not acknowledge that the research is the first to measure *in-body* radioactivity specifically near nuclear power reactors.
 - The GEIS fails to cite numerous medical journal articles documenting links between radiation exposure from nuclear reactor emissions and cancer, especially in children.
 - The GEIS does not adequately address the evidence that the fetus and developing infant are at significantly higher risk of cancer and brain damage from low-level radiation than had been previously understood. This evidence is presented in the 1991 report of the Committee on the Biological Effects of Ionizing Radiation, National

Research Council (BEIR V), which concluded that there are no safe levels of radiation exposure.

- The GEIS asserts that the doubling in cancer in the past half-century is not due to any environmental cause, other than cigarette smoking, failing to cite the considerable research documenting links between cancer and environmental toxins like radiation. The NRC ignores the rise in cancer rates among children, who do not smoke and whose parents are smoking less than a generation or two ago.
- The GEIS makes no mention of the increased sensitivity of the fetus and infant to radiation exposure.
- By no longer requiring Strontium-90 to be measured, either in environmental samples or humans, it has been possible for the NRC to characterize the radiation threat from the Turkey Point plant and all other nuclear power reactors as "microscopic." In this way, the NRC obscures the true magnitude of the threat to human life and health presented by fission products released into the environment.

D. Recommendations

1. The Radiation and Public Health Project recommends that several actions be taken by the NRC in regard to the re-licensing process for Turkey Point, and subsequent re-licensing applications for all reactors:
 - The NRC should require that Sr-90 be once again measured in environmental samples.
 - The NRC should institute a program of measuring levels of radioactivity in bodies of persons living near nuclear reactors, and should publicly report its findings in a timely manner.
 - The NRC should authorize periodic studies comparing *in-body* levels of radioactivity with local rates of childhood and adult cancer and other diseases susceptible to radiation exposure.
 - The NRC should postpone a decision on extending the license of Turkey Point and all other reactors until it has thoroughly evaluated all available information, including recent reports and significant research in progress, on nuclear reactor emissions and public health.
 - The NRC should include risks to health (i.e., links between local cancer patterns and radioactivity in the environment and body) as a criterion for extending licenses of existing nuclear reactors and for granting future licenses to operate new reactors.

COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT

I. INTRODUCTION

The Radiation and Public Health Project (RPHP) is an independent, non-profit research and educational organization. The focus of RPHP's work is to assess the health effects of exposures to radioactive chemicals released into the environment by nuclear weapons tests and nuclear reactor operations. Founded in 1935, RPHP has assembled an interdisciplinary team of professionals from the fields of radiation physics, toxicology, epidemiology, medicine, and statistics. RPHP Research Associates have published numerous medical journal articles and books on the radiation health issue (see Appendix I).

RPHP has documented substantial evidence linking environmental nuclear radioactivity with increased cancer risk. Perhaps the strongest evidence is the correlation of rising and declining levels of radioactive Strontium-90 in baby teeth with risk of childhood cancer in Long Island. The following comment outlines RPHP's findings and considers implications of these findings, including the Florida Report, for the environmental impact of extending the operating license of the Turkey Point 3 and 4 reactors.

II. NUCLEAR REACTOR EMISSIONS AND HEALTH

More Reactors Produce More Radioactivity. Currently, 107 nuclear power reactors (at 72 sites) are operating in the U.S., producing about 20% of the nation's electricity. (1) About two-thirds of Americans, or approximately 190 million people, live within 100 miles of at least one nuclear reactor. Operating utilities have permanently closed a total of 22 reactors. In addition, 128 reactors that were proposed by utilities to federal regulators were later cancelled before commencing operations. (2)

Startup of new reactors and increased use of existing ones have caused the generation of electricity from reactors to nearly triple (248 million to 727 million gigawatt-hours) from 1980 to 1999. (1) Present trends suggest that use of nuclear power reactors may proliferate in the future. The U.S. Nuclear Regulatory Commission (NRC) has received applications to extend the licenses of 43 reactors from the current life span of 40 years to 60 years. In addition, at its annual meeting in May 2001, the Nuclear Energy Institute announced a goal of starting 50 new nuclear reactors in the U.S. over the next 20 years.

Problems Presented by Aging Reactors. Increasing use of aging nuclear reactors raises environmental health issues that need to be addressed, namely:

1. Do operations of reactors, which routinely emit man-made radioactivity into the air, soil and water, from where they are inhaled and/or ingested by people, result in increased risk of disease, including cancer?
2. Does the aging of reactors increase the chance of a serious accident?
3. Does the buildup of nuclear waste from reactor operations pose a threat to the health of local residents?

72-1

72-2

72-3

The focus of RPHP's work is primarily issue #1, health effects of routine, federally-permitted emissions of radioactive chemicals into the environment.

Government Assessment of Risks to Health is Deficient. Because radioactivity can damage human health, an accurate assessment of risk to the public is warranted. **However, current regulatory policies do not include an adequate risk assessment for low-dose exposures.** The U.S. Nuclear Regulatory Commission has approved the first five applications for reactor license extension, with no consideration of disease rates, including cancer, in persons living closest to reactors.

RPHP has investigated health effects of exposures to reactor emissions from the Turkey Point reactors to residents of Miami-Dade County and has published its findings in the Florida Report, a copy of which is being submitted to the NRC along with these Comments.

III. HEALTH STUDIES HAVE BEEN OMITTED

Reactor Operations Release Many Cancer-Causing Chemicals. Nuclear reactors employ fission of uranium atoms to generate electricity. The fission process creates over 100 radioactive chemicals not found in nature, which may damage the immune, genetic, and hormonal systems. These products include strontium, plutonium, iodine, and other carcinogenic isotopes. The only other source of these man-made chemicals is nuclear weapons explosions. Most fission products generated by reactors are contained in radioactive waste, but some is emitted into air and water.

The NRC requires that electric utilities measure emissions of radioactive chemicals from nuclear reactors, along with levels of these chemicals in air, water, soil, and food. It does not require environmental measurements of Strontium-90, one of the most toxic radioactive chemical produced by reactors.

Health Studies Are Lacking. The NRC does not conduct or authorize health studies of radioactive chemical emissions or environmental levels. If levels fall below the federal "permissible limit," the NRC makes a presumption that public health is unaffected.

There has been a dearth of scientific, peer-reviewed studies evaluating disease rates near U.S. nuclear power plants since the first reactor opened in 1957. Only one national study has been done. In 1990, at the request of Senator Edward M. Kennedy, the National Cancer Institute (NCI) published data on cancer near nuclear plants.

The report concluded there was no connection between radioactive emissions and cancer deaths, because the methodology compared cancer rates in counties containing nuclear reactors with "control" counties often situated nearby. As a result, there was no significant difference between counties with nuclear plants and the "control" counties. However the NCI did find that cancer rates rose after reactor startup. (3) Since 1990, no federal agency, including the Environmental Protection Agency and

72-1

72-2

72-3

Southeastern Florida - Highest in Sr-90, Highest in Childhood Cancer. In southeastern Florida, the four reactors at Turkey Point and St. Lucie reported releases of 10.39 PBq of radioactivity (only chemicals with a half-life over eight days) into the air from 1970-93. A picocurie is a measure of radioactivity, representing one-trillionth of a curie. About two-thirds of the southeastern Florida total (6.69 trillion) originated from Turkey Point, nearly one-half of the 14.20 trillion picocuries emitted during the Three Mile Island accident in March 1979. (24) The Turkey Point plant is located 23 miles south of Miami; its two reactors began operation in 1972 and 1973.

Fewer baby teeth have been tested from persons born in Miami-Dade County than in Long Island. The average Sr-90 levels for 86 county residents born after 1979 is 2.21 picocuries of Sr-90 per gram calcium, making **Miami-Dade the area with the highest Sr-90 content in the U.S.** measured to date by the baby teeth study, (i.e., the five states for which at least 20 teeth have been measured).

Average Sr-90 Concentration in Baby Teeth Compared to Cancer Incidence, Children Under Age Five

Area	No. of Teeth b. 1980-94	Avg. pCi Sr-90 per g. Calcium	Cancer cases/100,000 Age 0-4, 1985-96
Miami-Dade County, FL	86	2.21	25.65
Ocean/Monmouth Cos., NJ	130	1.42	25.05
Westchester County, NY	65	1.55	23.91
Suffolk County, NY	564	1.38	22.51
New London/Middlesex/ Tolland/Windham Cos., CT	20	0.83	20.82

Source: State Cancer Registries (cancer cases) and Radiation and Public Health Project (Sr-90 data)

The average concentration of Sr-90 in Miami-Dade baby teeth increased 21.5% from 1981-87 to 1988-94. During this period, the cancer incidence rate in Miami-Dade children under age ten rose 6.8%. Here, Sr-90 and childhood cancer are rising together, as was found in Suffolk County NY, implying a cause-and-effect relationship.

Trends in Average Concentration of Sr-90 in Baby Teeth And Cancer Incidence Age 0-9 Miami-Dade County, Florida, 1981-1994

Birth Yr	No. Teeth	Avg. Sr-90	Diag. Yr	Cases	Pop.	Rate/100,000
1981-87	30	1.91	1981-87	287	1,572,525	18.25
1988-94	51	2.33	1988-94	387	1,985,143	19.49
% Chg		+21.5%				+6.8%

Average picocuries of Sr-90 per gram of calcium in baby teeth of Sr-90
Cancer cases per 100,000 population
Source: New York State Cancer Registry (cancer cases) and Radiation and Public Health Project (Sr-90 data)

More teeth are needed from Miami-Dade to undertake a more sophisticated analysis. This number will be achieved by the year 2002. In the three months since the presentation of critical tooth study results in the Florida Report on March 28, 2001, the number of teeth submitted from Florida has jumped from 239 to 542, most of them from the Miami-Dade area.

The childhood cancer situation in southeastern Florida is worsening. Since the early 1980s, the cancer incidence rate in the area has risen 43.2%; but in all other parts of Florida, the rate has fallen by 8.1%. The five southeastern Florida counties are flanked by the two St. Lucie reactors to the north and the two Turkey Point reactors to the south. There is only one other nuclear reactor in the rest of the state (Crystal River, 70 miles north of Tampa). These divergent trends provide additional reason to fully study the radiation-cancer link in Miami-Dade.

Cancer Incidence Age 0-9 Southeastern Florida* vs. Other Parts of the State 1981-83 vs. 1996-98

Area	Cancer Cases 1981-3	Population (000) 1981-3	Cases/100,000 1981-3	Cancer Cases 1996-8	Population (000) 1996-8	Cases/100,000 1996-8	% Change
Southeastern FL*	191	408	12,068	197,008	15,27	16,64	+35.2%
Other FL	458	646	29,707	490,100	18,01	16,54	- 8.1%

*Broward, Martin, Miami-Dade, Palm Beach, and St. Lucie Counties
Source: Florida Cancer Data System

Link Between Radioactivity in Miami-Dade Precipitation and Childhood Cancer. Even before additional teeth are tested, independent evidence exists for a radiation-childhood cancer link in Miami-Dade. The U.S. Environmental Protection Agency has reported levels of "gross beta", or radioactive chemicals that emit beta particles, in Miami precipitation for more than a decade. RPHP discovered that **trends in gross beta levels are followed by similar trends in cancer incidence for Miami-Dade children under five just three years later** (Figure 1). This is an important piece of evidence in support of a cause-and-effect relationship and of an environmental radiation-childhood cancer link.

V. IMPROVED INFANT AND CHILD HEALTH AFTER REACTOR SHUTDOWN

In 2000, RPHP staff published an article documenting that in five of five areas near closed nuclear power plants, the infant death rate improved dramatically in the first two years after closing. In addition, rates of birth defects and childhood cancer also improved. (25)

Soon after Turkey Point started operations, Florida Power and Light staff began to have trouble with corrosion and tube leaks in the steam generators. Turkey Point 3 and 4 were closed, one after the other, to repair the generators. The NRC OIGIS notes that, "If

72-6

primary-to-secondary leakage occurs, then these can also be monitored radioactive airborne releases from the secondary steam systems of each unit" (2-11).

During the period 1983-84, when radioactive exposures to fetuses and infants were greatly reduced, infant mortality in Miami-Dade and Broward Counties fell 19.1% from the previous two years, significantly different from the 5.4% national drop. In 1985-86, when the reactors had returned to full power, the infant mortality rate increased 1.2%, while it fell 4.7% in the U.S. These findings are consistent with research on other closed reactors.

72-7

Thus, the need for additional study of the relationship between environmental radiation and cancer is essential. It is essential that this information should be considered by the U.S. Nuclear Regulatory Commission in their review of the Florida Power and Light application to re-license the Turkey Point 3 and 4 reactors, and in all future licensure and re-licensure applications.

**Changes in Infant Mortality
Halle and Broward Counties
Before and After Temporary Closing of Turkey Point**

Closing Turkey Point

Years	Deaths <1 Yr. Live Births	Deaths/1000	% Change
1981-82 (open)	988	74.160	13.52
1983-84 (shut)	859	79.687	10.78
			- 19.1% (p < .01)
			- 6.4% in U.S.

Re-Opening Turkey Point

Years	Deaths <1 Yr. Live Births	Deaths/1000	% Change
1983-84 (shut)	859	79.687	10.78
1985-86 (open)	951	87.187	10.91
			+ 1.2% (p < .33)
			- 4.7% in U.S.

Source: National Center for Health Statistics (www.cdc.gov/nchs), and www.cdc.gov/nchs, 4 (D) Warden

VI. SUMMARY

Since atomic bombs were first manufactured and used during World War II, exposure to man-made fission products has been a critical environmental health issue. The relative novelty of these chemicals in the environment underscores the need for thorough and objective studies.

Since the conclusion of the Cold War a decade ago, nuclear weapons are no longer tested by the United States. However, electricity production from American nuclear power reactors has reached an all-time high, and the nuclear industry is now considering a large-scale expansion of new nuclear power plants in the U.S. These developments indicate that efforts to protect humans from the potentially harmful effects of exposure to radioactive emissions in the environment will be critical.

Southeastern Florida has Sr-90 concentrations in baby teeth, childhood cancer rates well above national averages. Both Sr-90 and childhood cancer are rising at roughly the same rate locally. There is a link between radioactivity in precipitation and childhood cancer in the region. And local infant mortality declined sharply when Turkey Point closed down in the early 1980s.

**RESPONSES TO NUCLEAR REGULATORY COMMISSION COMMENTS
IN TURKEY POINT ENVIRONMENTAL IMPACT STATEMENT**

The GEIS Supplement 5, Section 4.7.1, Evaluation of Potential New and Significant Radiological Impacts on Human Health, discusses and dismisses the findings in the RPHP published report on "Strontium-90 in Deciduous Teeth in Early Childhood Cancer" (referred to as the "Gould report"). The main responses of the Radiation and Public Health Project (RPHP) to the Nuclear Regulatory Commission (NRC) evaluation are as follows:

1. The Gould report was not available to the NRC at the time the GEIS was written.

72-8

The article by Gould and his associates in the *International Journal of Health Services* was published in September 2000, well before the EIS was completed in May 2001. (20) It has been available in medical libraries, plus online at www.rphp.org or www.radiation.org.

2. Comments that the GEIS should include adverse health effects of radioactive emissions and Sr-90 measurements in baby teeth are no new information.

72-9

The Gould study represents the first assessment of in-body measurements of radioactivity and its health effects near U.S. nuclear reactors. The NRC, public health departments, including the Florida Department of Health, and utilities have never made such measurements.

3. Only one study (26) was cited by the GEIS as evidence that no causal association between nuclear facilities and cancer exists.

72-10

There are numerous articles published in the medical literature that document elevated levels of cancer near nuclear facilities or after reactor accidents like Three Mile Island and Chernobyl. At least 11 studies in the United Kingdom alone show high levels of childhood cancer near various nuclear plants. (6-16)

4. NRC permissible limits for radioactive emissions are based on recommendations from organizations such as the International Commission on Radiological Protection and National Council on Radiation Protection and Measurements.

72-11

The GEIS does not adequately address the evidence that the fetus and developing infant are at significantly higher risk of cancer and brain damage from low-level radiation that had been previously understood. This evidence is presented in the 1990 report of the Committee on the Biological Effects of Ionizing Radiation, National Research Council -- National Academy of Science (BIR V), in 1990. (27)

The BEIR V report states "there is concern about radioactivity in the environment around nuclear facilities." It also notes that, "...the new data do not contradict the hypothesis, at least with respect to cancer induction and hereditary genetic effects, that the frequency of

such effects increases with low-level radiation, as a linear, no-threshold function of the dose." In other words, there are no safe limits for exposure to radiation, especially for the developing fetus.

5. The average value across the U.S. today from fallout of atmospheric nuclear weapons tests should be approximately 4 pCi of Sr-90 per gram of calcium in baby teeth.

72-12

The average radioactivity concentration in St. Louis baby teeth from bomb test fallout plummeted from 11.03 to 4.60 pCi Sr-90/g Ca from 1964 to 1970, after the bomb testing ended. In addition, British researcher Janine Bell calculated that by the mid-1980s, the burden of radioactivity from bomb test fallout was below the 1951-52 levels, at the beginning of bomb testing. (28) Both constitute evidence that current levels of bomb test fallout should be well below 4 pCi, and perhaps close to zero. As opposed to the NRC's projected Sr-90 levels in soil, RPHP is referring to projected Sr-90 levels in bone and teeth.

6. Rhabdomyosarcoma is not rare.

72-13

Writing in the *New England Journal of Medicine* in 1999, two Mayo Clinic researchers estimated the number of new cases among the 60 million American children under age 15 to be only 250 per year (out of 8,000 total childhood cancer cases). (29) The rate of rhabdomyosarcoma in western Suffolk County NY, near a number of nuclear reactors, is 15 times higher than the national rate. (22) (See Appendix 2).

7. No association has been documented between the incidence of rhabdomyosarcoma and any environmental condition, including radiation exposure.

72-14

In 1991, University of Pittsburgh researchers published a study showing the children of women who received X-rays during pregnancy has twice the risk of developing the disease. (30) In 1997, an Arizona research team demonstrated that one-quarter of mice who had Sr-90 applied to their skin developed rhabdomyosarcoma or a related soft-tissue cancer. (31)

8. While cancer risk has doubled in the past half-century, this increase does not appear to be due to environmental causes other than cigarette smoking.

72-15

Cancer incidence in Connecticut children under age 10 has nearly doubled from the early 1940s to the mid-1990s, an increase similar to the adult population. (32) None of these cancers are caused by children using tobacco; and because the rate of smoking among adults (parents) has declined about 40% since the mid-1960s, (33) the increase is due to factors other than tobacco. Children are most susceptible to the effects of environmental toxins such as radiation.

9. It is not apparent that the Gould report includes control groups.

The baby teeth study contains several control groups, including temporal controls, distance from reactor controls, and Sr-90 levels before and after reactors open and/or close. In 10 teeth from children born at least 200 miles from nuclear reactors, the average Sr-90 concentration is about 60% below that of those born near reactors. In addition, Sr-90 levels in 19 teeth of children born in San Luis Obispo County CA, after the startup of the Diablo Canyon nuclear reactors in the mid-1980s, are 50% higher than for children born before the reactors opened. Additional control data are being analyzed.

10. The Gould report does not report factors such as where the mother lived while pregnant, nor consider the source of food that the children may have consumed.

The report states that all baby teeth are classified according to where the mother lived during pregnancy. It also collects information on the type of water (bottled, municipal, other) consumed in the household. This data is clearly outlined in the methodology section of the Gould report.

72-16

11. The American Cancer Society reports that studies show cancer clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population.

72-18

In counties within 30 miles of nuclear plants in the eastern U.S., rates of cancer in children under 10 years old from 1988-97 exceeded national rates in 13 of 13 areas (see below). The cancer rates in Miami-Dade County and in Martin/St. Lucie Counties are the highest of all these. (34)

72-17

**Cancer Incidence, Children Under Age 10
Counties Mostly/Completely Within 30 Miles of Nuclear Plants
Eastern U.S., 1988-1997**

Plant (No. Reactors)	Counties	Cases	Pop. <10	Cases per 100,000	% US
U.S.				15.50	
Indian Point (2)	Rockland NY, Westchester NY	253	1390417	18.20	+17.4%
Brookhaven (2)	Saratog NY	307	1701407	18.04	+16.4%
Turkey Point (2)	Miami-Dade FL	575	2894175	19.87	+28.2%
St. Lucie (2)	Martin FL, St. Lucie FL	76	337853	22.49	+45.1%
Oyster Creek (1)	Monmouth NJ, Ocean NJ	280	1427943	19.61	+26.5%
Pilgrim (1)	Plymouth MA	130	675674	17.76	+14.6%
Seabrook (1)	Rosow MA	169	965032	17.51	+13.0%
Beaver Valley (2)	Allegheny PA, Beaver PA, Butler PA, Lucas PA, Washington PA	395	2449693	16.17	-4.0%
Three Mile Island/ Peach Bottom (3)	Cambridge PA, Berks PA, York PA, Lancaster PA, Lebanon PA, Perry PA	322	1934559	16.64	-7.4%
Susquehanna (2)	Carroll PA, Columbia PA, Luzerne PA, Morrow PA, Schuylkill PA, Sullivan PA, Washington PA	136	778040	17.48	+12.8%
Limerick (2)	Ducks PA, Cassco PA, Delaware PA, Lehigh PA, Montgomery PA	488	3046922	16.02	+3.3%
Millstone (2)	Middlesex CT, New London CT, Tolland CT, Windham CT	137	797959	17.17	+10.8%
Salem/Hope Cr. (3)	Knox DE, New Castle DE, Sussex DE, Salom NY	205	1294630	15.83	+2.2%
TOTAL		3463	19694354	17.58	+13.4%

Note: Cancer data from cancer registries in eastern states with complete reporting from 1988-97. New York data represents 1988-96. Includes counties near reactors still operating.

**COMMENTS AND QUESTIONS ON OTHER HEALTH-RELATED TOPICS
IN TURKEY POINT ENVIRONMENTAL IMPACT STATEMENT**

1. Did Hurricane Andrew, which swept directly over the Turkey Point site in September 1992, damage the plant, re-suspend accumulated radioactivity on the site, and harm the environment and human health?

While the NRC states that it deemed the plant's design adequate to withstand severe weather in the original license granted to Turkey Point (p. 2-43), it didn't specifically address Hurricane Andrew's effects on the plant. Such a devastating natural disaster should merit consideration in the GEIS, which is supposed to protect local public health from harmful radiation until 2033.

2. Could other sources of radiation, such as the Chernobyl accident and Nevada atomic bomb tests, be the source of Sr-90 in baby teeth and rising childhood cancer rates?

From 1990-92 to 1995-97, cancer cases diagnosed in Miami-Dade and Broward County children under age ten rose steadily from 728 to 814, a rate increase of 11.8%. In addition, Strontium-90 levels in area baby teeth rose during the years 1991-94 (although more teeth are needed to confirm this initial result). Radioactivity from the Chernobyl accident (1986) and Nevada underground bomb tests (ended 1992) cannot be contributing factors.

7. Does liquid radioactive waste discharged into below-ground cooling ponds present any threat to the local environment and public health? The NRC claims there is no such threat (p. 2-17 and 2-18).

Cooling canals are unlined, and located close to the Biscayne Aquifer, which supplies local drinking and farm water. According to the NRC, there "may be exchange of water between the cooling canal system and the groundwater beneath the canal" (p. 2-18). Neither the NRC nor the utility monitors the amount of radioactive chemicals seeping from the canals to the groundwater, so the potential threat to the environment and human health is untested and should be explored.

4. Turkey Point nuclear units 3 & 4 were closed for most of 1983 and 1984 to replace defective steam generators, which began to corrode soon after the plant opened in the early 1970s. The GEIS acknowledges that steam generator leaks can be associated with "unmonitored radioactive airborne releases." Are the currently-used steam generators and their potential for tube leaks and corrosion an environmental issue when considering the re-licensure application? (This issue not addressed by the NRC).

Turkey Point's original and current steam generators were manufactured by the Westinghouse Corporation, which was sued by 14 utilities operating nuclear plants. Westinghouse won one suit, while settling the others out of court. Florida Power and Light, which filed the original suit in 1978 based on problems at Turkey Point, entered

72-19

72-20

72-21

into one of these settlements. Because Turkey Point's current generators have been used for nearly 20 years (up to 50 years if the license is extended), the NRC should address any potential environmental and health threats posed by these aging parts, before an extension of its license is granted.

5. Do the NRC and Florida Power and Light make adequate measurements of radiation dose to the public from Turkey Point emissions? The NRC says that they do, and that the public is not affected (p. 2-10).

The NRC cannot and should not presume that Turkey Point emissions are harmless, since it does not measure in-body levels of radioactive chemicals like Strontium-90. In recent years, Strontium-90 measurements in milk near nuclear plants were no longer required. These levels were significant: in 1976, milk from dairy farms 5 to 15 miles from the Millstone plant in Connecticut had the same Strontium-90 concentration as in 1961-62, at the peak of atmospheric atomic weapons testing. With 125,000 Floridians living within 10 miles of Turkey Point, and over 3 million within 50 miles, it is critical that such measurements be made and compared with trends in cancer.

72-22

APPENDIX 1. RPIHP RECENT PROFESSIONAL PUBLICATIONS

Recent Book Publications

1. Gould JM and members of RPHP. *The Enemy Within: The High Cost of Living Near Nuclear Reactors*. New York: Four Walls Eight Windows, 1996.
2. Mangano JJ. *Low-Level Radiation and Immune System Damage: An Atomic Era Legacy*. Boca Raton FL: Lewis Publishers, 1996.
3. Sherman JD. *Life's Delicate Balance: Causes and Prevention of Breast Cancer*. New York: Taylor and Francis, 2000.

Recent Medical Journal Articles

1. Gould JM et al. Strontium-90 in deciduous teeth as a marker in early childhood cancer. *International Journal of Health Services* 2000;30(3):153-59.
2. Mangano JJ et al. Strontium-90 in newborns and childhood disease. *Archives of Environmental Health* 2000;55(4):240-4.
3. Gould JM et al. The Strontium 90 baby teeth study and childhood cancer. *European Journal of Oncology* 2000;5(suppl. 2):119-25.
4. Mangano JJ. Inconveniens in local infant health after nuclear power reactor closing. *Environmental Epidemiology and Toxicology* 2000;2:32-6.

APPENDIX 2. RHABDOMYOSARCOMA - RARE MALIGNANCY IN CHILDREN AND ITS LINK WITH RADIATION EXPOSURE¹

Bone, teeth, blood cells, lymphoid tissue, fat cells, muscles, and fibrous tissue all originate from a single layer during fetal development called the mesenchymal. (35) Leukemia and sarcomas are malignancies derived from mesenchymal cells, (36) the latter accounting for five percent of pediatric cancers. (37) Mesenchymal malignancies in children are of particular concern because they are aggressive and result in death of approximately 50% of those affected.

Rhabdomyosarcoma (RMS) is a rare form of sarcoma derived from skeletal muscle cells, (38) with an annual incidence of 4.5 newly-diagnosed cases per million children age 15 or younger. (39) There is no known cause of RMS in children. However, it has been induced in animals exposed to radiation. (40) (31) Moreover, fetuses exposed to X-rays while in utero had twice the risk of being diagnosed with cancer as children. (30)

In a small area of Suffolk County, on New York's Long Island, at least 19 children have developed rhabdomyosarcoma. Seven children younger than 16 years old diagnosed with rhabdomyosarcoma from 1994-99 lived in a small area of eight zip codes located 10 miles west-northwest of Brookhaven National Laboratory, which operated three nuclear reactors. In addition, this area is within 60 miles of eight nuclear power reactors in New York, Connecticut, and New Jersey.

Child	Diag. Year	Age	Zip Code	Child	Diag. Year	Age	Zip Code
1	1994	16	11804*	11	1996	7	11931
2	1996	3	11767	12	1990	16	11784
3	1996	4	11780 +	13	1997	1	11050
4	1994	4	11790 +	14	1995	3	11949
5	1982	12	11741*	15	1956	6	11753*+
6	1995	16	11968*	16	1997	12	11763
7	unknown	unk	11727	17	unknown	unk.	11961/11727
8	1994	23	11752+	18	1998	15	11787
9	1994	6	11767 +	19	1999	6	11780 -
10	1994	10	11784 +				

* = deceased as of 1999 + = resident of 8 zip codes near Brookhaven National Labs

According to the 1990 census, the total population of this area was 119,150, which has not changed much since. Children ages 0 to 16 years old made up approximately 15% of that population, or 17,875 individuals; at a rate of 4.5 per million per year, about 0.48 cases would be expected from 1994-1999. Seven cases represents a rate nearly 15 times greater than expected. In 2000, the Suffolk County legislature authorized a Task Force to explore possible causes of the RMS outbreak.

¹ Appendices 2-6 prepared by Judith Sherman, M.D., RPHP Research Associate

APPENDIX 3. MECHANISM OF NUCLEAR RADIATION INJURY

Radioisotopes accumulate in various parts of the body and produce damage as they decay by release of alpha, beta, or gamma energy. An isotope's path through the body and its site of accumulation is dependent upon the chemical family to which it belongs. Beta particles, or high-energy electrons, are quickly slowed by collisions with tissue elements and their kinetic energy converted to thermal (heat) energy. (41) It is this energy, released during nuclear decay, that causes disruption of cellular membranes, alteration of DNA, changes in enzymes, and other adverse effects.

By contrast to nuclear bomb tests, which prolong the inhalation and ingestion of radioactive elements by dispersion into the stratosphere, emissions from nuclear power reactors are dispersed at low atmospheric levels and reach earth in a matter of hours, days, or weeks. Thus, Sr-90 and shorter-lived radioactive emissions enter the air, water, and food chain rapidly. Sr-90 is accompanied by isotopes such as argon, xenon, krypton, cesium, barium, and iodine, some of which have short half-lives and produce radioactive decay products that expose the embryo and fetus as well as the elderly to significant risk.

Geographical deposition of radioisotopes is not uniform, whether it is derived from bomb testing, nuclear power plants, or catastrophes such as Chernobyl and Three Mile Island. Measurement of radioactivity in rain, soil, air, and in food has confirmed an uneven distribution of Sr-90 fallout on the ground. (42) Fallout of Sr-90, Cs-137, and plutonium from the Chernobyl accident demonstrates a gradient of deposition related to distance from the source, and varying with wind, rain, and geography. (43) (44)

APPENDIX 4. RISK FROM LOW-DOSE RADIOACTIVE NUCLIDES

The often held notion that reactions to chemicals and ionizing radiation follow a linear dose-response curve is not supported by fact. While a reaction may be proportional at high doses that impair or kill, a straight-line dose-response is not borne out at low-dose exposures, (45) not when an insult occurs at the critical periods of fetal development, and during cell division and repair. (46)

Internal exposures to toxic chemicals and radionuclides below the level that kills a cell are critical: such sub-lethal exposures that alter cellular function or structure and are not repaired become expressed as cancer or functional alteration. The DES daughters and sons are prime examples. Diethylstilbestrol (DES) was administered to pregnant women in the misguided idea that it would protect against fetal loss during pregnancy. Children and now grandchildren were born with anatomic and functional genital abnormalities and developed genital cancers when they reached adulthood. (47) Cells undergoing replication are hundreds of times more susceptible to radiation and chemical effects. (48) (49)

Internal radiation may involve exposure to nuclides such as plutonium-239 and strontium-90, some fraction of which stays within a body essentially for life because of long half-lives. It also involves exposure to nuclides with a short half-life such as barium-140, cobalt-57, chromium-51, cesium-134, iodine-131, and others, which release significant amounts of radiation over a period of hours to days.

Many nuclides undergo sequential decay, an ideal condition for sub-lethal damage to promote the induction of genomic instability. (50) Thus, internal decay of such isotopes as plutonium-239 and carbon-14 deliver a biological effect of very long duration and the potential to induce genetically transmitted defects. (51) In addition, very low levels of radiation exposure demonstrate an enhanced, supra-linear effect due to the release of free radicals, resulting in functional and physiological effects, separate from genetic or mutational alteration. (52) (53)

APPENDIX 5. RADIOACTIVE STRONTIUM-90 (SR-90) IN BABY TEETH

Sr-90 is a reliably measured surrogate to determine radiological fallout because of its slow excretion from the body and a long half-life of 28.7 years. With such a lengthy half-life, Sr-90 is persistent in the environment and in the bodies of humans. The uptake of radioactive Sr-90 follows that of calcium, and becomes deposited in bones and teeth. The newborn's calcium and Sr-90 are derived from the mother's dietary intake and from her bone stores during pregnancy. (54) (57) But Sr-90 was understood before the first atomic bomb was detonated when it was proposed by Lise Meitner to use the bone-seeking isotope to poison the food supply of Germany during World War II. (55)

Measurements of Sr-90 deposited in human bones and teeth began after the onset of above-ground nuclear bomb tests in Nevada and were carried out by various governments, including the U.S. (56) (57) (58) (18) An independent, comprehensive study by the Committee for Nuclear Information measured Sr-90 levels in about 60,000 baby teeth collected from children in St. Louis. (54) (59) Comparing 1954 births with those in 1964, Sr-90 levels increased in concentration from 0.77 to 11.05 picocuries per gram of calcium. The risk to health from this contamination and concern for the health of children worldwide led to a ban on above ground nuclear testing by the U.S. and U.S.S.R., a treaty signed by President Kennedy and Premier Khrushchev in 1963.

Testing of St. Louis baby teeth ended in 1976 with the withdrawal of federal support from the project. Government agencies also supported programs of measuring Sr-90 in children's bones (1963-71) and adult bones (1954-82). Again, these programs ended when federal funding ceased.

More recent testing followed Chernobyl releases, when the Otto Ring Institute in Germany documented a ten-fold increase in Sr-90 levels in baby teeth for children born in 1987, compared with those born in 1983-85. (60) The rise in levels are comparable to the rise documented in St. Louis children, in the midst of the above-ground nuclear bomb testing era. In 1990, for unknown reasons, the U.S. Environmental Protection Agency program of reporting monthly levels of barium-140, cesium-137, and iodine-131 in pasteurized milk in 60 U.S. cities was discontinued after 53 years. Strontium-90 levels in pasteurized milk in these cities are limited to only a single annual measurement in July. (61)

APPENDIX 6. NUCLEAR RADIATION AND CHILDHOOD CANCER

The global epidemic of cancer has not lessened despite improvements in diagnosis and treatment. Since World War II, our environment has changed in significant ways. The advent of the Nuclear Age, and the increase in the manufacture, use, and disposal of petrochemical products such as pesticides, solvents, and plastic, often acting synergistically with radioactive elements, has contributed to the burden of cancer in industrialized countries.

Mimicking natural elements, a myriad of radioactive isotopes never existed in our evolutionary history until the detonation of nuclear bombs and the operation of nuclear power plants. These imposters, created in nuclear bombs and power plants, fall to earth where they are taken up in food and water of animals and humans. It is these emissions that are addressed in various articles, including one about the improvements in local infant and child health after the closing of nuclear reactors. (25)

Cell division, and thus human growth, is most accelerated during the fetal and infant periods. Thus, any cell-impairing toxin such as radiation will be most harmful to the youngest humans. Childhood cancer has long been recognized as perhaps the disease most sensitive to radiation.

The adverse effects on humans who were exposed to radicles were predictable, based upon research in the physiological, biological, chemical, and physical sciences. Thus, removal of sources of carcinogenic exposure should provide relief from the burden of disease. As predicted, improvements in infant/child health occurred dramatically and quickly after reactor closings. The following declines in local infant mortality in the first two years after reactor closing are given below. Counties downwind and less than 40 miles from the reactor are included.

Reactor, Closed	Infant Deaths		Live Births		Deaths/1000		% Change
	Before	After	Before	After	Before	After	
<u>Permanently Closed</u>							
LaCrosse WI, 1987	36	30	3507	3452	10.27	8.69	-15.4%
Rancho Seco CA, 1989	418	190	44500	49474	9.19	7.89	-16.0%
Ft. St. Vrain CO, 1989	83	72	9725	9977	8.53	7.22	-15.4%
Trejan OK, 1993	255	204	30330	29799	8.34	6.85	-17.9%
Big Rock Pt. MI, 1997	25	6*	2922	1329*	8.56	3.92*	-54.2%
Mo. Yankee ME, 1997	19	10*	3841	2201*	4.95	4.54*	- 8.3%
<u>Temporary Closing (for at least two years)</u>							
Pilgrim MA, 1986	97	76	12936	13412	7.49	5.67	-24.3%
Millstone CT, 1993	166	130	22261	2,095	7.46	6.16	-17.4%
TOTAL 8 AREAS	1097	936	130052	130877	8.54	7.01	-16.9% p<.02
U.S. AVERAGE CHANGE, 1986-1998							- 6.4%

APPENDIX 2. THE RELATION BETWEEN PICOCURIES AND DOSE IN MILLIREMS.²

Radioactivity of a substance, or the number of disintegrations per second in which some form of radiation is emitted, is measured in units of Curies or picoCuries. A Curie is the very large number of 37 billion events per second, and a picoCurie is one trillionth of this, or 0.037 disintegrations per second. Thus, Curies or picoCuries are a measure of the quantity of radioactive material. In the case of Strontium-90, which emits only electrons or beta rays, these units give the number of high-energy electrons emitted per second.

Rems or millirems (1/1000 of a rem) by contrast are a measure of the energy absorbed in tissue as a result of the emission of energetic particles like the electrons ejected from the nuclei of Strontium-90 atoms. Thus, they are a measure of the amount of biological damage produced by the radioactive material that leads to mutations or the death of immune system cells.

The damage done as measured in millirems for low levels of Sr-90 radioactivity is not only directly proportional to the radioactivity in picoCuries, but also proportional to the energy of the emitted electrons that can travel a few millimeters in tissue. Moreover, it is also directly related to the length of time during which the emission of powerful electrons takes place. Thus, the biological damage leading to cancer and other diseases is particularly great for Sr-90 because it has a fairly long physical half-life of 28.7 years, and because it also stays in bone for years as measured by its biological half-life, or the time it takes for half the Sr-90 atoms to leave the bone. This biological half-life is about 2 years for infants, and 5-10 years for adolescents and adults, so some Sr-90 will be found in an individual for many years, even when it is not constantly replaced by new ingestion or inhalation.

The dose in millirems produced in bone in the course of a year when the amount of Sr-90 is kept constant at 1 picoCurie per gram of calcium has been calculated at 4.5 millirems per year, as given on page 50 of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) of 1972. A similar result is obtained in a 1977 Nuclear Regulatory Commission publication NUREG 1-109 used by the NRC to evaluate the radiation dose to the public from nuclear plant releases.

To get a feeling for the importance of the dose of 4.5 mrem per year produced by the presence of just one picoCurie of Sr-90 per gram calcium in bone, it is important to realize that the dose due to natural sources of environmental radiation, other than radon in some homes, is about 70 to 100 mrem per year. Since some individuals have been found to have as much as ten to fifteen micrograms of Sr-90 in teeth at birth, the dose per year was more than ten times the rate of 4.5 mrem per year, or more than 45 mrem. Thus in the first three or four years of life at continuing intakes of Sr-90 from the drinking water, the diet and the air, the cumulative dose to bone was of the order of the range of 100-180 mrem.

² Prepared by Franz J. Stenglisa, Ph.D., chief scientist, RHPH

This dose has to be compared with the theoretically calculated whole-body dose produced to a maximally exposed individual by a nuclear reactor such as one of the Turkey Point Reactors in 1986 of only 0.0036 mrem per year, as listed in the 1996 NRC publication "Genetic Environmental Impact Statement for License Renewal of Nuclear Plants" (NUREG-1437).

This is 1184 times smaller than the yearly dose due to 1 picoCurie of Sr-90 per gram calcium, and 11,840 times less than the dose from one-year exposure to ten pCi/g Ca. The reason for this huge discrepancy is that in the calculation of the whole body dose by the NRC, Sr-90 is no longer measured in the environmental samples collected around nuclear plants such as milk, as it used to be required in the 1960s and 1970s.

The seriousness of this failure to measure Sr-90 in the environmental samples and thus to ascertain the actual dose to bone and bone marrow, where the cells of the immune system originate, can be illustrated by the fact that laboratory studies by Stocke et Al. (Acta Radiologica 7:321:1968) showed that significant reduction in the white cells of the immune system were measured at doses of the order of only 10 mrem produced by Sr-90.

By only calculating the total body dose *theoretically* from measurements of the stack releases into the air and not from actual measurements of environmental samples, as done in the Annual Radioactive Effluent Release Reports for the Turkey Point Units 3 and 4 for recent years (1999, 2000), only extremely small values were arrived at, such as 0.0000011 mrem per year due to airborne releases – millions of times less than the actual doses based on measured concentrations found in human teeth.

Thus, by no longer requiring Strontium-90 to be measured, either in environmental samples or humans, it has been possible for the NRC to characterize the radiation threat from the Turkey Point plant and all other nuclear power reactors as "microscopic." In this way, the NRC obscures the true magnitude of the threat to human life and health presented by fission products released into the environment.

APPENDIX B. STATEMENT BY DR. VICTOR W. SIDEL AND DR. H. JACK GEIGER ON RPLIB BABY TOOTH STUDY

After reviewing the initial findings of the Tooth Fairy Project in 1999, Dr. Victor W. Sidel, past president of the American Public Health Association, and Dr. H. Jack Geiger, past president of Physicians for Social Responsibility, stated:

"If the levels of Strontium-90 in children's teeth and the variation in levels by geographic area reported in this study are validated by appropriate repetition, these findings would appear to justify intensive follow-up and continuing large-scale surveillance. Given the biological risk associated with body burdens of even small amounts of long-lived radioactive Strontium-90, it would be prudent to regard these findings as suggestive of a potential threat to human health."

REFERENCES:

1. U.S. Nuclear Regulatory Commission, <http://www.nrc.gov/NUREGSIB.asp>. See Table 7, U.S. Commercial Nuclear Power Reactor Average Capacity Factor and Net Generation.
2. U.S. Nuclear Regulatory Commission dtd. August 12, 1999.
3. Jablon S, Hrubec Z, Boice JD, Stone HJ. Cancer in Populations Living Near Nuclear Facilities. NRC Publication No. 90-874. Washington DC: U.S. Government Printing Office, 1990.
4. Hardy MC, Steyer J, Nissen JW, Szeer ML. Cancer near the Three Mile Island nuclear plant: radiation emissions. *American Journal of Epidemiology* 1993;137(3):397-412.
5. Johnson CJ. Cancer and infant mortality around a nuclear power plant. *American Journal of Public Health* 1993;75(10):1218.
6. Sharp L, McKinney PA, Black RJ. Incidence of childhood brain and other non-haemopoietic neoplasms near nuclear sites in Scotland, 1975-94. *Occupational and Environmental Medicine* 1999;56(5):306-14.
7. Hsieh C, Cato MS. Death rates from leukaemia are higher than expected in areas around nuclear sites in Berkshire and Oxfordshire. *British Medical Journal* 1997;315(7105):309.
8. Black RJ, Sharp L, Harkness FF, McKinney PA. Leukaemia and non-Hodgkin's lymphoma incidence in children and young adults resident in the Dumfries area of Carlisle, Scotland in 1958-91. *Journal of Epidemiology and Community Health* 1994;48(7):532-6.
9. Draper CJ, Siller CA, Cartwright BA, Craft AW, Vincent JS. Cancer in Cambridgeshire in the vicinity of the Sellafield nuclear installation, 1963-90. *British Medical Journal* 1995;306(6870):89-94.
10. Goldsmith JR. Nuclear installations and childhood cancer in the UK: mortality and incidence for 0-9 year-old children, 1971-1990. *Science in the Total Environment* 1992;127(1-2):13-35.
11. Kinton LJ, Hudson CM, Siller CA. Correlations between adults as evidence for an infective origin of childhood leukaemia: an explanation for the excess near nuclear establishments in West Berkshire? *British Journal of Cancer* 1991;64(2):549-54.
12. Fooks PJ, Hows L, Phillips MJ, Johnson SA. Incidence of leukaemia in young people in the vicinity of Hinkley Point nuclear power station, 1959-86. *British Medical Journal* 1989;299(6694):289-95.
13. Cook-Mozaffari PJ, Derby SC, Dall R, Forster D, Henman C, Pike MC, Vincent J. Geographical variation in mortality from leukaemia and other cancers in England and Wales in relation to proximity to nuclear installations, 1969-78. *British Journal of Cancer* 1989;59(2):475-85.
14. Rozman E, Baral V, Catalano L, Wilson A, Barlow C, Nyder H, Aston DL. Childhood leukaemia in the West Berkshire and Dorset and North Hampshire District Health Authorities in relation to nuclear establishments in the vicinity. *British Medical Journal* 1987;294(6572):597-602.
15. Forster D, Cook-Mozaffari P, Derby S, Davey G, Minton J, Dall R, Pike M. Cancer near nuclear installations. *Nature* 1987;229(528):499-505.
16. Hironaka MA, Kemp DR, Orphan JD, Hsieh R. Childhood leukaemia in northern Scotland. *Lancet* 1986;1(8475):266.
17. Rosenthal DL. Accumulation of environmental 90-Sr in teeth of children. *Proceedings of the Ninth Annual Harford Biology Symposium. In Radiation Biology of the Fetal and Juvenile Mammal*, edited by MR Sikov and DD Mottlitt. U.S. Atomic Energy Commission, December 1969.

18. Kluck CS. *Strontium-90 in Human Bowls in the U.S., 1962*. EML-155. New York: U.S. Department of Energy, 1984.
19. Solubility BE. *Scavenger of the world pacific curb U-beach*. The New York Times, October 16, 1956: A1.
20. Gould JM, Sternglas LJ, Sherman JD, Brown J, McDonnell W, Shauman J. Structure-90 in cordons: effects on a B6or In early child cancer. *Integrat Oncol. Journal of Health Services* 2000;2(2):515-39.
21. Mancini JJ, Sternglas LJ, Gould JM, Shauman JD, Brown J, McDonnell W. Strontium-90 in newborns and childhood disease. *Archives of Environmental Health* 1990;35(4):240-4.
22. Gould JM, Sternglas LJ, Mancini JJ, McDonnell W, Shauman JD, Brown J. The strontium-90 baby teeth study and childhood cancer. *European Journal of Oncology* 2000;5:119-25.
23. New York State Cancer Registry, data produced April 21, 1999.
24. Brookhaven National Laboratory. *Radioisotopic Materials Released from Nuclear Power Plants*. NUREG-R-2977, annual reports.
25. Mancini JJ. Improvements in fetal infant health after nuclear power reactor closing. *Environmental Epidemiology and Toxicology* 2000;3:35-36.
26. Jablon S, Hrubec Z, Dejeu JD. Cancer in populations living near nuclear facilities: A survey of mortality nationwide and incidence in two states. *Journal of the American Medical Association* 1991;265(11):1403-1408.
27. Committee on the Biological Effects of Ionizing Radiation. *Health Effects of Exposures to Low Levels of Ionizing Radiation (BEIR V)*. National Research Council. Washington DC: National Academy Press, 1990.
28. DeJ J. Trends in the incidence of childhood leukemia between 1961 and 1985 and trends in radiation exposure in parents. *Health Reports* 1991;5(1):111-115.
29. Arad CAS, Chur WM. *Children and adolescents: tumors of childhood and adolescence*. New England Journal of Medicine 1999;341(5):342-352.
30. Griffenman S, Gula MI, O'Shan AF, Fallica JM, Anderson TW, Buckley J, Minor HM. In utero X-ray exposure and risk of childhood thymic lymphoma. *Pediatric Perinatology and Epidemiology* 1991;5:66-67.
31. Gupta A, Andrews KL, McDaniel KM, Nagle RB, Bowden GT. Experimental induction of thymic lymphomas in mice with irradiated doses of B-irradiation. *Journal of Cancer Research and Clinical Oncology* 1999;125:257-267.
32. National Cancer Institute. *Party-Five Years of Cancer Incidence in Connecticut: 1935-79*. NIH Publication No. 86-7657, Washington DC: U.S. Government Printing Office, 1976.
33. Centers for Disease Control and Prevention. *National Health Interview Survey, annual reports*. In *Health United States 1996-97 and Injury Chartbook*. NCHS Publication No. (PHS) 97-1252. Hyattsville MD: Centers for Disease Control and Prevention, 1997.
34. Unpublished data from state cancer registries in Connecticut, Delaware, Florida, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, and Rhode Island.
35. Arey LD. *Developmental Anatomy*, 6th Edition. Philadelphia: W. B. Saunders, 1954: 341-345.
36. Goffman JW. *Radiation and Human Health*. San Francisco: Sierra Club Books, 1981:142-143.
37. Koefoed AM (ed). *Koefoed's Paediatrics*. Stamford CT: Appleton and Lane, 1996:1297.
38. Helman DR. Rhabdomyosarcoma: an overview. *Oncologist* 1999;4(1):34-44.
39. Dagher J, Helman L. Rhabdomyosarcoma: an overview. *Oncologist* 1995;4(1):34-44.
40. Rhee H, Wajsborn L, Zimmer AV, Hof L, Miller G, Kramer A. Rhabdomyosarcomas and radiation hypersensitivity in a mouse model with Gata3 syndrome. *Nature Medicine* 1998;4(5):619-623.
41. Taira G, Powell L, 10.
42. U.S. Congress, Joint Committee on Atomic Energy. *Summary Analysis of Hearings, May 5-8, 1959*. Washington DC: U.S. Government Printing Office, 1959.
43. Byr L.A. Radio-contamination paths and possible health consequences of the accident at the Chernobyl nuclear power station. *Journal of Radiological Protection* 1989;10:4-20.
44. Scholz R. 28-29.
45. Seitz JA, McMillan MA. *Innovations in Cancer Risk Assessment (EBC-01 Study)*. National Center for Toxicological Research, U.S. Food and Drug Administration, Park Forest, South IL: Pathotex Publishers, 1999.
46. Sluzenski JD. *Life's Delicate Balance: Causes and Prevention of Disease*. New York: Taylor and Rowledge, 2000.
47. Sherman JD. Structure-activity relationships of chemicals causing endocrine, reproductive, cytotoxic, and oncogenic effects: a public health problem. *Toxicology and Industrial Health* 1994;10(2):163-179.
48. Kirby C. *Wings of Death: Nuclear Fallout and Human Health*. Aberystwyth, Wales: Green Audit, 1995.
49. Sinclair WK, Murtin RA. X-ray sensitivity during the cell generation cycle of cultured Chinese hamster ovary cells. *Radiation Research* 1966;29:50-57.
50. Madhesil C, Seyerstor CB, Lutzar. *unfertilized and genetic stability*. *International Journal of Radiation Biology* 1997;71:751-757.
51. Wright EG, Marsden SC, Lockman SA, et al. Alpha emitters inducing lesions in stem cells, but can result in transmission of chromosome instability to their progeny. *Karato* 1994;155:6362.
52. Helman A. Effects of 22 Na+ on phospholipid membrane injury to irradiated erythrocytes. *Radiation Research* 1968;30:155-166.
53. Sternglas LJ. Implication of dose-rate dependent cell-membrane damage for the biological effects of medical and environmental radiation. *Proceedings of the Symposium on Population Exposure, Knoxville TN, October 21-24, 1974*. HHS-741018.
54. Reza LC. Strontium-90 absorption by deciduous teeth. *Science* 1961; 134:1669-1673.
55. Rhodes R. *The Making of the Atomic Bomb*. New York: Simon and Schuster 1986: 310-311.

57. Kemp JR, Eckelmann J, Schuler AR. Strontium-90 in man. Science 1957; 125:219-224

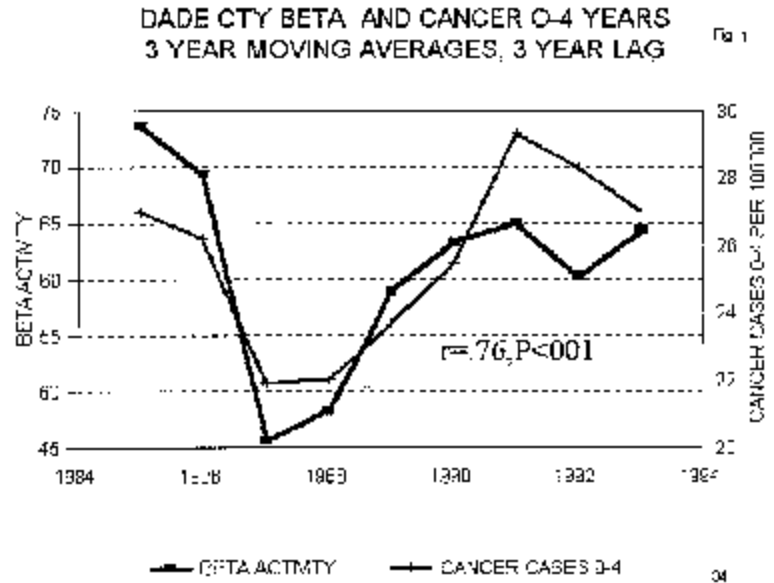
58. Weiss ES, Lind WH, Falter KH, Aronow RM. Strontium-90 content of human bones. 1961-1962. Radiological Health Data. May 1961;201-219.

59. Darzatta EF, Ferri ES, Will MA. Strontium-90 in human bones in the United States, 1962-1966. Radiological Health Data and Reports. April 1970; 18-18A

60. Hamman B. The Closing Circle: Nature, Man, and Technology. New York: Alfred A. Knopf 1972. 199-200.

61. Scholz R. Ten Years After Chernobyl: The Rise of Strontium-90 in Baby Teeth, Munich, Germany; The Octo Hug Radiation Institute (Available in English translation from the Radiation and Public Health Project, 302 West 86th Street, N.Y. New York, NY 10024).

62. U.S. Environmental Protection Agency. Environmental Radiation Data. Montgomery, AL, 1991



TPD 73



ALEX PENTAS
Mayor

OFFICE OF THE MAYOR
MIAMI-DADE COUNTY, FLORIDA

Good Evening,

I would like to welcome the members of the Nuclear Regulatory Commission (NRC) to Miami-Dade County and thank them, again, for their professional and diligent contribution to the very important and controversial issue we are reviewing a copy of the Draft Supplement 5, "Generic Environmental Impact Statement," which was prepared after much careful analysis by the NRC. I am in close contact with our residents and employees that concern the operating license of the Turkey Point Nuclear Plant in the most positive environmental option to help meet the growing energy needs of South Florida.

I would like to explain why I support the license renewal of the Turkey Point Nuclear plant.

- 73-1 Miami-Dade County is a growing community with increasing demands for electricity. By approving the license, Turkey Point Nuclear Plant will be able to provide South Florida with safe, clean, reliable and economical electricity well into the 21st century.
- 73-2 Turkey Point Nuclear Plant is one of the safest and most advanced nuclear plants in the country as judged by its regulators and its peers. It has consistently met safety standards set by the Nuclear Regulatory Commission and by the Institute of Nuclear Power Operations.
- 73-3 Miami-Dade County has a very strong record of its commitment to protect its natural environment. The Turkey Point employees have developed a unique stewardship of the environment in the region surrounding the Plant by preserving the natural habitat which provides homes to many endangered species, including the American Crowsfoot.
- 73-4 Miami-Dade County is a diverse community with many needs. The Turkey Point employees are teaching neighbors to communicate concerning the Plant. Its employees make significant contributions to the community and their organizations.
- 73-5 Turkey Point Nuclear Plant is the largest private employer in the region with over 800 employees and its purchase of local services helps sustain the economy of South Miami-Dade County.

I appreciate being able to meet with you for this meeting and to discuss the license renewal application. Feel free to call me at (305) 375-5971. Thank you.

Sincerely,

Alex Pentas
Mayor

HL 012370469

MIAMI-DADE COUNTY CLERK, 111 N.W. 11TH STREET, SUITE 4010, MIAMI, FLORIDA 33136-1994 (305) 375-5971 FAX (305) 375-3418

TPD 74

LEONARD S. ANTHONY
14820 Naranja Lakes Blvd.
Apt. PH
Homestead, FL 33032
Phone 305 245 7014

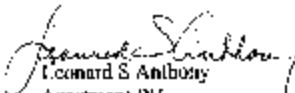
July 17, 2001

Testimony in support of the TPL application for renewal of Operating License

I am Leonard S. Anthony, and I reside at 14820 Naranja Lakes Boulevard, Homestead. This is actually the Naranja area of unincorporated Miami-Dade County located within the ten mile radius of the Turkey Point Power Plant in South Florida.

- 73-1 I am testifying on my own behalf, at this time. As a resident in this area, I have no personal safety concerns as I believe, and note that the Supplement 5, regarding Turkey Point Operating Units 3 and 4 to the "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" assigns a "total" significance to the potential for a nuclear accident. The plant has been recognized as having a stellar performance record in the past decade of years with little anticipation of degradation of this status in the foreseeable future.
- 73-2 It has been recognized that refurbishment has occurred subsequent to Hurricane Andrew in 1992 and no further recommended extensive refurbishment is noted as anticipated or recommended in the supplement to the GEIS as necessary to protect the environment.
- 73-3 Although the Supplement to the GEIS does not address need, it should be noted that alternative fuel "peaker" electricity generating plants have already initiated discussions with multiple local municipalities or communities for the construction of new plant(s) within our immediate geographical areas. Albeit that the current electrical power production at Turkey Point Power Plant (all four (4) units) appear to serve our entire immediate and foreseeable future near-term needs, South Miami-Dade County affords the most logical areas for further residential and light industrial development. Coupled with the uncertainties about the future redevelopment of the excess lands at the former Homestead Air Force Base and the reasonably available of undeveloped and/or agricultural lands in the area, there will be a continuing and probable greater need for all the electrical power currently generated with a need for future plant(s) or capacity to serve the still growing community. If this power need, current and future, is not conveniently met by existing plants, including Turkey Point units 3 and 4, there will then be a reliance on new fossil fuel burning plants at several new locations whose environmental operational pollution potentials are far more potent than nuclear generated power will generate. With the prospects of new nuclear powered electrical plants being built and licensed being almost nil in this country, we have only lost plants not gained new ones in the past decade, one must seemingly rely on only fossil fuel electrical generating plants.

- 4. We, who are interested and concerned about the sensible inevitable development in our area, must seek to preserve the good non-polluting electrical power plants rather than look to replace them with far more potentially environmental polluting plants at several disparate locations.
- 5. The anticipation is that Units 3 and 4 at the Turkey Point Operating Plant will continue to be maintained in their excellent operating condition and that their outstanding safety operating record can be extended throughout the requested licensure period and through even another subsequent licensing period as Supplement 5. Regarding Turkey Point units 3 and 4 to the Generic Environmental Impact Statement forecasts.
- 6. Thank you for this opportunity to appear before you and elaborate my perceptions of the continued need for the operation of these critical electrical power generating units at Turkey Point. I support and endorse the relicensure of the units at Turkey Point.


 Leonard S. Anthony
 Apartment PH
 14820 Naranja Lakes Boulevard
 Homestead, Florida 33032-8338

TPD 75

NARANJA LAKES CONDOMINIUM NO. 5, INC.
 14840 Naranja Lakes Boulevard
 Homestead, FL 33032
 Phone 305 247 0292
 Fax 305 247 4085

July 17, 2001

TESTIMONY
 FPL LICENSE RENEWAL -2001

74-2

- 1. I am Leonard S. Anthony, and I reside at 14820 Naranja Lakes Boulevard, Homestead, Florida 33032. I am here in my role as President of the Board of Directors of our Condominium Association. We are a local Association of four mid-rise buildings comprising 241 units or apartments. Our Board represents the 241 families that own these apartments. This is the second presentation we have made, the first being in December 2000.
- 2. At our June meeting of the Board of Directors, I was authorized as the representative of the Board to extend our support and endorsement of the FPL application for license renewal that they are seeking. 75-1
- 3. We have been here for almost thirty years, survived and rebuilt after Hurricane Andrew in 1992 when most of our immediate neighborhoods were totally devastated – and still are wastelands. We look forward to the future redevelopment of those devastated neighborhoods and note the need for ample power to support that redevelopment. At the December 2000 scoping hearing, we recognized the need for ample electrical power in the near-term and in the future. The recent arrival of potential projects for electrical power ‘peaker’ plants using fossil fuels emphasizes this need. With their added potential for usage of federal 25% exemption emission permits, we can expect much acid rain should they ever be authorized and constructed- nor so with nuclear power.
- 4. We, the Board, note with interest and state the following:
 - A. The electrical service has been provided at a reasonable and relatively stable cost. Compare this to the recently wildly fluctuating costs of fossil fuels –especially petroleum and natural gas-generated electrical power and the chaos existing in California and elsewhere in the West.
 - B. FPL has not operated detrimentally to the environment even in their periods of heavy power generation as the Supplement 5 regarding the Turkey Point Operating Units 3 and 4 of the Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants (GEIS). Their cooling canals do not actively interface with the immediately adjacent Biscayne Bay in that they use self-contained land-locked cooling canals, incidentally providing breeding grounds for crocodiles and other wildlife in their extensive land holdings, and generally protecting the environment, and being community sensitive to even permitting use of selected lands for recreation, etc. 75-2
75-3

- C. FPL has an impressive safety record – many times cited by the NRC – as one of the safest and most reliable plants in the U.S. 75-4
- 7. We, the Board of Directors of Naranja Lakes Condominium Number 5, on behalf of the 241 apartment owners recommend the relicensure of FPL when their current license expires, so that they may continue to be the excellent community asset that they have been throughout our existence and on into the future. 75-5

End

*For the Board
 Edward S. Anthony
 President, Board of Directors*

TPD 76

Johnnie Randles

My name is Johnnie Randles and I have lived in homestead for 18 + years. Located about 24 miles south of Miami and 9 miles east of Homestead their is approximately 22,000 acres and is home to Turkey Point Plants.

This is my first time to come before the NRC to voice my support for the Turkey Point license renewal. 76-1

What would we not have with out this plant?

- A wild life reserve 76-2
- Power for our homes
- A cleaner environment
- Jobs to support the community
- support for hundreds of business in the way of jobs and material that is purchased.
- Cheaper electrical bills

What have we gained since this plant has been here?

- Financial security for employees, contractors and support business who employ several thousand people. 76-3
- A stable cheaper power for our homes and business.
 - ❖ Turkey Point is the lowest cost producer of electricity in the FPL system. 76-4
- Look at what happened in California, it's not what we want! We need electricity. . . it drives our economy; it preserves and expands our quality of life; and it can shape our future
 - * Florida energy demands are growing about 2 percent annually.
 - * Electricity provided from Turkey Point powers an area from Miami International Airport and south. 76-5
 - * Each unit produces 693 Million Watts of electricity.
- . And that means we need the power from Turkey Point Nuclear Power Plant.

We have Protection of the some of the last salt water crocks and rare bird of south Florida. 76-6

✓ There are many reasons why the plant should continue operating, but all those reasons would disappear if the plant didn't prove itself in one area and that's safety.

*Turkey Point is rated as one of the safest and most reliable nuclear power plants in the US and world. I know this to be true, I work there and feel safe doing so.

• Planning for the future is what renewing the Turkey Point license is all about. But it's about more than just the plant's future. It's about renewing the community's future as well. There are vital connections that link Turkey Point to our economy, to a cleaner environment, and most importantly, to the human network in our churches, school and youth organizations.

• , it's power. . . it's people. . . are what makes the promise of a better future. The plant is already here – let's use an existing resource to meet the community needs. I support the renewal of the Turkey Point license for safe, clean and affordable electricity.

76-7

76-8

TPD 77



Joe Breh
Governor

Robert Emox, M.D.
Secretary

July 17, 2001

Dear interested Parties:

Much concern has been related to us about statements made by Radiation and Public Health Project, Inc. (RPHP) in a March 28, 2001 announcement. RPHP has implied that there are large increases over time in cancer rates in southeastern Florida counties and they attribute these increases to radiation exposure from the Turkey Point and St. Lucie power plants.

77-1

The Florida Department of Health takes these assertions seriously and has reviewed the data used by RPHP regarding cancer rates in southeast Florida. Using this data to reconstruct calculations and graphing the results, we have not been able to identify any unusually high rates of cancers in these counties. Attached is the Bureau of Environmental Epidemiology report addressing the data and the RPHP findings.

Should you need any further clarification, please feel free to contact me at (888) 245-4289.

Sincerely,
David R. Johnson
David R. Johnson, M.S., M.S.
Bureau Chief of Environmental Epidemiology

cc: Bill Parizek, OOH Communications

Report Concerning Cancer Rates in Southeastern Florida

By

Bureau of Environmental Epidemiology
Division of Environmental Health
Florida Department of Health

This report addresses statements made by the Radiation and Public Health Project, Inc. (RPHP) in a March 28, 2001 announcement regarding cancer rates in southeast Florida. These statements implied that there are large increases over time in cancer rates in Southeastern Florida counties and attributes those increases to radiation exposure from the Turkey Point and St. Lucie power plants. Each power plant has 2 nuclear reactors on site. The first Turkey Point reactor began operation in December 1972. The second Turkey Point reactor started operating in September 1973. The first St. Lucie reactor began operating in December 1976; the second in August 1983.

Members of the Bureau of Environmental Epidemiology, Division of Environmental Health, Florida Department of Health discussed with a representative from RPHP the manner in which RPHP analyzed data as a basis for the statements. From this discussion, members of the Bureau of Environmental Epidemiology reconstructed the RPHP calculations of cancer rates using the data and data sources provided by the RPHP. These sources included Cancer Mortality Statistics as made available through CDC Wonder, the Florida Cancer Data System (FCDS) and the National Cancer Institute (NCI). Data from the Surveillance, Epidemiology, and End Results (SEER) based within the NCI was also used in evaluating incidence rates. The data and calculations were then reviewed and interpreted by epidemiologists in the bureau.

In the following sections, statements made by the RPHP regarding cancer rates are followed by DOH findings and interpretations. Because health statistics data are often expressed as units per thousand population or in the case of cancer, per hundred thousand population, one has to be careful in interpreting trends. Changes in rates look larger in smaller counties due to the lower population figures (in some counties, less than 100,000). In these cases, the rates are greatly influenced by the lower population counts. When the changes in rates are expressed as percentages, these changes will appear to be even more magnified.

RPHP Statement 1: "In 1983-84, the first two years that the St. Lucie 2 reactor operated, infant deaths in St. Lucie rose 35.3%."

Bureau of Environmental Epidemiology Calculations and Interpretations: Our analysis does not confirm this statement. Figure 1 shows that the infant death rates decreased after the time that the second St. Lucie reactor started operating. The rates fluctuated in the following years and a general declining trend is observable. These fluctuations in rates are often simply a result of very low counts both in the numerator and denominator when rates are being computed. A comparison between the trend plot of St. Lucie and U.S. infant mortality rates which is smoother because of the larger numbers involved confirms this statement. Overall, this data does not support the alleged relationship between the operation of the second St. Lucie reactor and an increase in infant mortality rates.

RPHP Statement 2: "In 1983-84, when the Turkey Point reactors were mostly closed for repairs, infant deaths in Broward and Dade Counties fell 19.1% compared to only 6.4% in the U.S. The following two years, when Turkey Point returned to full power, the local infant death rose 1.2%."

Bureau of Environmental Epidemiology Calculations and Interpretations:

The two-year average infant mortality rate fell from 13.32 per 1,000 in 1981-82 to 10.79 per 1,000 in 1983-84 (for a decrease of 19%). From 1983-84 to 1985-86 it increased to 10.91 per 1,000 (or an increase of 1.2%) but in 1987-89, it decreased by 1.2%. Figure 2 indicates that while the reactors continue to operate, the infant mortality rate has declined in these counties. The decline follows a similarly declining pattern in the state and the country.

RPHP Statement 3: "Since 1950, (white female) breast cancer mortality rose significantly in the counties near Turkey Point and St. Lucie reactors (up 26% near Turkey Point, up 55% near St. Lucie, compared to a 1% US increase)."

Bureau of Environmental Epidemiology Calculations and Interpretations:

To support this statement, the RPHP presented a table of age-adjusted white female breast cancer mortality rates of 10 selected counties, the state of Florida and the U.S. The RPHP table is appended as Table 1. These 10 counties are part of 18 counties that RPHP has stated to be within a range of exposure to emission from two power plants that are located in Turkey Point and St. Lucie. The 10 counties were divided into two groups: the St. Lucie group and the Turkey Point group. We assume that this grouping is in accordance with their proximity to the power plants. The St. Lucie group was composed of the following counties: St. Lucie, Brevard, Indian River, Okeechobee, and Ocala. The Turkey Point group was composed of Dade, Monroe, Broward, Palm Beach and Collier counties.

When accessing the data provided by the RPHP we found that CDC Wonder only provides mortality rates starting from 1979. The RPHP representative then informed us that the data for calculating the mortality rate for earlier time periods (1950-1954) was obtained separately from the National Cancer Institute (NCI). We asked RPHP for a copy of their data or a copy of their data request from NCI so we could make a similar request. We did not receive either from RPHP and were told to deal directly with NCI. The data we obtained from NCI was composed of rates in five-year increments (1950-54, 1955-59, etc. until 1990-1994). Although requested, NCI did not provide rates for counties that had less than 8 breast cancer deaths over a five-year period. We therefore did not receive cancer rates for St. Lucie for 1950-54; Okeechobee from 1950-54 to 1980-89; and Collier from 1950-54, to 1980-84. We also requested but did not receive the combined rates of the St. Lucie group and the Turkey Point group.

Using data from NCI, we recalculated the percentage changes in breast cancer mortality rates in those counties in the St. Lucie group and the Turkey Point group for the various five-year time periods. We could not recalculate the RPHP claim of 221% and 263% increases in the breast cancer mortality rate in St. Lucie from 1950-54 to 1980-84 and from 1950-54 to 1985-89, respectively, due to inadequate data as described above. We also could not recalculate the RPHP claims of a 55% increase for the St. Lucie group and a 26% increase for the Turkey Point group for the same reason. For counties where we had data, our recalculated percentage results did not significantly differ. However, RPHP assumed that breast cancer mortality rates increased in a linear pattern from 1950 to the present time. To verify this assumption, we plotted the breast cancer mortality rates in each of the 10 counties over time. Figures 3-12 show that the rates in these 10 counties actually fluctuate over time rather than increasing in a linear manner. The fluctuations in smaller counties are wider than those in larger counties suggesting

that these rates are influenced by the size of the underlying denominator. In other words, percent changes become magnified in smaller counties due to the small number of cases and population being analyzed. Since rates for cancer are reported per 100,000, in age groups or counties with smaller populations (less than 100,000) even one case will make a big difference in the rates, magnifying the fluctuations in trend plots. Figures 3-12 also show that, for most time periods, the rates of each individual county (for the periods which we have data) are consistently lower than U.S. rates. Generally, the rates in the 10 counties appear to fluctuate around Florida rates and increase at about the same pace as the overall Florida state rates.

It is important to note that Table 1 shows that the breast cancer age-adjusted mortality rates in southeastern Florida (as summarized by 18 counties) for the time period 1950-54 to 1986-89 are comparable to the rest of the state of Florida and consistently lower than the U.S. rates.

RPHP Statement 4: "In the 1990s, the cancer mortality rate in young adults age 15-34 in these five southeastern counties has risen, in contrast to a decline in the US. Increases were particularly large for breast cancer, bone and blood cancer each especially sensitive to radioactivity."

Bureau of Environmental Epidemiology Calculations and Interpretations:

Breast Cancer:

Breast cancer mortality rates among all women aged 15-34 were graphed by year in Figure 13. Observation of this graph does not confirm the statement regarding rising breast cancer mortality in this age group. In 1990, the breast cancer mortality rate in the 15-34 age group in these five counties was 2.71 per 100,000. In 1998, it was 2.05 per 100,000. In between these years, the rates fluctuated from 2.39 per 100,000 (1991) to 1.28 per 100,000 (1993). In 1990, the US rate was 1.62 per 100,000 and in 1998, it was 1.36 per 100,000. Between these years, the rates have fluctuated from 1.68 per 100,000 (1991) to 1.41 per 100,000 (1997).

Bone Cancer

Figure 14 shows an annual fluctuating pattern in the mortality rate for bone cancer in the 15-34 age group in these counties. Observation of this graph does not confirm the statement regarding rising bone cancer mortality in this age group. In 1990, the bone cancer mortality rate in the 15-34 age group in these five counties was 0.16 per 100,000. In 1998, it was 0.40 per 100,000. In between these years, the rates fluctuated from .09 per 100,000 (1991) to 0.84 per 100,000 (1997). In 1990, the US rate was .29 per 100,000. In 1998 it was 0.34 per 100,000. Between these years, the U.S. rates have fluctuated from 0.31 per 100,000 (1993) to 0.36 per 100,000 (1997). Bone cancer deaths in this age group are quite rare and expressing changes as percentages masks the low numbers involved.

Blood Cancers

Blood cancers as defined by the RPHP include all leukemias and lymphomas (ICD-9 codes 200.0 to 208.9). In 1990, blood cancer mortality rate in the 15-34 age group in these five counties was 2.63 per 100,000. In 1998, it was 3.19 per 100,000. Between these years, the rates fluctuated from 2.81 per 100,000 (1994) to 4.38 per 100,000 (1997). In 1990, the US rate was 2.92 per 100,000. In 1998 it was 2.37 per 100,000. In between these years, the rates have fluctuated from 2.52 per 100,000 (1997) to 2.95 per 100,000 (1992).

Figure 15 shows that starting in 1994, the appearance of a slight upward trend can be noted in the age specific blood cancer mortality rates in the five counties. During the same period, the U.S. rates appear to be declining. Since this is relatively recent, we cannot be certain if this increase will be sustained or if it represents expected fluctuations in rate amplified by the relatively small underlying population. Based on currently available data, epidemiologists in the Bureau of Environmental Epidemiology calculated the age specific mortality rate in 1999 to be 2.83 per 100,000, a decrease in the rate from 1998.

RPHP Statement 5: "From the early 1980s to the late 1990s (actually "early 1990" in the RPHP statement but corrected to "late 1990" by the RPHP representative), cancer incidence in children under 10 rose 35.2% in five southeastern counties (Broward, Dade, Martin, Palm Beach and St. Lucie), compared to a 10% rise in the US."

Bureau of Environmental Epidemiology Calculations and Interpretations:

Figure 16 shows that from early 1990 (defined by the RPHP representative as 1991 to 1993) to late 1990 (defined as 1996 to 1998) the childhood cancer incidence rates for southeast Florida rose from 15.35 to 20.27 per 100,000 or 32%, when comparing just these two time periods. A simple comparison between the two time periods is misleading due to the apparent annual fluctuations. For the SEER regions, incidence rate for the same two time periods rose 14.6% (from 14.05 to 16.1). Although the incidence rates in these 5 counties in southeast Florida are slightly higher than the SEER rates, they are not higher than the incidence rates for the rest of Florida, rather, they are consistent with childhood cancer incidence for 0-9 year olds in the rest of the state of Florida. This data does not suggest an increased incidence of childhood cancer unique to southeast Florida.

Additionally, based on currently available data, epidemiologists in the Bureau of Environmental Epidemiology calculated the 1999 cancer incidence rate for age 0-9 year-olds for these 5 southeastern counties to be 16.4 cases per 100,000, a rate that is lower than 1998. The most recent available U.S. cancer data is for 1998, which shows that the cancer incidence rate for this age group is 16.8 cases per 100,000.

RPHP Statement 6: "In the same period, from the early 1980s to the late 1990 (actually "early 1990" in the RPHP statement but corrected to "late 1990" by the RPHP representative), an enormous 325.3% increase in childhood cancer took place in St. Lucie County increasing the current rate in this area to more than double the national average."

Bureau of Environmental Epidemiology Calculations and Interpretations:

It appears that the RPHP is basing their statement of an increase by comparing only two points in time, the aggregate rates from 1981-83 to those of 1998-98. However such a comparison is only valid if the relationship of rates and time from 1980 to late 1990 is linear. Figure 17 shows that an assumption of a linear relationship is not tenable. Rather, there are large fluctuations in rates at different points in time. The childhood cancer rates in St. Lucie fluctuate by year with some years showing lower rates than the Florida and national rates, and some years higher. A simple comparison between two points in time is misleading.

As previously indicated, wider fluctuations in rates are observed in smaller counties due to smaller underlying populations. In this case, the population is even smaller than the county population since only children ages 0 to 9 in St. Lucie are being examined.

Fluctuations in annual cancer rates, rather than a sustained increase, occur in St. Lucie County after a second reactor was added to the St. Lucie plant in 1983. Consistently higher rates would have been expected if the assumption of increased risk with an additional reactor were true. In this case, no sustained increased rate is observed.

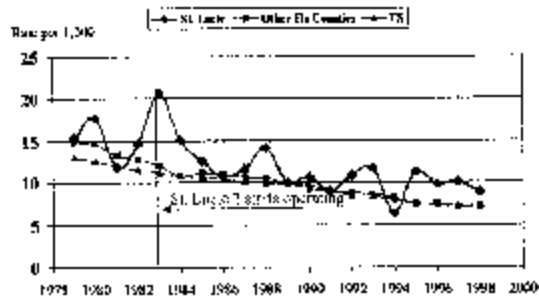
Based on currently available data, epidemiologists in the Bureau of Environmental Epidemiology calculated the 1999 cancer incidence rate for age 0-9 year-olds in St. Lucie County to be 4.4 cases per 100,000, showing a marked decreased rate and continuing the pattern of fluctuation of rates from 1998 to 1999.

Summary:

In summary, we reconstructed the calculations made by the RPHP using the same data from which they base their claims. RPHP claims that there are striking increases in cancer rates in southeastern Florida counties and attributes these increases to radiation exposure from nuclear reactors. Using this data to reconstruct calculations and graphing our findings, we have not been able to identify unusually high rates of cancers in these counties. As we would expect, just by chance, some county rates appear higher than state and national trends and some appear lower. These rates fluctuate from year to year and in some situations, large fluctuations occur with a small number of cases and small underlying county populations. One has to use careful scientific and objective evaluation of these fluctuations to avoid misinterpretation. Careful analysis and observation of the data presented here does not support the alarming claims made by the RPHP regarding cancer mortality rates and trends in southeastern Florida counties when compared with the rest of the state of Florida and the nation.

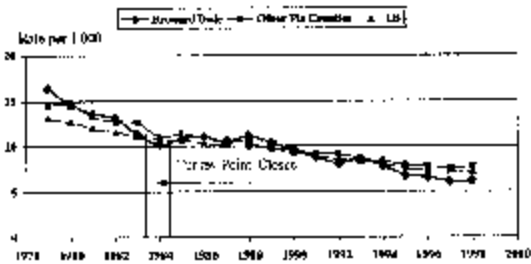
Appendix

Figure 1. Infant Mortality Rates in St. Lucie County, Other Florida Counties and the US, 1979-1998



St. Lucie 1: 12/76; Turkey Point 3: 12/72; Turkey Point 4: 9/73
 Source: CDC Wounder Infant Mortality

Figure 2. Infant Mortality Rates in Broward-Dade, Other Florida Counties and the US, 1979-1998



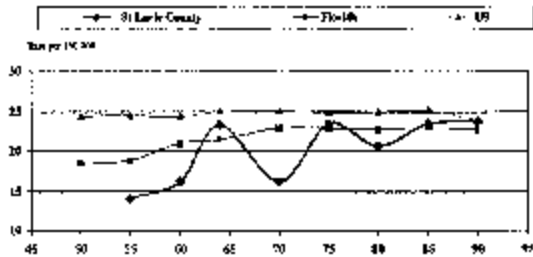
St. Lucie 1: in operation since 12/76; St. Lucie 2: since 12/77; Turkey Point 3: since 12/72; Turkey Point 4: since 9/73
 Source: CDC Wounder Infant Mortality

Table 1. Age Adjusted Breast Cancer Mortality Data Provided to DOH By the Radiation and Public Health Project Inc.

St. Lucie 1 and 2 and Turkey Point 3 & 4										
WHITE FEMALE BREAST CANCER MORTALITY RATES 1950-98										
COUNTIES WITHIN 50 AND 100 MILES OF ST. LUCIE AND TURKEY POINT										
DEATHS PER 100,000										
FIPS Code	County	ST	Age-Adjusted Mortality Rates	Percent Change	Number of Deaths					
			1960-84	85-89	90-94	95-99	1960-84	85-89	90-94	
ST LUCIE										
12111	ST LUCIE	FL	6.5	20.7	23.5	221%	263%	3	74	112
12009	BREVARD	FL	18.8	24.4	26.9	30%	43%	18	262	387
12061	INDIAN RIVER	FL	17.2	19.3	24.8	12%	42%	6	67	97
12083	OSCEOLA	FL	30.1	22.5	13.3	-26%	-56%	2	14	8
12097	OSCEOLA	FL	14.4	27.1	24	89%	67%	10	52	70
TOTAL 5 COUNTIES			18	23.2	24.8	48%	55%**	37	479	649
TURKEY POINT										
12025	DADE	FL	20.1	24	23.3	20%	16%	302	1,147	1,474
12067	MONROE	FL	14.3	21	21.2	47%	49%	7	51	52
12011	BROWARD	FL	15	22.8	24.1	52%	60%	52	1,065	1,283
12088	PALM BEACH	FL	16.6	24	23.9	44%	44%	58	686	813
12021	COLLIER	FL	22.8	23.5	21.5	3%	-9%	3	95	135
TOTAL 4 COUNTIES⁽¹⁾			18.8	23.8	23.8	28%	28%**	422	3,384	3,867
TOTAL 18 COUNTIES			18.3	23.4	23.3	28%	27%**	631	4,298	5138
TOTAL FLORIDA			18.4	22.8	22.8	24%	24%**	1,354	9,070	10,780
TOTAL UNITED STATES			24.4	24.9	24.8	2%	1%	91,392	167,803	178,888

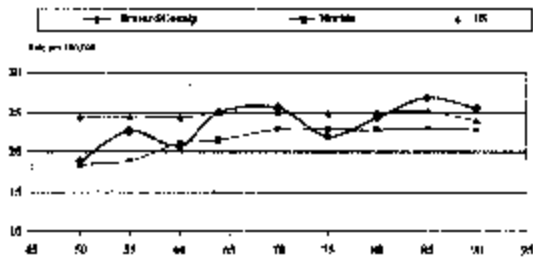
NOTE: This table was reproduced exactly as provided to the DOH
⁽¹⁾ During a conference call, the RPHP representative corrected this as actually including the 5 counties above

Figure 3. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, St. Lucie County, 1950-54 to 1990-94



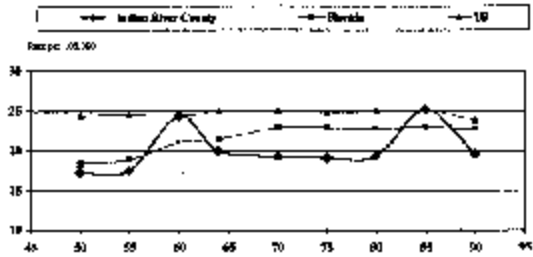
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 4. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Brevard County, 1950-54 to 1990-94



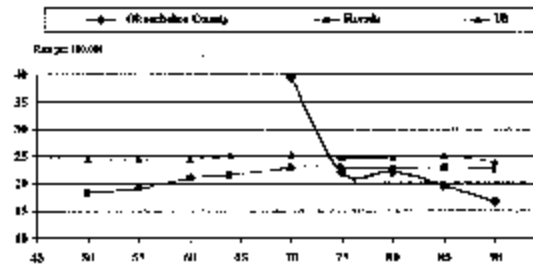
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 5. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Indian River County, 1950-54 to 1990-94



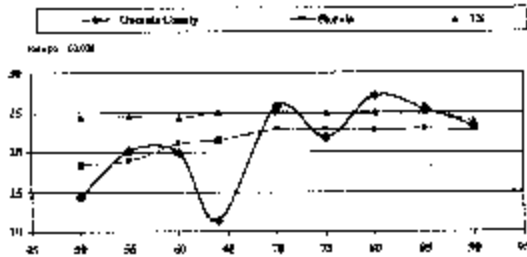
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: NCI Mortality rates.

Figure 6. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Okeechobee County, 1950-54 to 1990-94



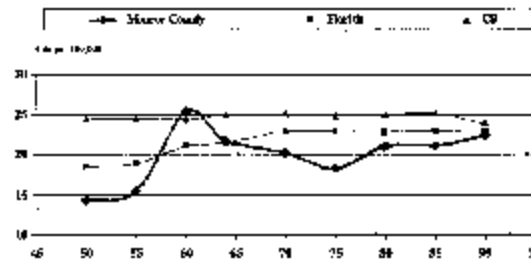
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 7. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Osceola County, 1950-54 to 1990-94



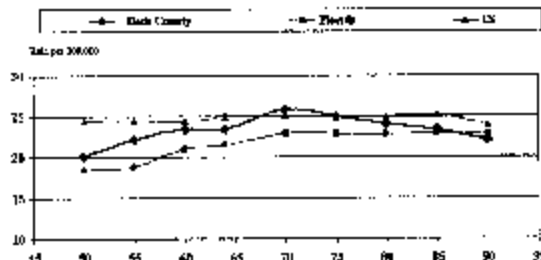
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 9. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Monroe County, 1950-54 to 1990-94



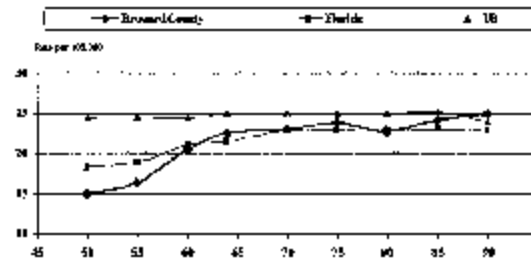
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 8. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Dade County, 1950-54 to 1990-94



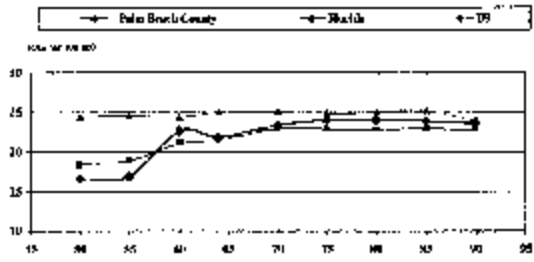
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 10. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Broward County, 1950-54 to 1990-94



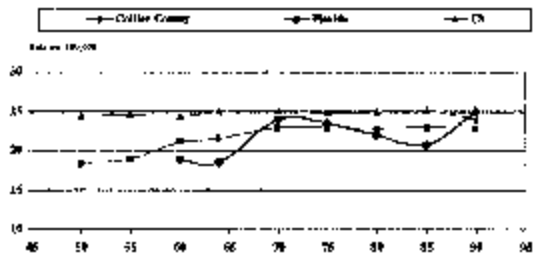
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54, ..., 90 stands for the period 1990-94.
 Source: National Cancer Institute

Figure 11. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Palm Beach County, 1950-54 to 1990-94



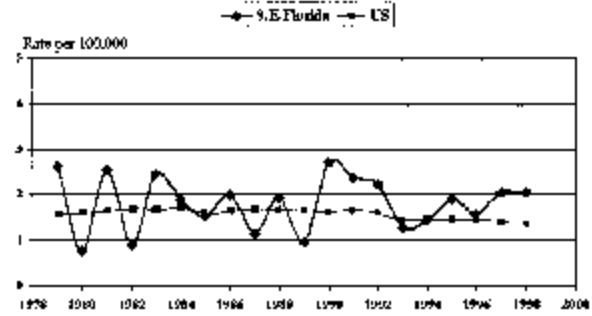
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54.90 stands for the period 1990-94.
Source: National Cancer Institute

Figure 12. Five-year Age Adjusted Mortality Rates for Breast Cancer in White Women, Collier County, 1950-54 to 1990-94



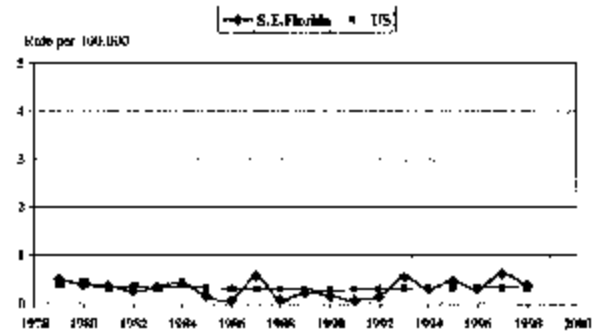
The numbers on the time axis represent the beginning of the periods. Thus, 50 stands for the period 1950-54.90 stands for the period 1990-94.
Source: National Cancer Institute

Figure 13. Breast Cancer Age-Specific Mortality Rates in All Women Age 15-34, 1981-1998



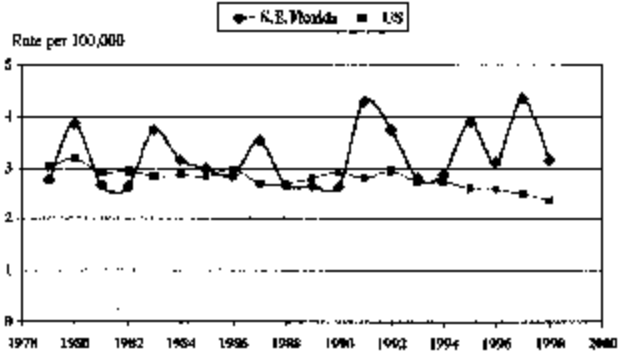
Note: S.E. Florida include: Broward, Dade, Palm Beach, Martin and St. Lucie Counties.
Source: CDC Wonder Mortality rate for US and S.E. Florida.

Figure 14. Bone Cancer Age-Specific Mortality Rates in All People Age 15-34, 1981-1998



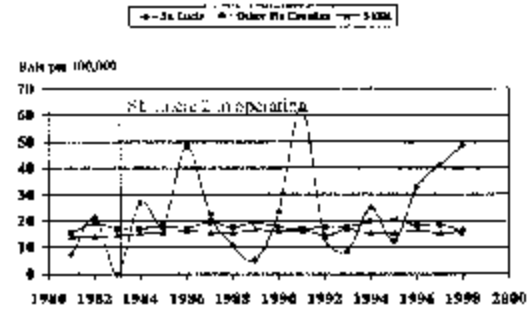
Note: S.E. Florida include: Broward, Dade, Palm Beach, Martin and St. Lucie Counties.
Source: CDC Wonder Mortality rate for US and S.E. Florida

Figure 15. Blood Cancer Age-Specific Mortality Rates in All People Age 15-34, 1981-1998



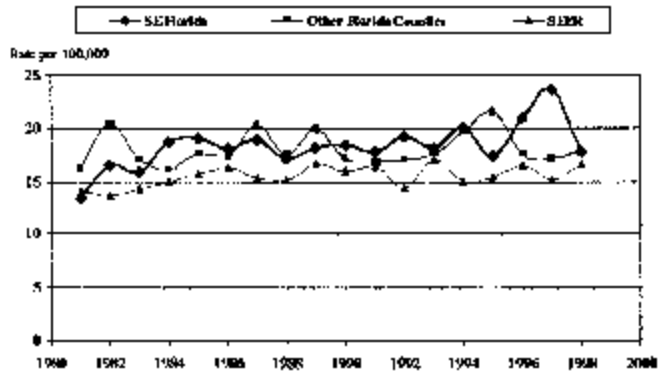
Note: S.E. Florida include: Broward, Dade, Palm Beach, Martin and St. Lucie Counties.
 Source: CDC Wonder Mortality rate for US and S.E. Florida.

Figure 17. All Cancers Age-Specific Incidence Rates in Children Age 0-9, 1981-1998



Source: CDC Wonder Mortality rate for US and S.E. Florida.

Figure 16. All Cancers Age-Specific Incidence Rates in Children Age 0-9, 1981-1998



SE Florida includes: Dade, Broward, Palm Beach, Martin and St. Lucie Counties.
 Source: FCDS incidence data released to J. Mangano and CDC population estimates.

TPD 78



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA REGIONAL OFFICE
8 FORDY STREET
ATLANTA, GEORGIA 30303-9139

August 27, 2001

RECEIVED

SEP 13 11 31 AM '01

John and Deborah
Dorsh
JED:SD

61 PR 30951

4/18/01

(3)

43AD

Chief
Rules, Review and Divisions Branch,
Division of Administrative Services
Mail Stop 7-6120
U.S. Nuclear Regulatory Commission
Washington, D.C. 20545-0001

RE: NRC Review and Comments on
Duke Georgia Environmental Impact Statement for
License Renewal of Nuclear Plants, Supplement 5
Regarding Turkey Point Units 3 and 4, (TMDNR01)
CRG No. 104020

Dear Chief:

The U.S. Environmental Protection Agency (EPA) reviewed the document entitled "Draft
Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding
Turkey Point, Supplement 5, Units 3 and 4," (DGSEIS), pursuant to Section 102(f)(2)(C) of the
National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. The purpose of
this letter is to provide EPA's comments regarding the DGSEIS.

Turkey Point is a nuclear-powered, electric generating facility that has surface water
discharges regulated by the National Pollutant Discharge Elimination System (NPDES) program.
Based upon the information provided in the DGSEIS, the document received no "EC 2" rating.
That is, there are technical and/or scientific issues on some aspects of the proposed project, and more
information is needed. Specifically, clarification is needed regarding environmental impacts of the
existing recirculating cooling canal system. More detail is also needed regarding the facility's
compliance with 40 CFR Part 112, regarding storage of petroleum products. The attached
comments detail our concerns.

78-1

78-2

Comments = ADM-013

E-RTDS = ADM-013

Coord. = S.H. Wilson (HWI)

Public Address (202) 566-0900
Internet: www.epa.gov
E-mail: epa@epa.gov

Thank you for the opportunity to comment on this DGSEIS. We look forward to reviewing
the final document. If you have any questions or require more information, please contact Ramona
McComney of my staff at (404) 362-9615.

Sincerely,

Heinz J. Mueller, Chief
Office of Environmental Assessment

EPA Review and Comments on Draft Generic Environmental Impact Statement License Renewal of Nuclear Plants, Supplement 5 Regarding Turkey Point Units 3 and 4 (DGSEIS)

Alternatives:

As described in the DGSEIS, the environmental impacts of continuing or renewing the license for Turkey Point Units 3 and 4 has fewer environmental impacts than the alternatives. The alternatives described in the document include using fossil fuel power generation processes, constructing a new nuclear facility, or implementing the No-Action Alternative.

Transmission Lines:

Page 4-11, Section 4.2 Transmission Lines: "Herbicides are used occasionally, primarily applied to individual trees or shrubs to prevent re-sprouting, although broadcast applications are used as general weed control in some of the urban and suburban areas". The GSEIS should specify the types and quantities of herbicides applied, and the alternatives to spraying plants with herbicides.

Similarly, the DGSEIS should include details regarding broadcast applications for weed control (types, frequency, quantities, alternatives to chemical applications, etc.). Improperly applied herbicides and weed killers can impact surface and groundwater resources. Excess timely applications of herbicides in and around residential areas could impact sensitive populations. In addition, some herbicides can also cause potential adverse impacts to wildlife if not used in a conservative manner.

Environmental Justice:

Section 4.4.6: We appreciate the discussion of EJ issues, and the presentation and interpretation of census block data in the DGSEIS.

Appendix A, Comments received on the environmental review:

Page A-18: The GSEIS should provide more detailed responses to specific comments, including Endangered Species. The document defers detailed information to the GEIS, and yet consultation activities with the U.S. Fish and Wildlife Service should have been initiated with the preparation of this DGSEIS.

Page A-25: Water quality impacts in Biscayne Bay from barge deliveries are deferred to the GEIS. This DGSEIS could provide more information in regards to legitimate concerns.

Page A-28: Requirements for the NPDES permit should be known, and the Final GSEIS should provide more detail in response to these comments. Furthermore, the NRC's response to the comment on NPDES requirements is not specific ("...and are not under the jurisdiction of the NRC"). Known permit requirements should be addressed in the DGSEIS.

FPL's Compliance Status and Consultation correspondence:

Appendix B; Table B-1: While the table is apparently intended to be comprehensive, it does not include EPA's plan review and approval requirements for storage of petroleum products under the Oil Pollution Prevention Program's Spill Prevention Control and Countermeasures (SPCC), at 40 CFR Part 112. This program is not delegated to the FDEP, and the applicant (Florida Power and Light) has had numerous inspections of its facilities by EPA for compliance with this EPA

program.

The table should be amended to include this approval requirement, as well as any regulatory authority the U.S. Coast Guard has via the Oil Pollution Act of 1990, Facility Response Plan (FRP) requirements for oil storage facilities. A release or discharge from these facilities could potentially present a significant or substantial harm to the environment.

Water Resources:

The National Park Service (Appendix B; pages B-6 to B-11) states that the miles of cooling canals from Turkey Point have altered the natural environment by destabilizing a hypersaline area which impedes natural groundwater flow from the upland side of the canals into Biscayne Bay. The NPS also states that the landscape has been altered at the downstream side of these canals by dwarf cangroves and high salinity marshes, as a result of the lack of freshwater flow (which occurred until the creation of the cooling canals; page B-10). The Biscayne National Park requested that the NRC investigate ways to mitigate these impacts.

Appendix A, page A-6, provides an answer to this comment, but does not clarify whether, or how, the construction of the cooling canals may have resulted in impacts to the landscape and the salt marshes in question. However, in the text of the DGSEIS (page 4-7), in the section discussing cooling pond impacts on terrestrial resources, impacts are characterized as "small significance." Clarification is needed regarding direct and indirect impacts from the construction and operation of the cooling canals.

Finally, Page A-6 does not address the request from the NPS regarding consideration of mitigation measures. The Final GSEIS, which should provide more information regarding impacts of the cooling canals, should also include information regarding potential mitigation measures, if impacts have occurred.

78-9

78-10

78-3

78-4

78-5

78-6

78-7

78-8

78-9

78-10

78-11

78-12