

July 25, 2000

Ms. Barbara Lange
Messrs. Mark Oncavage and Alan Farago
Sierra Club - Miami Group
Post Office Box 43-0741
South Miami, Florida 33243-0741

SUBJECT: TURKEY POINT UNITS 3 AND 4 - HOMESTEAD AIR FORCE BASE
PROPERTY DISPOSAL

Dear Sierra Club Representatives:

This is in response to your letter of February 24, 2000, as supplemented by letters dated March 3 and 27, and June 9, 2000, from Mark Oncavage. The above letters contained comments regarding the proposed commercial operations at the Homestead Air Force Base (HAFB) site, and the potential risk to Turkey Point Units 3 and 4 from these operations. You requested that the U.S. Nuclear Regulatory Commission (NRC) staff address these comments in its safety assessment (SA) of the above subject. By letter dated April 26, 2000, the staff informed you that these comments will be addressed in the staff's SA or in separate correspondence. Additionally, as stated in our letter to you dated April 4, 2000, we have added your individual names to our distribution for the documents related to this subject sent by the NRC to FPL and the U.S. Air Force (USAF).

The staff issued its SA on this subject by letter dated June 19, 2000, to Thomas F. Plunkett, President of the Nuclear Division, Florida Power and Light Company (FPL). Sierra Club's (SC's) comments stated in the February 24, 2000, letter regarding the crash risk from bird strikes and the foreign aircraft operations were addressed in the SA. Also, the SA, as well as our May 26, 2000, letter to Douglas J. Heady, USAF, provided the reason (i.e., the lack of information, at this time, on how spacecrafts would operate from the spaceport) for not addressing Mr. Oncavage's comments as stated in his letter dated March 3, 2000, related to the proposed spaceport (i.e., Comments #4, 5, 6, 7, 8, 13, 14, 15, and 18). Mr. Oncavage's Comments #25, 28, 29, 30, and 34 are addressed herein. It should be noted that Mr. Oncavage's April 17, 2000, letter requested the USAF and the Federal Aviation Administration (FAA) to address the remaining comments (i.e., Comments #1, 2, 3, 9, 10, 11, 12, 16, 19, 20, 21, 22, 23, 26, and 32 to be addressed by the USAF, and Comments #17, 24, 27, 31, and 33 to be addressed by FAA).

In the June 9, 2000, letter, Mr. Oncavage stated with regard to the assessment of the potential risk to Turkey Point of the proposed spaceport that the "Sierra Club, Miami Group realizes very little is currently known about the proposed spaceport operations." However, he requested that a detailed statement by the "responsible official" be made of any adverse environmental effects which cannot be avoided should the proposal be implemented. Mr. Oncavage stated that this request is in accordance with the National Environmental Policy Act of 1969 (NEPA). Mr. Oncavage believes that this requirement has not been met.

The USAF and the FAA are the Federal agencies preparing the Supplemental Environmental Impact Statement. This comment should be addressed by them. In this regard, by our letter of July 18, 2000, to Mr. Heady, we forwarded this comment to the USAF. Also, in the June 9, 2000, letter, Mr. Oncavage discussed the Mission Statement of the NRC which reads in part

“ . . . to ensure adequate protection of the public health and safety. . . .” He added that “If the NRC cannot demonstrate adequate public health and safety concerning Turkey Point operations in relation to the spaceport operations, then again the assessment must be decisively negative.” The staff understands that for a spaceport there is a need for a separate Environmental Impact Statement which focuses on this issue. Therefore, the staff is not able to make a safety finding on the adequacy of the spaceport operations until sufficient information is available. At that time, the staff will ensure that its finding meets the Commission regulations and that there is reasonable assurance that the activities can be conducted without endangering the health and safety of the public. The staff is of the opinion that it is fulfilling its Mission Statement by not making a finding at this time.

The excerpt below taken from the June 19, 2000, SA, and the subsequent paragraphs discuss each of the remaining comments.

Excerpt from the staff's SA of June 19, 2000

Taking into account the above effects of potential bird strikes and the adjustment for foreign carriers from Latin America, the estimated aircraft crash frequency is increased by a factor of 1.22, changing the 3.63×10^{-7} /year to 4.43×10^{-7} /year which meets the SRP [Standard Review Plan] 3.5.1.6 acceptance criterion of about 10^{-7} /year. In addition, FPL's estimate is within the guidelines of SRP 2.2.3, wherein the acceptance criterion of 10^{-6} /year is applicable if reasonable qualitative arguments can be made to show that the realistic probability estimate is lower. Actual configurations or situations at the plant for which qualitative arguments can be made regarding the fact that they may decrease the risk estimate, do not readily lend themselves to modeling and analysis due to the complex nature of the configurations or situations. Therefore, sound engineering judgment is utilized in determining the acceptance criteria for the probability estimate. Specifically, FPL has qualitatively identified some conservatism inherent in its analysis which indicates that the actual risk from on-site aircraft crashes is lower than the estimate of 3.63×10^{-7} /year. For example, FPL notes that shielding by adjacent structures or heavy machinery, as well as the canal and the adjacent fossil units are not fully credited. Moreover, the structural capability of safety-related structures (e.g., containment building) against missile impacts has not been taken into account when considering conditional core damage probability and conditional containment failure probability. Based on its review, the staff concludes that the risks associated with on-site aircraft crashes for Turkey Point are acceptable.

It should be noted, however, that the margin between the estimated aircraft crash frequency and the acceptance guidelines of SRP 3.5.1.6 is relatively small. Hence, the staff believes that FPL would need to monitor the aircraft operations at the proposed airport on a periodic basis. Should the actual aircraft operations exceed those projected for the year 2014, a reassessment of the aircraft risk would need to be made. It is necessary for the licensee to inform the staff of its plans to monitor the air traffic and flight tracks at the HAFB site on a periodic basis after it becomes operational as a commercial airport, and to reassess the risk as stated above.

Regarding the potential for the base to be used as a spaceport for handling vehicle launches and landings, the licensee has not performed an analysis of the associated risks. FPL indicates that the potential impact is bounded by the impacts associated with a commercial airport. However, with no supporting data or analysis, the staff cannot, at this time, make a finding of acceptability regarding potential spaceport operations. Hence, if the base conversion leads to the implementation of spaceport operations, FPL would need to address the associated risk by providing a risk assessment for staff review and evaluation.

SC's comment on public record (February 24, 2000, letter)

. . . a significant amount of information seems to be missing from the public record including the Draft Supplemental Environmental Impact Statement [DSEIS].

Response

In accordance with 10 CFR 2.790 of the NRC's "Rules and Practice," a copy of this letter is available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (the Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room). Our understanding from Mr. Heady is that the DSEIS was widely distributed in December 1999, and at the public hearings that the USAF and FAA held in February 2000 in the vicinity of the HAFB site. Also, by letter dated June 8, 2000, Mr. Heady sent a copy of the DSEIS to the NRC Document Control Desk and, therefore, it is now available in ADAMS with an accession number ML003723827.

SC's comment on the equations used to estimate the aircraft crash probability (Comment #1 of February 24, 2000, letter)

FP&L's [sic] response (ref. 4 and ref. 7) utilizes formulae that appear to be inconsistent with NUREG-0800 [SRP 3.5.1.6].

Response

The NRC staff's SA stated that FPL used the Department of Energy (DOE) methodology which is equivalent to the SRP methodology. The SRP does not require the use of the formulae stated in Section 3.5.1.6. The staff accepts equivalent methodologies in the review of documents submitted by its licensees.

SC's comment on calculations (Comment #2 of February 24, 2000, letter)

We request that a line-by-line, calculation-by calculation probability analysis . . . be included in the SER, as specified by NUREG-0800.

Response

The SRP does not specify that a line-by-line, calculation-by-calculation be included in the staff's SA. The staff's SA dated June 19, 2000, conformed to the SRP recommendation for addressing safety issues and is in congruence with the standards that have normally been followed by the staff for SAs and evaluations.

SC's comment on flights to all the countries of the Caribbean, Central America, and South America (Comment #3 of February 24, 2000, letter)

. . . by 2015, of these 51,220 operations, more than 80% are estimated to be Latin American

Response

The staff's SA dated June 19, 2000, addressed this concern on page 3. This results in an increase of the risk probability by about 5%.

SC's Comment on the distance between HAFB and Turkey Point (Comment #4 of February 24, 2000, letter)

. . . maps and diagrams appear to show that portions of Homestead Air Force Base lie within a 5-mile radius of the plant . . .

Response

The distance criterion is based on the proximity of an airport runway rather than the property boundary. In any case, the distance between the Turkey Point facility and the runway is a factor that is accounted for when using the DOE or the SRP methodology. In addition, in response to an NRC comment, FPL stated in its letter of May 1, 2000, that the estimated distance from the Turkey Point site (Units 1, 2, 3 and 4) to the HAFB runway is 4.9 miles with an estimated uncertainty of ± 0.2 miles.

SC's comment on the flight path over Turkey Point (Comment #5 of February 24, 2000, letter)

In an addendum to the DSEIS, on the flight path chart named "HST EAST FLOW," it appears that the following flight paths over Turkey Point . . . How do these over flights meet acceptance criteria, II.1.c of NUREG-0800?

Response

The listed flights are part of the total air activity in the vicinity of the Turkey Point site that is addressed in assessing aircraft risk for the site. The first step is the application of the proximity/operations screening criteria of SRP 3.5.1.6, Part II. If these are met, the risk is considered to be within the acceptance criteria. If not, appropriate air crash estimates are made to estimate the risk. Specific equations are used to estimate aircraft operations in connection with an airport, as well as aircraft activities associated with commercial and military air routes.

SC's comment on the critical structure for risk assessment (Comment #6 of February 24, 2000, letter)

FP&L [sic] lists the critical structures for risk assessment . . .

Response

As shown in the staff's SA (please refer to the SA excerpt stated above), the aircraft crash risk is acceptably low. SRP Section 3.5.1.6 states that the safety-related structures, systems, and components (SSC) to be considered with respect to the screening criteria include those described in the Appendix to Regulatory Guide (RG) 1.117, "Structures, Systems, and Components of Light-Water-Cooled Reactors to be protected Against Tornadoes." Other safety-related SSC, which may not be included in RG 1.117, will be considered on a case-by-case basis. Some of the items listed in this comment such as all firefighting equipment, the fuel tanks for Turkey Point Units 1 and 2, and the switchyard, are not classified as safety-related equipment. The fuel tanks for the Turkey Point Unit 4 diesel generators (DGs) are housed inside the Unit 4 DG building. The day tanks for the Unit 3 DGs are housed inside the Unit 3 DG building. The 7-day tank for Unit 3 DGs is located outside the DG buildings and is classified as safety-related. However, the area of the tank is very small in relation to the total area that was considered. Hence, its inclusion in the estimated total target area would not change the total area significantly.

SC's comment on the Brookhaven National Laboratory (Comment #7 of February 24, 2000, letter)

In a study by Brookhaven National Laboratory (ref. 8, p. 4-2) the worst-case scenario of an accident at a spent fuel pool

Response

As shown in the staff's SA (please refer to the SA excerpt stated above), the aircraft crash risk is acceptably low. The SRP does not require addressing this structure if the risk is acceptable.

SC's Comment on bird strike hazards (Comment #8 of February 24, 2000, letter) and Mr. Oncavage's comment on bird strikes (Comment #25 of March 3, 2000, letter), also Response 4 from Mr. Oncavage's letter dated June 9, 2000

Attached is a copy of a letter from Bernice U. Constantin

Response

As shown in the SA excerpt above, the bird strike effect was considered and led to an increase of the crash risk. The combined effect of potential bird strikes and the adjustment for foreign carriers from Latin America led to an increase of 22% of the crash risk.

Mr. Oncavage's comment on air crash probability (Comment #28 of March 3, 2000, letter), also Response 5 from Mr. Oncavage's letter dated June 9, 2000

How does the NRC quantify the air crash probabilities for Turkey Point for air carriers from the Caribbean, Central American, and South American Countries?

Increasing the crash frequency by a factor of 10 to account for 80% of operations

Response

To address the effect of South American flights, the crash frequencies for commercial aviation presented in SRP 3.5.1.6 were increased by a factor of 10 for all commercial aviation using the Homestead airport. On this basis, the factor of 10 is more than sufficient to account for South American flights which are projected to be 80% of the total.

Mr. Oncavage's comment on the consequences of a worst-case accident (Comments #29 and #30 of March 3, 2000, letter), also Responses 2 and 3 from Mr. Oncavage's letter dated June 9, 2000

What would be the consequences of a worst-case accident crashing into the Turkey Point control building?

What would be the consequences of a worst-case accident crashing into the Turkey Point spent fuel pool buildings?

The twin 400' chimneys need to be factored

Omitted from the target data

Response

As shown in the staff's SA (please refer to the excerpt stated previously), the aircraft crash risk is acceptably low. Actual configurations or situations at the plant for which qualitative arguments can be made regarding the fact that they may decrease the risk estimate, do not readily lend themselves to modeling and analysis due to the complex nature of the configurations or situations. Therefore, sound engineering judgment is utilized in determining the acceptance criteria for the probability estimate. Specifically, FPL has qualitatively identified some conservatism inherent in its analysis, which indicates that the actual risk from on-site aircraft crashes is lower than the estimate of 3.63×10^{-7} /year. For example, FPL notes that shielding by adjacent structures or heavy machinery, as well as the canal and the adjacent fossil units, are not fully credited. Moreover, the structural capability of safety-related structures (e.g., containment building) against missile impacts has not been taken into account when considering conditional core damage probability and conditional containment failure probability. Based on its review, the staff concludes that the risks associated with on-site aircraft crashes for Turkey Point are acceptable. The low crash risk probability provides reasonable assurance that no release exceeding 10 CFR Part 100 will occur.

Mr. Oncavage's comment on statistical probability (Comment #34 of March 3, 2000, letter)

What is the NRC's statistical probability of an airplane crash at Turkey Point from the Homestead Airport?

Response

The FPL's statistical probability is as stated in the staff's SA, which is 4.43×10^{-7} /year. The staff finds that the methodology used to generate this probability is acceptable.

If you have any comments regarding this matter, please contact Kahtan Jabbour, Project Manager for the Turkey Point Plant. Mr. Jabbour may be contacted at 301-415-1496.

Sincerely,

/RA/

Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

cc: See next page

Response

As shown in the staff's SA (please refer to the excerpt stated previously), the aircraft crash risk is acceptably low. Actual configurations or situations at the plant for which qualitative arguments can be made regarding the fact that they may decrease the risk estimate, do not readily lend themselves to modeling and analysis due to the complex nature of the configurations or situations. Therefore, sound engineering judgment is utilized in determining the acceptance criteria for the probability estimate. Specifically, FPL has qualitatively identified some conservatism inherent in its analysis, which indicates that the actual risk from on-site aircraft crashes is lower than the estimate of 3.63×10^{-7} /year. For example, FPL notes that shielding by adjacent structures or heavy machinery, as well as the canal and the adjacent fossil units are not fully credited. Moreover, the structural capability of safety-related structures (e.g., containment building) against missile impacts has not been taken into account when considering conditional core damage probability and conditional containment failure probability. Based on its review, the staff concludes that the risks associated with on-site aircraft crashes for Turkey Point are acceptable. The low crash risk probability provides reasonable assurance that no release exceeding 10 CFR Part 100 will occur.

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Sincerely,

/RA/

Richard P. Correia, Chief, Section 2
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Docket Nos. 50-250 and 50-251

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