SIERRA CLUB

Miami Group

Post Office Box 43-0741 ● South Miami, Florida 33243-0741

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington DC 20555

24 February 00

RE: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Homestead AFB Property Disposal

We appreciate the considerations you have shown us during this process. As you likely realize, the conversion involving Homestead Air Force Base is very important to us and the base is very close to Turkey Point. We are extremely concerned about the public safety consequences of the conversion.

We understand that the Nuclear Regulatory Commission ("NRC") is completing a Safety Evaluation Report ("SER") for the Final Supplemental Environmental Impact Statement. Sierra Club, Miami Group, has notice that a significant amount of important information seems to be missing from the public record including the Draft Supplemental Environmental Impact Statement ("DSEIS"). We respectfully request that you ensure that the information below is incorporated into the calculations and conclusions of the SER.

1. The NRC staff, in a letter (ref. 2) to Florida Power & Light ("FP&L"), states that the probability calculations of aircraft hazards should comply with NUREG-0800 (ref. 3, p 3.5.1.6-3). FP&L's response (ref. 4 and ref. 7) utilizes formulae that appear to be inconsistent with NUREG-0800.

2. We realize that in complex calculations, assumptions can mislead and mistakes can be made. In a Memorandum and Order for the Big Rock Nuclear Power Plant (ref. 5), for example, a conceptual error was discovered in a probability analysis. This error led to a conclusion that underestimated a plane crash risk into the nuclear power plant by a factor of 23,667. We request that a line-by-line, calculation-by-calculation probability analysis of air crashes from Homestead Airport, Homestead Spaceport, and the Combined Spaceport/Airport alternative be included in the SER, as specified by NUREG-0800.

3. Aside from Mexico, Guatemala, and the northern Bahamas Islands, it appears that Homestead is the closest mainland American airport to all the countries of the Caribbean, Central America, and South America. The DSEIS (ref. 1, p 2.2-9) predicts significant foreign passenger and cargo operations by the year 2005. For 2015 (assuming FP&L receives a license renewal) the DSEIS (ref. 1, p 2.2-9 to 2.2-11) states:

> "Together, these commercial passenger server user groups are forecast to have 20,300 jet and 30,920 turboprop annual operations

by 2015. Of these 51,220 operations, more than 80% are estimated to be Latin American, Caribbean, or other international locations."

In NUREG-0800 (ref. 3, p 3.5.1.6-4), the table for fatal crash probability only states data for US. Air Carriers, General Aviation, USN/USMC, and USAF. NUREG-0800 appears to be inadequate to calculate accident probabilities concerning large proportions of foreign aircraft operations. Please explain in the SER what data and calculations are being used to compensate for the disparity between the predicted Homestead foreign/domestic fleet mix and the general norm.

4. In the Turkey Point Final Safety Analysis Report (ref. 6, fig. 2.2-2, fig. 2.5-1, fig. 2.5-2), the relevant aerial photograph, maps, and diagrams appear to show that portions of Homestead Air Force Base lie within a 5 mile radius of the plant. How does this meet acceptance criteria II.1.a and II.1.b of NUREG-0800 (ref. 3, p 3.5.1.6-2) ?

5. In an addendum to the DSEIS, on the flight path chart named "HST EAST FLOW," it appears that the following flight paths over fly Turkey Point:

1. helicopter arrivals EA1X,
2. backbone ND3X, and
3. backbone NDOX.

On the flight path chart named "HST WEST FLOW," it appears that the following flight path over flies Turkey Point:

4. backbone SD5X.

On the chart named "HST EXISTING & FUTURE LOCAL PATTERN TRACKS," it appears that the following patterns over fly Turkey Point:

5. NC8,
6. NC9, and
7. SC4.

On the flight path chart named "HST EAST FLOW-ARRIVALS," it appears that the following flight paths over fly Turkey Point:

8. backbone O5JJ,
9. backbone NDAX, and
10. backbone EA1X.

On the flight path chart named "HST EAST FLOW-DEPARTURES," it appears that the following flight paths over fly Turkey Point:

11. backbone O5WP, and
12. backbone O5WJ.

On the flight path chart named "HST WEST FLOW-ARRIVALS," it appears that the following flight paths over fly Turkey Point:

13. backbone 23FJ,
14. backbone 23RJ, and
15. backbone 23TP.

On the flight path chart named "HST WEST FLOW-DEPARTURES," it appears that the following flight paths over fly Turkey Point:

16. 23HJ,
17. 23HP,
18. 23WP,
19. 23WJ,

20. 23VJ,
21. 23SJ, and
22. WDIX.

How do these over flights meet acceptance criteria, II.1.c of NUREG-0800 ?

6. FP&L lists the critical structures for risk assessment (ref. 7 p 3) as the containment buildings, turbine building, control building, auxiliary building spent fuel buildings, emergency diesel generator buildings, intake structure and the (twin 400') fossil unit chimneys (413' above mean sea level). We request that all fire fighting equipment, all fuel tanks (including the tanks associated with fossil units 1 & 2), and the switchyard be added to the list for risk assessment, even thought they may not be structures in the strictest sense.

7. In a study conducted by Brookhaven National Laboratory (ref. 8, p 4-2) the worst case scenario of an accident at a spent fuel pool of a typical decommissioned pressurized water reactor anticipates that prompt fatalities will be 95, latent fatalities will be 143,000 and condemned land will be 2,790 square miles. We realize that Turkey Point has not been decommissioned, but there are two reactors on site, not one. The Reactor Spent Fuel Storage report (ref. 9, p 3) states that as of 11/4/98 there are 1,578 spent fuel assemblies being stored on site. This potential catastrophic accident should receive a separate risk assessment analysis since the consequences are comparable to a core-melt atmospheric accident at one reactor (ref. 8, p 4-4).

8. Bird strike hazards are a documented problem at Homestead Air Reserve Base (ref. 10). Bird strikes have the potential for causing additional aircraft crashes in the Turkey Point area. Efforts to mitigate this situation are not likely to occur, due to the close proximity of Biscayne National Park and Everglades National Park. Bird populations are protected and the killing of birds, the destruction of their habitat or attempts to traumatize bird life by noise or chemical means would be politically and legally impossible. Recently Miami-Dade government stated a willingness to maintain a buffer of undeveloped land around the former HAFB. This would likely increase bird habitat and exacerbate the problem. A site-specific quantitative multiplier based upon the bird strike hazards needs to be incorporated into the probability calculations of the air crashes in the SER.

Conclusions:

Without guessing the outcome of the SER, Sierra Club, Miami Group believes that developing a commercial airport next to two nuclear reactors at Turkey Point creates an intolerable radiological danger for south Florida far exceeding the 10 CFR 100 guidelines. We agree with FP&L that adjacent structures and canals may mitigate some aspects of an air crash and we agree that the containment buildings probably would not experience perforation. However, as discussed supra, the existence of the following unquantified problems may increase the risk of air crashes.

Foreign aircraft may not be up to the standards to which we are accustomed, e.g. old aircraft, reduced maintenance, marginally trained pilots and overloaded planes. Language difficulties may also occur between air traffic controllers and foreign air pilots. Moreover, the arrival and departure flight patterns appear to be complex and convoluted (ref.11, p 1&2) with aircraft crossing over and under various federal airways to reach or leave the airport. Finally there is a significantly higher risk of bird strikes at Homestead than is the norm nationally.

Sincerely,

Alan Farago
Conservation Chair

Mark Oncavage
Energy Chair

Barbara Lange
Everglades Chair

References

1. Draft Supplemental Environmental Impact Statement, Disposal of Portions of the Former Homestead Air Force Base, Florida , U.S.Air Force and Federal Aviation Administration, December, 1999.

2. Letter to Thomas F. Plunkett, Florida Power and Light from Kahtan N. Jabbour, Senior Project Manager, Office of Nuclear Reactor Regulation, May 4, 1998.

3. NUREG-0800, Standard Review Plan 10 CFR Part 100, 3.5.1.6 Aircraft Hazards, rev. 2 - July 1981

4. Letter to U.S. Nuclear Regulatory Commission from R.J. Hovey, Vice President, Turkey Point Plant, June 15, 998.

5. Memorandum and Order in the matter of Consumers Power Company (Big Rock Nuclear Power Plant) Atomic Safety and Licensing Board, U.S. Nuclear Regulatory Commission, March 6, 1984 (Docket No. 50-155-OLA).

6. Final Safety Analysis Report , Turkey Point Plant, Units 3 & 4, Florida Power and Light Company, volume 1, rev. 5, July 1987.

7. Letter to U.S. Nuclear Regulatory Commission from R.J. Hovey, Vice President, Turkey Point Plant, November 17, 1999.

8. NUREG/CR-6451, A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants , Brookhaven National Laboratory, August 1997.

9. Reactor Spent Fuel Storage, http://www.nrc.gov/OPA/drycask/sfdata.htm, November 4, 1998.

10. Memorandum for Distribution from Steven R. Fulghum, Col., USAFR, 482d Fighter Wing Bird Hazard Working Group, March 25, 1996.

11. Letter to U.S. Nuclear Regulatory Commission from Douglas J. Heady, SAF/GCN U.S. Air Force, August 23, 1999 enclosure HST Departure and Arrival Altitude Restrictions .

FPL

JUN 15 1998

L-98-152

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to Request for Information
Regarding the Impact of a Commercial Airport
at Homestead Air Force Base Site on Safety
at Turkey Point Units 3 and 4

On December 9, 1997, the Friends of the Everglades sent a letter to the NRC questioning whether the proposed conversion of the Homestead Air Force Base to a commercial airport represented a risk to the Turkey Point Nuclear plant. The NRC has subsequently issued a request for information regarding the Air Base conversion to Florida Power and Light Co. (FPL), with a response requested within 60 days.

The enclosed response provides our best estimate of risk related to the operation of a commercial airport at the Homestead Air Force Base site. This risk estimate is based on data currently available to us regarding proposed number of operations, flight paths, and proposed flight mix (i.e., military versus commercial versus general aviation) for single runway operation in the year 2014. Our communications with the Homestead Air Force Base Conversion Agency and with the Federal Aviation Administration indicate that the number of operations, flight paths, and mix of operations is currently under review as part of development of a Supplemental Environmental Impact Statement (SEIS). Miami-Dade County officials have indicated that, due to an order limiting growth at the proposed Homestead Regional Airport issued by the State of Florida, aircraft activity will be limited to approximately 50 operations per day through the year 2005.

Accordingly, the information presented here is subject to change based on the development of new information in the SEIS. When this information becomes available to us, we will reevaluate this issue and inform you of any changes. When the proposed disposition of the Homestead Air Force Base is finalized, we will update our Final Safety Analysis Report, as appropriate, to reflect these changes.

FPL also agrees that the commercialization of the base would have an impact on the offsite emergency preparedness program. Evacuations and the effects of the growth in the Emergency Planning Zone are aspects of emergency preparedness that must be addressed jointly by FPL, the State of Florida, and Dade County. We continue to communicate with local and state authorities on this matter in order to ensure that the issues coming from the commercialization of the base are identified, that the offsite emergency preparedness program to address these issues is appropriately revised, and to ensure the Federal Emergency Management

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Enclosure 1

Agency is in concurrence with the revisions to the program. We will continue to meet with the appropriate local and state authorities to ensure that these issues are addressed in a timely manner.

Should there be any questions on this request, please contact us.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

OIH

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point

RISK ASSESSMENT OF THE TURKEY POINT UNITS 3 AND 4 NUCLEAR POWER PLANT FROM AIRCRAFT OPERATIONS AT THE MIAMI-DADE COUNTY HOMESTEAD REGIONAL AIRPORT

1. Scope

In response to the NRC letter dated 14 April 1998, entitled "Request for Information Regarding the Impact of a Commercial Airport at the Homestead Air Force Base on Safety at Turkey Point Units 3 and 4," this risk assessment has been prepared. This assessment provides a scoping estimate of the risk of aircraft operations to facilities at Turkey Point Units 3 and 4 based on a site specific model and conservative assumptions.

2. Applicability

This risk assessment estimates the risks with potential radiological consequences from aircraft crashes to those critical structures at Turkey Point Units 3 and 4 associated with aircraft operations at the Miami-Dade County Homestead Regional Airport.

This risk assessment does not address aircraft related hazards from the Turkey Point On-site Heliport or other airports in the vicinity of Turkey Point such as the Kendall-Tamiami Executive Airport and the Miami International Airport or other airports outside a 30-mile radius from Turkey Point Units 3 and 4. Furthermore, Terminal Radar Approach Control air traffic, medium altitude, and high altitude operations in the regional area of the Turkey Point Nuclear Facility are not addressed, since potential aircraft accidents impacting Turkey Point Units 3 and 4 from these aircraft operations provide negligible contributions to the total risk.

The Turkey Point Units 3 and 4 structures that contain safety systems which may be damaged by an aircraft crash were evaluated as part of this assessment. These structures include the containment buildings, auxiliary building, emergency diesel generator buildings, spent fuel buildings, intake structure, control building, and turbine building.

3. Description of Miami-Dade County Homestead Regional Airport and Projected Aircraft Operations

A detailed description of the projected aircraft classification by types, past and projected annual aircraft operations, and percentage distributions of these operations assumed for the proposed Miami-Dade County Homestead Regional Airport was extracted from the Final Environmental Impact Statement (FEIS, Reference 5). Aircraft operations data provided for the year 1994 (Military operations) were used to assess the current risk associated with Homestead Air Force Base. Projected aircraft operations for the year 2014 from the FEIS were used to assess the risk of future operation of the proposed Miami-Dade County Homestead Regional Airport, and include both military and civilian

flight operations. The aircraft operations projected for 2014 are higher than the current aircraft operations at the existing Homestead Air Force Base.

4. Methodology for Performing Risk Assessments of the Turkey Point Nuclear Plant Units 3 & 4 from Potential Aircraft Crash Accidents (Reference 2)

The DOE methodology for assessing the risk of aircraft crashes to nuclear plants is based upon estimating the annual crash frequency "f" for the affected structures as follows

$$f = N * P * A * F \qquad (1)$$

where

f = annual frequency of aircraft crashes to designated structures
N = annual flight operations at the Miami-Dade County Homestead Regional Airport by aircraft category and flight phase
P = in flight crash rate per mile for aircraft by aircraft category and flight phase,
A = effective facility (structure) area in square miles by aircraft category and flight phase,
F = crash probability density over area A by aircraft category and flight phase.

The area presented by a facility to an aircraft during an accident sequence represents a proportionality with the aircraft crash location conditional probability. Normally, the area presented by a facility consists of a fly-in area, A_f, and a skid-in area, A_s. These represent the probability that a given category of aircraft will fly directly into the facility, and the probability that an aircraft will hit the ground first, then skid into the facility, respectively. The total effective area A_t, for each aircraft category, is given by

$$A_t = A_f + A_s$$

For a rectangular facility of length L, width W, and height H, the fly-in area, for each aircraft category, is (from Reference 2):

$$A_f = (WS + R) * H * \cot \Phi + (2 * L * WS) / R + (L * W) \qquad (2)$$

The skid area, for each aircraft category, is (from Reference 2):

$$A_s = (WS + R) * S$$

where

WS = aircraft wingspan, for each category aircraft,
L = facility length,
W = facility width,
R = diagonal dimension of the facility = $(L^2 + W^2)^{1/2}$,

H = facility height,
cot ϕ = mean cotangent of each category aircraft at impact angle ϕ,
S = mean skid length for each category aircraft.

For each of the critical structures analyzed, the aircraft impact probability is then multiplied by conditional core damage probability, and conditional containment failure probability to obtain the probability of exceeding 10 CFR Part 100 exposure. Probabilistic Safety Assessment insights are used to develop an upperbound of the conditional core damage probability and conditional containment failure probability. It is conservatively assumed that if containment fails, the radiological consequences would exceed 10 CFR Part 100 exposure guidelines.

5. Results

FPL has performed a scoping estimate of the aircraft impact frequency (number/year), the conditional core damage probability, the conditional containment failure probability, and the 10 CFR Part 100 exposure exceedance frequency for the critical structures of the Turkey Point Units 3 and 4. The risk of exceeding 10 CFR Part 100 exposure guidelines associated with aircraft operations in 1994 (current risk of military operations) has been conservatively calculated to be 4.91E-7/year. The expected rate of occurrence of potential exposures in the year 2014 in excess of the 10 CFR Part 100 guidelines has been conservatively calculated to be 8.11E-7/year, which is less than 1.0E-6/year. The NRC's Standard Review Plan (SRP) states at Section 2.2.3 (Reference 6) that:

> "The probability of occurrence of the initiating events leading to potential consequences in excess of 10 CFR Part 100 exposure guidelines should be estimated using assumptions that are as representative of the specific site as is practicable. In addition, because of the low probabilities of the events under consideration, data are often not available to permit accurate calculation of probabilities. Accordingly, the expected rate of occurrence of potential exposures in excess of 10 CFR Part 100 guidelines of approximately 10^{-6} per year is acceptable if, when combined with reasonable qualitative arguments, the realistic probability can be shown to be lower."

The following reasonable qualitative factors not directly addressed in the risk estimates are provided below to show that the realistic probability of exceeding 10 CFR Part 100 guidelines will be lower than 8.11E-7/year.:

1. Because of Turkey Point's distance from the Homestead Regional Airport, local flight operations in the local air traffic pattern around the Homestead Regional Airport should not approach the plant. This may reduce the risk estimates by a factor of 2.

2. Shielding by adjacent structures or heavy machinery, and barriers such as the canal and the fossil units are not fully credited. This may reduce the risk estimates by 20%.

3. The conditional core damage probability and conditional containment failure probability are not based on more detailed assessment of structural capability or all available equipment. For example, Sandia National Laboratory tests have indicated that the containment structures do not experience perforation damage. In addition, the steel liner is effective in preventing concrete from scabbing. This may reduce the risk to varying degrees for different structures but is not readily quantifiable.

6. Conclusions

Based on the results of a conservative study, the expected rate of occurrence of aircraft accidents leading to potential exposures in excess of the 10 CFR Part 100 guidelines is 8.11E-7/year for the year 2014. Qualitative factors that will lower the estimated probability of the aircraft risk exist in the study, which would be acceptable in accordance with SRP Section 2.2.3.

7. References

1. Kimura, C. Y. and R.E. Glaser, "Estimate of Aircraft Crash Hit Frequencies on the Facilities at the Lawrence Livermore National Laboratory (LLNL) Site 200", UCRL-ID-127761 Rev 0, Lawrence Livermore National Laboratory, Livermore, CA, July 3, 1997.

2. "Accident Analysis for Aircraft Crash into Hazardous Facilities", DOE Standard DOE-STD-3014-96, U.S. Department of Energy, Washington, DC, October 1996.

3. Sanzo, D., R. Bolig, and D. Stack, "ACRAM Modeling Technical Support Document", LA-UR-96-2460/TSA-11-95-R112, Los Alamos National Laboratory, Los Alamos, NM, September 1996.

4. Kimura, C.Y., Ronald E. Glaser, Richard W. Mensing, Tom Lin, Timothy A. Haley, Andrew B. Barto, and Martin A. Stutzke, "ACRAM Data Development Technical Support Document", UCRL-ID-124837, Lawrence Livermore National Laboratory, Livermore, CA, August 1996.

5. Final Environmental Impact Statement, "Disposal and Reuse of Homestead Airforce Base, Florida," February 1994, Department of the Air Force.

6. NUREG-0800, Rev. 2, NRC Standard Review Plan, Section 2.2.3, "Evaluation of Potential Accidents."

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Frederick J. Shon

In the Matter of:

CONSUMERS POWER COMPANY — Docket No. 50-155-OLA

(Big Rock Point Nuclear Power Plant) — March 6, 1984

MEMORANDUM AND ORDER
(Reopening Record On B-52
Bomber Crash Probability)

O'Neill Contention II-D states:

> The licensee has not adequately provided for the protection of the public against the increased release of radioactivity from the expanded fuel pool as a result of the breach of containment due to the crash of a B-52 bomber.

This contention was accepted as an issue in controversy because the United States Air Force (USAF) conducts low altitude simulated bombing runs in the vicinity of the Big Rock Plant, on a training course known as the Bayshore route. On at least one occasion, in 1979, a Bayshore plane overflew the Big Rock Point Plant at a low altitude, and in 1971 there was an crash of a B-52 bomber near the plant. (Supplemental Testimony of Lt. Col. Gary P. Betourne On O'Neill Contention II-D (Betourne Suppl. Testimony) ff. Tr. 4464, at 2, 3.) We denied motions for summary disposition of this contention in LBP-82-8, 5 NRC 299, 326-30 (1982) and found that there were genuine issues of fact about the risk of a B-52 crash at the plant.

In its motion for summary disposition of this contention, the Licensee presented the deposition of Maj. (now Lt. Col.) Gary Betourne, USAF, along with an analysis prepared by him in 1980 estimating the probability of a B-52 crash at the Big Rock Point Plant (1980 USAF analysis).[1] The 1980 USAF analysis was prepared in response to a request from the NRC Staff for validation of the results of a 1971 estimate prepared by the USAF. Lt. Col. Betourne testified during the 1983 hearings, addressing the questions posed by the Board in LBP-82-8. (Betourne Suppl. Testimony.) Because of changes in USAF practices with respect to the Bayshore route, intended to reduce the risk of a B-52 crash at the Big Rock Point plant, Lt. Col. Betourne performed another analysis of the probability of a B-52 crash at the plant, based on data from 1982 (1982 USAF analysis), and included it in his supplemental testimony. (Betourne Suppl. Testimony at 7-9.) Lt. Col. Betourne was cross-examined on that testimony during the 1983 hearings.

During this cross-examination it was revealed by the NRC Staff that there was a conceptual error in the probability formulations of the 1982 USAF analysis. (Tr. 4550-53.) As a result the 1982 analysis underestimated the probability of a B-52 crash at the plant by a factor of 23,667. (Tr. 4554.) Lt. Col. Betourne, after an extended period of

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1 The 1980 USAF analysis was discussed by us in LBP-82-8, supra, at 327-30.

deliberation, accepted Staff's position and corrected his estimate. (Tr. 4557-62.) Intervenor O'Neill, in John O'Neill's Proposed Findings of Fact and Conclusions of Law for Contention II-D, Aircraft Hazards (O'Neill Findings) dated February 7, 1984, pointed out what amounts to another conceptual error in the 1982 USAF analysis.[2]

In their proposed findings both Licensee and Staff base their conclusions on findings from the 1980 USAF analysis rather than on the 1982 USAF analysis--understandably. Staff witness Dr. Kazimieras M. Campe used the 1980 analysis as the basis for his prepared testimony in the 1983 hearings (NRC Staff Testimony of Kazimieras M. Campe on Aircraft Hazards with Respect to the Big Rock Point Nuclear Plant (Campe Testimony), ff. Tr. 4655); he testified that "Our review and

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2 This "conceptual error", although not a true error in a mathematical sense, introduced an unnecessary step in the series of calculations by Lt. Col. Betourne and tended to obscure the fact that the 1982 USAF analysis was actually quite simplistic. The point made by O'Neill appears to have been recognized by Staff at the hearing (Counsel Goddard at Tr. 4552) but seems not to have been recognized, or if recognized not accepted, by Lt. Col. Betourne (Tr. 4560, where the witness erroneously calculated an adjusted value for step 3 of the calculations; Tr. 4563, where the witness corrected this error; and Lt. Colonel Gary Betourne's Revised Gross Analysis of B-52 Crash Risk to the Big Rock [Point Plant] 1982, ff. Tr. 4736, at 1, where step 3 is retained in the revised calculations.) There is no logical need for step 3, and it cancels out when the arithmetic is done. As succinctly stated by Mr. Goddard, "[T]he way to reach the probability of a crash at Bayshore is to take the probability of a crash [per run] anywhere times the total number of runs at the Bayshore facility *** ". (Tr. 4552.) Yet, inexplicably, Staff seems to accept the step 3 calculation in its NRC Staff Response to Intervenor John O'Neill's Proposed Findings of Fact on *** Aircraft Hazards Contentions dated March 1, 1984.

verification of the Air Force Analysis led us to conclude that it was reasonable and provided an adequate basis for the B-52 crash risk estimates." (Campe Testimony at 5.) But Lt. Col. Betourne was responsible for the 1980 USAF analysis as well as for the 1982 USAF analysis.

Given the obvious problems that Lt. Col. Betourne had with the rather simple 1982 analysis, we are reluctant to accept the more complex 1980 analysis[3] on the basis of the superficial assurance by Dr. Campe, quoted above, that it was reasonable and adequate. While we do not, intuitively, believe that a B-52 crash poses a significant hazard for the Big Rock Point Plant, we are obligated to reach a decision with respect to this and other contentions on the basis of the record developed during this proceeding, not on our intuition. In view of the problems encountered with the 1982 USAF analysis, we need documented assurance that the Staff has conducted a detailed, line-by-line and calculation-by-calculation, review of the 1980 analysis (including a review of the method by which the USAF collected its crash data and derived its crash-per-run probability); we must be assured that Staff finds it not only reasonable and acceptable, but conceptually and mathematically correct as well.

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3 We note with some uneasiness the fact that the corrected 1982 analysis shows a much higher probability of crash than did the 1980 analysis adopted by Staff and Licensee, despite the fact that the bomb run had been changed in the interim to produce a lesser risk.

Accordingly, we are reopening the record in this proceeding with respect to the B-52 crash contention. We are requesting the Staff to provide us with a detailed, critical review of the 1980 USAF analysis. That review shall be filed, in the form of an affidavit, within 30 days. Licensee and intervenors may respond to the Staff filing within 15 days. Should the Staff find problems in the 1980 analysis which throw the results into question, we shall expect Staff to propose an acceptable means for obtaining a more adequate record with respect to this issue.[4]

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[4] Although we do not anticipate adopting Dr. Schwartz's view about statistical uncertainty in the context of the regulatory scheme for air crash hazards (Evidentiary Deposition of Dr. Arthur Schwartz taken November 16, 1983; See Standard Review Plan 2.2.3 at 2.2.3-2), we find Staff's comments on the O'Neill Findings with respect to Dr. Schwartz to be troubling. In its response to O'Neill's proposed findings on aircraft hazards, dated March 1, 1984 Staff noted what while it is generally true that the accuracy of probabilistic estimates is linked to sample size, this was--in Staff's view--not a deficiency in the USAF analysis. It explained this position in the following way:

> The portion of Lieutenant Colonel Betourne's USAF analysis involving statistical data is limited to B-52 crash data and 3-K abort data. (Betourne's revised gross analysis, following Tr. 4735.) The probability of a crash at Bayshore is estimated to be about 0.018 per year. The probability of an overflight, based on 3-K abort statistics, is estimated to be about 0.0042. The question of statistical sample size is applicable to these probability values, and not to the final result of 5.3×10^{-7}] (emphasis supplied).

If the Staff means what it has said here, we find its conclusion ludicrous. The product of uncertain probability values does not gain immunity from the uncertainties associated with the multiplier and multiplicand by the act of multiplication. Quite the contrary; the product suffers from the uncertainties of both.

ORDER

For all the foregoing reasons and based upon a consideration of the entire record in this matter, it is, this 6th day of March 1984

ORDERED

1. That Staff shall file no later than April 5, 1984 a detailed review of the 1980 USAF analysis. If Staff finds that the analysis contains error or for any other reason is inadequate, Staff shall propose a means of developing an adequate record on this issue.

2. Consumers Power Company and the intervenors may file responses to Staff's review by April 20, 1984.

THE ATOMIC SAFETY
AND LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Oscar H. Paris
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

FPL

NOV 17 1999

L-99-251

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 and 50-251
Response to Request for Information
Regarding the Impact of a Commercial Airport
at Homestead Air Force Base Site on Safety
at Turkey Point Units 3 and 4

On August 23, 1999, the Air Force notified the NRC that a Supplemental Environmental Impact Statement was being prepared for the Homestead Air Force Base conversion project to (a) reflect updated air traffic information associated with a "Maximum Use One Runway" (MUOR) projection, (b) reflect alternate flight track configurations currently under consideration for noise abatement, and (c) evaluate the environmental impact associated with the optional use of the facility as a commercial spaceport. The NRC subsequently issued a request to Florida Power & Light (FPL) to assess the impact of the proposed changes on the previously submitted risk assessment documented by FPL letter L-98-152 dated June 15, 1998, and to inform the NRC of any changes within 60 days.

FPL has completed the assessment of the impact of the proposed changes and determined that the overall risk to Turkey Point from an aircraft accident decreases from the previously estimated 8.11E-7/yr to 3.63E-7/yr based on the new projections and MUOR conditions. A comparison of the original airport conversion plan flight projections with the latest Federal Aviation Administration (FAA) flight projections indicates that the total number of flight operations has remained relatively constant between the two forecasts. The original data (Table 1) forecasted a maximum of 246,700 flight operations in the year 2014, while the current projection (Table 2) forecasts 231,274 flight operations under MUOR conditions. The projected mix of flight operations at the airport, however, has changed in the latest FAA submittal. As indicated in the attached tables, the revised flight data includes a decrease in projected military air traffic and a corresponding increase in civilian air traffic. This change in the projected mix of flight operations at the airport does impact the risk assessment previously transmitted to you in support of the Final Environmental Impact Statement. As revealed in the previous analysis, the risk of an aircraft impact at Turkey Point is dominated by military air traffic. This dominance is due in part to the fact that the probability of an accident per flight operation is much higher for military aircraft than for commercial or general aviation aircraft.

Enclosure 3

This is due to the higher percentage of high-risk activities associated with military flights, e.g., training, high-speed maneuvering. The dominance is also due to the fact that the probability of an aircraft accident occurring in the immediate vicinity of the airport is much higher for military aircraft than for commercial or general aviation aircraft. That is, most commercial or general aviation flights leave the airport area after takeoff. When landing, they are most often arriving from places a considerable distance from the airport. While the same can be said for some military air traffic, a high percentage of the military flights consist of training exercises near the airport, leading to a higher probability that if an accident does occur, it will be in the vicinity of the home airport.

The latest FAA flight projections indicate that the decrease in large military aircraft traffic is seven-fold. For small military aircraft, the decrease is 28.1%. Despite the fact that the amount of commercial jumbo jet operations (Class A air carriers) in the latest forecast is over three times that of the original forecast, the overall risk to Turkey Point from an aircraft accident decreases from 8.11E-7/yr to 3.63E-7/yr under MUOR conditions as a consequence of the predicted decrease in military air traffic. This represents a 55% reduction in the frequency of aircraft accidents at the site having the potential to generate exposures in excess of 10 CFR 100 limits. It is also well below 1E-6/yr significance threshold specified in Section 2.2.3 of NUREG 0800.

The following reasonable qualitative factors not directly addressed in the risk estimate are provided below to show that the realistic probability of exceeding 10 CFR 100 guidelines due to an aircraft impact will be lower than the revised risk estimate of 3.63E-7/yr for Turkey Point.

1. Shielding by adjacent structures or heavy machinery, and barriers such as the canal and the fossil units are not fully credited. This may reduce the risk by 20%.

2. The conditional core damage probability and conditional containment failure probability are not based on more detailed assessment of structural capability or all available equipment. For example, Sandia National Laboratory tests have indicated that the containment structures do not experience perforation damage. In addition, the steel liner is effective in preventing concrete from scabbing. This may reduce the risk to varying degrees for different structures but is not readily quantifiable.

The structures at Turkey Point considered to be critical structures for the purpose of the risk assessment were the containment buildings, turbine building, control building, auxiliary building, spent fuel buildings, emergency diesel generator buildings, intake structure, and the fossil unit chimneys.

With respect to the spaceport option, FPL did not perform a specific analysis to quantify the effects of potential launch vehicle failures at the base due to the limited number of flight operations projected for such a facility. The potential impact of a spaceport at the Homestead Air Force Base location would be bounded by the impact associated with a commercial airport.

As indicated in our previous correspondence on this subject, FPL continues to communicate with local and state authorities on this matter in order to ensure that the issues coming from the commercialization of the base are identified, that the offsite emergency preparedness program to address these issues is appropriately revised, and to ensure the Federal Emergency Management Agency is in concurrence with the revisions to the program.

Once the proposed disposition of the Homestead Air Force Base is finalized, FPL will update our Final Safety Analysis Report, as appropriate, to reflect these changes.

Should there be any questions on this submittal, please contact us.

Very truly yours,

D.E. Jernigan
R.J. Hovey

R. J. Hovey
Vice President
Turkey Point Plant

OH/MG

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant
Florida Department of Health and Rehabilitative Services

Table 1
Original Homestead Airport Traffic Forecast
from Earlier Analysis

Aircraft Classes	Projected Annual Aircraft Operations			
	1994	1999	2004	2014
CLASS A (Air carriers) (MD-11,DC-10,B-767,B-737,F-100, MD-80,CL600,DHC8)	0	520	33870	45890
(Large military Aircraft) (C-130,C-141,P-3)	10388	10388	10388	10388
Subtotals	10388	10908	44258	56278
CLASS B (Small high-performance) (F-15, F-16)	18230	18230	18230	18230
(General aviation jet) (Learjet, Citation)	3850	3850	5750	5650
Subtotals	22080	22080	23980	23880
CLASS C (Air taxi)	0	0	0	0
(GA Turboprop) (Metroliner, Cessna 206, Nomad)	1316	1316	1316	1316
(GA multi-engine) (Piper 31)	608	34408	40208	44308
(GA single engine)	0	82000	99900	110400
(Helicopters) (UH-60, H-3)	5118	9918	10418	10518
Subtotals	7042	127642	151842	166542
Grand Totals	39510	160630	220080	246700

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Table 2
Updated Homestead Airport Traffic Forecast
For MUOR projection

Aircraft Class	Projected Annual Aircraft Operations				
	1997	2000	2005	2015	MUOR*
CLASS A (Air carriers) (MD-11,DC-10,B-767,B-737,F-100, MD-80,CL600,DHC8)	0	0	8700	74140	154679
(Large military Aircraft) (C-130,C-141,P-3)	1624	1624	1624	1624	1624
Subtotals	1624	1624	10324	75764	156303
CLASS B (Small high-performance) (F-15, F-16)	13100	13100	13100	13100	13100
(General aviation jet) (Learjet, Citation)	900	2990	3450	4510	4510
Subtotals	14000	16090	16550	17610	17610
CLASS C (Air taxi)	0	0	0	0	0
(GA Turboprop) (Metroliner, Cessna 206, Nomad)	900	900	1940	900	900
(GA multi-engine) (Piper 31)	900	11330	13000	17160	21900
(GA single engine)	0	26304	27993	33821	29000
(Helicopters) (UH-60, H-3)	2400	4410	4890	5480	5561
Subtotals	4200	42944	47823	57361	57361
Grand Totals	19824	60658	74697	150735	231274

*MUOR = Maximum Use, One Runway

NUREG/CR-6451
BNL-NUREG-5249

A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants

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EXECUTIVE SUMMARY

The long-term availability of less expensive power and the increasing plant modification and maintenance costs have caused some utilities to re-examine the economics of nuclear power. As a result, several utilities have opted to permanently shutdown their plants. Each licensee of these permanently shutdown (PSD) plants has submitted plant-specific exemption requests for those regulations that they believe are no longer applicable to their facility. The preparation and subsequent review of these exemption requests represents a large level of effort for both the licensees and the NRC staff. This experience has indicated the need for an explicit regulatory treatment of PSD nuclear power plants.

This report presents a regulatory assessment for generic BWR and PWR plants that have permanently ceased operation in support of NRC rulemaking activities in this area.

After the reactor vessel is defueled, the traditional accident sequences that dominate the operating plant risk are no longer applicable. The remaining source of public risk is associated with the accidents that involve the spent fuel. Previous studies have indicated that complete spent fuel pool drainage is an accident of potential concern. Certain combinations of spent fuel storage configurations and decay times, could cause freshly discharged fuel assemblies to self heat to a temperature where the self sustained oxidation of the zircaloy fuel cladding may cause cladding failure.

Spent Fuel Configurations

This study has defined four spent fuel configurations which encompass all of the anticipated spent fuel characteristics and storage modes following permanent shutdown. Spent fuel which (due to a combination of storage geometry, decay time, and reactor type) can support rapid zircaloy oxidation is designated as Spent Fuel Storage Configuration 1 - "Hot Fuel in the Spent Fuel Pool." Configuration 1 encompasses the period commencing immediately after the offload of the core to a point in time when the decay heat of the hottest assemblies is low enough such that no substantial zircaloy oxidation takes place (given the pool is drained), and the fuel cladding will remain intact (i.e., no gap releases).

After this point, the fuel is considered to be in Configuration 2 - "Cold Fuel in the Spent Fuel Pool." The fuel can be stored on a long-term basis in the spent fuel pool, while the rest of the plant is in safe storage or decontaminated (partial decommissioning). Alternatively, after decay heat loads have declined further, the fuel can be moved to an ISFSI (designated as spent fuel storage Configuration 3). This would allow complete decommissioning of the plant and closure of the Part 50 license. Spent fuel storage Configuration 4 assumes all spent fuel has been shipped offsite. This configuration assumes the plant Part 50 license remains in effect only because the plant has not been fully decontaminated and cannot be released for unrestricted public access.

A representative accident sequence was chosen for each configuration. Consequence analyses were performed using these sequences to estimate onsite and boundary doses, population doses and economic costs.

Regulatory Assessment

After a plant is permanently shutdown, awaiting or in the decommissioning process, certain operating based regulations may no longer be applicable. A list of candidate regulations was identified from a screening of 10 CFR Parts 0 to 199. The continued applicability of each regulation was assessed within the context of each spent fuel storage configuration and the results of the consequence analyses. The regulations that are no longer fully applicable to the permanently shutdown plant are summarized below:

The set of regulations that are designed to protect the public against full power and/or design basis accidents are no longer applicable and can be deleted for all spent fuel storage configurations of the permanently shutdown plant. These regulations include combustible gas control (50.44), fracture prevention measures (50.60, 50.61), and ATWS requirements (50.62).

Other regulations, although based on the operating plant, may continue to be partially applicable to the permanently defueled facility. This group of requirements includes the Technical Specifications (50.36, 36b), the fire protection program (50.48) and Quality Assurance (50.54(a) and Part 50 Appendix B).

The requirements for emergency preparedness (50.47, 50.54(q) and (t), and Part 50 Appendix E), onsite property damage insurance (50.54(w)) and offsite liability insurance (Part 140), were evaluated using the accident consequence analysis. Since the estimated consequences of the Configuration 1 representative accident sequence approximate those of a core damage accident, it is recommended that all offsite and onsite emergency planning requirements remain in place during this period, with the exception of the Emergency Response Data System requirements of Part 50, Appendix E. Subject to plant specific confirmation, the offsite emergency preparedness (EP) requirements are expected to be eliminated for Configuration 2, on the basis of a generic boundary dose calculation. Part 50 offsite EP requirements can also be eliminated for Configurations 3 and 4 because the spent fuel has been transferred to an ISFSI (subject to Part 72 requirements) or transported offsite. Without spent fuel, the plant is not a significant health risk. It is recommended that the onsite property damage and the offsite liability insurance levels remain at operating reactor levels for the duration of Configuration 1. The consequence analyses support reduced insurance requirements for the remaining configurations (2,3, and 4).

4 RESULTS OF THE CONSEQUENCE ANALYSES

The MELCOR Accident Consequence Code System, MACCS[16,17] was used in this study to model offsite consequences. The principal phenomena considered in MACCS are atmospheric transport, mitigative actions based on dose projection, dose accumulation by a number of pathways (including food and water ingestion), early and latent health effects, and economic costs.

The prediction of onsite consequences (occupational doses) has traditionally been estimated through deterministic calculation of dose rate(s), dose(s) and contamination level(s), generally of a scoping or bounding character. Typical of these methods, was the guidance provided by Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors."[28] A typical application of this method was documented in NUREG/CR-5771.[29]

In this study, a variety of deterministic methods were applied. These included the standard method as outlined in relevant Reg. Guides, and/or alternate methods, such as the Ramsdell model,[30] for estimating the concentration of material entrained in the building wake. The methods are important for predicting on-site consequences, a region generally not modelled adequately by the MACCS code.

4.1 Configuration 1 - Results

A series of MACCS code calculations were performed to quantify the postulated accidents cases for the Configuration 1 conditions described in Section 3.1. For each accident, Cases 1 through 4, and each generic reactor type, two calculations were performed: one using the set of high release fractions (H) and a second employing the set of low release fractions (L). The latter generally included a DF of 10 for particulates to reflect potential for retention of activity in structures. The results are tabulated in Tables 4.1 and 4.2.

A case by case comparison of the results for Configuration 1 indicates that the generic PWR and BWR results are very similar. Generally, the results are within 20 percent of one another, although in a few comparisons the differences may be somewhat larger. This similarity would be expected on the basis of *identical* site assumptions, weather conditions, interdiction criteria, and source term fractional releases adopted for both reactor evaluations. PWR inventories were generally larger than corresponding BWR inventories. The higher PWR consequences were attributable to the assumed higher burnup, the inclusion of the last normal refueling discharge in cases where the last core discharge was considered, and the relatively larger PWR pool size in the cases that considered full pool involvement.

Table 4.1 Mean PWR Consequences

Accident	Inventory	Distance (miles)	Prompt Fatalities	Societal Dose (person-rem x10^4)	Latent Fatalities	Condemned Land (sq. miles)	Total Cost ($x10^4)**
Case 1H	full pool	0-50	70	74	31,300	467	287
		0-500	95	339	143,000	2790	566
Case 1L	full pool	0-50	1.2	62	25,300	297	100
		0-500	1.2	130	53,800	869	117
Case 2H	last core*	0-50	29	81	33,200	286	186
		0-500	33	226	94,600	776	274
Case 2L	last core*	0-50	0.3	42	16,800	156	56
		0-500	0.3	70	28,800	188	59
Case 3H	50% pool	0-50	0	32	13,200	25	25
		0-500	0	48	20,400	25	25
Case 3L	50% pool	0-50	0	6	2,400	2	1.1
		0-500	0	8	3,400	2	1.1
Case 4H	last core*	0-50	0	24	10,100	15	15
		0-500	0	36	15,400	15	15
Case 4L	last core*	0-50	0	4	1,500	1	0.8
		0-500	0	5	2,300	1	0.8

* The "last core" also includes the last normal refueling discharge.

** excludes health effects

A limited comparison can be made of the results obtained in this effort with those of previous investigations. The consequence estimates obtained here are generally higher. For example, the societal dose commitment (0 to 50 miles) for the worst case accident (fire, full pool involvement, high release fractions) reported by Sailor[7] was 2.6 million person-rem; Jo[8] reported 25.6 million person-rem; while in the present work 75.3 million person-rem (BWR) was obtained. As discussed in Appendix A, these early efforts used identical inventory and source term assumptions. The differences observed were primarily due to the population assumptions. The average population density (0-50 miles which includes the large city) used herein was about 1800 persons per square mile. This would support an approximate increase
of a factor of two over the dose reported by Jo. The second major reason the consequences are greater is the radionuclide inventory used here. The assumptions made for reactor power, end of plant life fuel burnup and fuel pool capacity, resulted in an inventory which has substantially higher quantities of the long lived radionuclides than previous studies. For example, the total BWR pool inventory of Cs-137 was about a factor of 3 greater than developed by Sailor for the Millstone plant. Thus, the limited comparisons would indicate that the consequences determined in this study were generally higher than the former studies. The consequences are consistent with earlier work, when gross differences in the underlying assumptions are taken into account.

Table 4.2 Mean BWR Consequences

Accident	Inventory	Distance (miles)	Prompt Fatalities	Societal Dose (person-rem x10^4	Latent Fatalities	Condemned Land (sq. miles)	Total Cost $x10$^{**}
Case 1H	full pool	0-50	74	75	31,900	456	280
		0-500	101	327	138,000	2170	546
Case 1L	full pool	0-50	1.3	58	23,600	286	97
		0-500	1.3	120	49,800	784	113
Case 2H	last core	0-50	24	81	33,000	262	167
		0-500	26	207	86,400	521	234
Case 2L	last core	0-50	0.2	38	15,300	140	48
		0-500	0.2	62	25,700	159	51
Case 3H	50% pool	0-50	0	29	12,200	23	23
		0-500	0	45	18,900	23	23
Case 3L	50% pool	0-50	0	5	2,100	2	1.0
		0-500	0	7	3,000	2	1.0
Case 4H	last core	0-50	0	20	8,300	13	12
		0-500	0	30	12,700	13	12
Case 4L	last core	0-50	0	3	1,300	1	0.7
		0-500	0	4	1,900	1	0.7

** excludes health effects

The total costs of fuel pool accidents observed in this study were found to rise more sharply than the societal dose. This reflects the tradeoffs of protective (interdiction and relocation) actions. These actions are, of course, intended to limit public exposure to the released radioactivity, but at the increased cost of primarily population dependent interdiction and relocation expenses. Again the major obvious factors, which will drive costs up in comparison to earlier studies, are the larger population at risk and the larger inventory of material considered in this study. This observation is supported by a comparison of the condemned land. Comparing Case 1H in Table 4.1 or 4.2 with case 1A of Table A.2, it can be seen that the condemned area has doubled. Although, Table A.2 identifies this as interdicted area, which might be subject to a different interpretation given the usage of this term by the MACCS code, the text of the Sailor study clearly stated "... interdicted area (the area with such a high level of radiation that it is assumed that it cannot ever be decontaminated)." Condemned land is defined as farmland permanently removed from production, as such it does not account for the population affected area. However, the condemned area for case 1H in the present study clearly indicates a more extensive contamination of all lands when compared to the former study. This increase translates into increased costs.

Table 4.3 PWR Core Melt Accident Results

Accident	Inventory	Distance (miles)	Prompt Fatalities	Societal Dose (person-rem x10⁴)	Latent Fatalities	Condemned Land (sq. miles)	Total Cost ($x10⁶)
RZ1 with evacuation	3800 Mwt core	0-500	88	70.*	35,000	2000	NR
RZ1 no evacuation	3800 Mwt core	0-500	160	220.	110,000	2000	NR

* Doses that were not reported, have been estimated from the number of latent fatalities and the BEIR-V recommended risk coefficient of 5.0E-4 fatalities per person-rem.

(Reproduced from Reference 14)

For perspective, it is interesting to provide some comparison to core melt accidents. A major core melt accident (RZ1, large early release) was selected from the results reported in Reference 14. This study employed many of the assumptions, i.e., population distribution and weather conditions, that were employed in the present analysis, thus allowing for reasonable comparison. The core melt accident source term was 100% of the noble gases, 27% of the iodine group, 21% of the cesium group, 10% of the tellurium group, 12% of the barium and strontium groups, 0.52% of the ruthenium group, 0.2% of the lanthanum group and 0.6% of the cerium group. Table 4.3 summarizes the reported results.

The core melt accident results are provided for two emergency protective actions: one in which a representative evacuation was modelled along with long term protective actions; and a no evacuation, no long term protective action case. The later case, while unrealistic, provides a very conservative bounding estimate of the consequences. A case with protective actions identical to this study was not reported. However, the results of such an analysis would have provided results intermediate to those reported (with the exception to condemned land which is not affected by emergency response). Comparison with the results shown in Tables 4.1 and 4.2 clearly indicates that for worst case assumptions, i.e., full pool involvement and large source term, the postulated Configuration 1 spent fuel pool accident may have *comparable* consequences to a major core melt accident.

Previous studies have elected to quantify the risks and costs of fuel pool accidents using either Case 1 or Case 2 results. In their final analysis, Sailor, et al.,[7] chose the last refueling offload/maximum source term accident results. In Jo, et al.,[8] a worst case (full pool/maximum source term accident) and a best estimate case (last refueling/maximum source term accident) were explored. For the present evaluation, BNL recommends that the estimated consequences for case 2L be used. This case assumes that the accident is limited to the last full core discharge (plus the last normal refueling discharge in the case of a PWR) and the lower release fractions, that reflect some credit for fission product retention.

This recommendation has been made for the following reasons. As discussed in NUREG/CR-4982, there is a large degree of uncertainty associated with the fire propagation throughout the entire pool. Additionally, mitigative options such as rack modifications,[5,6] (i.e., increased hole size) and fuel

Reactor Spent Fuel Storage

Spent Fuel Storage | News and Information | NRC Home Page | E-mail

Spent Fuel Pool and Full Core Offload Capability

Note: This data is based on unevaluated information provided to the NRC by licensees. It is current as of November 4, 1998.

Plant Name	Core Size	Spent Fuel Pool			Current License Expires	Lose Full Core Offload Capability	Dry Cask Storage?
		Capacity	Assemblies Stored	Remaining Capacity			
Arkansas 1	177	968	818	150	2014	LOST	YES
Arkansas 2	177	988	701	287	2018	1999	YES
Beaver Valley 1	157	1627	756	871	2016	2018	NO
Beaver Valley 2	157	1088	392	696	2027	2012	NO
Braidwood 1	193	2870	1054	1816	2026	2010	NO
Braidwood 2	193				2027	2010	NO
Browns Ferry 1	764	3471	1864	1607	2013		NO
Browns Ferry 2	764	3133	2116	1355	2014	2013	NO
Browns Ferry 3	764	2353	1588	1879	2016	2006	NO
Brunswick 1	560	1767	984	783	2016	2000	NO
Brunswick 2	560	1767	1020	747	2014	1999	NO
Byron 1	193	2781	1278	1503	2024	2010	NO
Byron 2	193				2026		NO
Callaway	193	1340	829	511	2024	2004	NO
Calvert Cliffs 1	217	1830	1362	468	2014		YES
Calvert Cliffs 2	217				2016		YES
Catawba 1	193	1418	705	622	2024	2006	NO
Catawba 2	193	1418	686	695	2026	2006	NO
Clinton	624	2515	1124	1381	2026	2006	NO
Comanche Peak 1	193	556	765	526	2030	2002	NO
Comanche Peak 2	193	735			2033		NO
Cooper	548	2366	1340	1026	2014	2004	NO
Crystal River 3	177	1357	680	677	2016	2011	NO
Davis-Besse	177	718	601	117	2017	Lost in 1998	YES
D.C. Cook 1	193	3613	2015	1598	2014	2011	NO
D.C. Cook 2	193				2017	2011	NO
Diablo Canyon 1	193	1324	640	684	2021	2006	NO
Diablo Canyon 2	193	1317	660	657	2025	2007	NO
Dresden 2	724	3537	2562	975	2006	2002	NO
Dresden 3	724	3536	2380	1156	2011	2003	NO
Duane Arnold	368	2411	1648	763	2014	2003	NO
Farley 1	157	1407	662	527	2017	2006	NO
Farley 2	157	1407	593	641	2021	2010	NO
Fermi 2	764	2383	1296	1087	2025	2001	NO
FitzPatrick	560	2797	2080	717	2014		NO
Fort Calhoun	133	1083	706	377	2013	2007	NO

Ginna	121	1879	879	435	2009	NA	NO
Grand Gulf 1	800	4348	2488	1860	2022	2005	NO
Hatch 1	560	5946	4884	1062	2014	2000	NO
Hatch 2	560				2018	2000	NO
Hope Creek	764	4006	1708	2298	2026	2008	NO
Indian Point 2	193	1374	917	457	2013	2006	NO
Indian Point 3	193	1345	672	655	2015	2011	NO
Kewaunee	121	990	780	210	2013	2009	NO
LaSalle 1	764	7932	3076	4852	2022	2013	NO
LaSalle 2	764				2023	2013	NO
Limerick 1	764	2832	1701	1131	2024	2006	NO
Limerick 2	764	3921	1893	2028	2029	2006	NO
McGuire 1	193	1351	871	480	2021	2002	NO
McGuire 2	193	1425	1039	386	2023	2001	NO
Millstone 2	217	1263	868	423	2015	2002	NO
Millstone 3	193	756	416	340	2025	2001	NO
Monticello	484	2209	1094	1115	2010	2006	NO
Nine Mile Point 1	532	2776	2200	576	2009	1999	NO
Nine Mile Point 2	764	4049	1400	2649	2026	2010	NO
North Anna 1	157	1737	1505	169	2018		YES
North Anna 2	157				2020		YES
Oconee 1	177	1312	1094	218	2013	2013	YES
Oconee 2	177	1312	1094	218	2013	2013	YES
Oconee 3	177	825	552	273	2014	2014	YES
Oyster Creek	560	2645	2420	180	2009	LOST	YES
Palisades	204	771	657	101	2007	LOST	YES
Palo Verde 1	241	1205	648	557	2024	2004	NO
Palo Verde 2	241	1205	644	561	2025	2003	NO
Palo Verde 3	241	1205	664	541	2027	2003	NO
Peach Bottom 2	764	3819	2720	1099	2013	2000	NO
Peach Bottom 3	764	3819	2777	1042	2014	2001	NO
Perry 1	748	4020	1504	2516	2026	2011	NO
Pilgrim	580	3859	1974	1885	2012	NA	NO
Point Beach 1	121	1502	1347	155	2010		YES
Point Beach 2	121				2013		YES
Prairie Island 1	121	1386	1237	125	2013	2007	YES
Prairie Island 2	121				2014	2007	YES
Quad Cities 1	724	3657	1933	1724	2012	2002	NO
Quad Cities 2	724	3897	2943	954	2012	2003	NO
River Bend	624	2680	1400	1280	2025	2006	NO
Robinson	157	544	302	242	2010	NO	YES
Salem 1	193	1632	772	850	2016	2012	NO
Salem 2	193	1632	584	1038	2020	2016	NO
San Onofre 2	217	1542	870	672	2013	2006	NO
San Onofre 3	217	1542	918	624	2013	2006	NO
Seabrook	193	1236	376	860	2026	2010	NO
Sequoyah 1	193	2091	1295	796	2020	2004	NO
Sequoyah 2	193				2021	2004	NO
Shearon Harris 1	157	4184	720 PWR and 1841 BWR	336 PWR and 557 BWR	2026		NO
South Texas 1	193	1969	428	1529	2027	2024	NO
South Texas 2	193	1969	400	1556	2028	2025	NO
St. Lucie 1	217	1706	1128	578	2016	2006	NO
St. Lucie 2	217	1076	692	384	2023	2001	NO

Summer	157	1276	637	567	2022	2006	NO
Surry 1	157	1044	854	190	2012	NA	YES
Surry 2	157				2013	NA	YES
Susquehanna 1	764	2840	2655	None	2022	2000	YES
Susquehanna 2	764	2840	1762	823	2024	2000	YES
Three Mile Island	177	1338	755	583	2014	NA	NO
Turkey Point 3	157	1395	808	587	2012	2009	NO
Turkey Point 4	157	1389	770	619	2013	2009	NO
Vermont Yankee	368	2863	2331	532	2012	2001	NO
Vogtle 1	193	1475	1081	2392	2027	2015	NO
Vogtle 2	193	1998			2029	2015	NO
WNP 2	764	2654	1703	951	2023	1999	NO
Waterford 3	217	2398	700	1698	2024	2018	NO
Watts Bar 1	193	1612	80	1530	2035	2018	NO
Wolf Creek	193	1327	664	663	2025	2008	NO

DEPARTMENT OF THE AIR FORCE
482D FIGHTER WING (AFRES)

25 Mar 96

MEMORANDUM FOR: SEE DISTRIBUTION

FROM: 482FW/SE
29050 Coral Sea Blvd., Box 37
Homestead ARB, FL 33039-1299

SUBJECT: Minutes of 18 Mar 96 Bird Hazard Working Group (BHWG)

1. The Homestead Air Reserve Station Bird Hazard Working Group met 18 March 1996, 0900, B360, 482 FW Safety Conference Room. The following personnel attended:

Col Steve Fulghum	482 OG/CC, Chairman, X7459
Lt Col Joe Dunaway	482 FW/SE, Facilitator, X7333,
Andy Bobick	482 SPTG/CEV, X7344
Dwight Hegge	482 OG/OSAT, X7510
Bill Comber	482 OG/OSA, X7072
Mike Handrahan	DCAD Operations, 238-6093/Fax 235-9180
Ray Talbird	482 SPTG/BCE, X7476
Connie Dodson	Scribe, X7063

2. INTRODUCTIONS were made as attendees arrived.

3. REVIEW OF BASH PLAN: The HARS BASH Plan was briefly reviewed. This program is a #1 priority in the Air Force Reserve. The Plan outlines responsibilities and procedures of all concerned with bird hazard reduction at HARS.

4. PERSPECTIVE ON BIRD PROBLEM: The Air Force loses an average of two aircraft yearly due to bird strikes. Last year 24 lives were lost at Elmendorf AB, with the first crash of an AWACS aircraft. So far, 57 people have been killed in Air Force aircraft due to bird strikes between 1985 and 1995 . Part of the problem at HARS is that the birds are not repelled by the former strong smell of JP-8, and the large amount of jet noise that characterized the airfield environment before the Hurricane. Our "habitat" is also growing/spreading to such a degree that we have more wildlife than ever drawn to the area along/around our flightline, runway, and base.

EXHIBIT
4

5. DEFINITION OF THE PROBLEM:

a. Habitat Change: Our airfield drainage ditches and culverts have become so overgrown and clogged that they support more natural vegetation. This habitat attracts more birds. Our bird population has drastically increased due to the plentiful food supply.

b. Mount Trashmore: Naturally, our proximity to this monument to human garbage puts us in the path of gulls and vultures traveling to and from Mt Trashmore.

c. Proximity to Bay/Ocean: Another habitat of large and small birds in our flying area.

6. SUMMARY OF ACTIONS TAKEN TO DATE:

a. Wing Safety Office.
(1) The Bird Aircraft Strike-Hazard Reduction (BASH) plan was published in February.
(2) The E3A AWACS mishap was briefed in depth to all assigned/attached pilots as required by the ALSAFCOM msg.
(3) A bird hazard environment survey by the USDA Animal Damage Control Division Chief was requested and was accomplished 28 Feb 96. Report dated 4 Mar 96 has been received. (Attachment 1)
(4) Close coordination has been established with BCE Environmental Flight to formulate strategies for restoring our airfield drainage canals to functionality.
(5) Conducted BHWG this date.

b. Airfield Management/Tower.
(1) Chief, Airfield Management has appointed and trained the Bird Scare Group. Newer, more state of the art scare equipment is being ordered for the group.
(2) Integrated light bar with horns, sirens, speakers are being ordered to equip Base Ops vehicle, Mako SOF vehicle, and OG vehicle.
(3) Bird Watch conditions have been reviewed along with the procedures to establish/change them.
(4) Tower Chief has reviewed Bird Watch conditions/procedures with his personnel.
(5) Numerous training sessions/flight safety briefings have covered lessons learned from the deficiencies in the Elmendorf mishap.
(6) The Tower Controllers are doing a good job observing/reporting bird sighting within the limitations of their visibility from the temporary tower cab.

c. BCE Environmental Flight.
(1) BCE Environmental participated in a recent working visit by an AFRES/CE scientific contractor to develop an Integrated Natural Resources Plan for Homestead ARS. This Integrated Natural Resources Management plan will have an impact on our BASH program. The BASH Program may have to be revised to comply with some of the provisions of this plan when it is published.
(2) The office has made contact with both DERM and CORPS Wetland folks regarding the need to acquire permits to clean our the drainage canals near the runway. Both

offices indicated there should be no problems restoring the canals to their earlier, functional state.

(3) The office has been working on a Statement of Work for the restoration of the canals to their clean and functional state. Included in the Statement Of Work is the cleaning of the culverts that cross under the runway to connect with other canals for drainage.

d. Wing Stan Eval.

(1) A thorough review of Supervisor of Flying procedures relating to bird hazard conditions and procedures has been conducted.

(2) Local Chapter 8, MCI11-F-16V3 contained outdated definitions of Bird Watch conditions. A change will be published to this publication reflecting the latest wording.

7. POSSIBLE SOLUTIONS:

a. We must get involved with future landfills/power plants to ensure they are not in our flight paths. It was noted that, had HARS been a civilian airport, Mt. Trashmore would never have been built where it is. COMMENT BY USAF

b. Retain the services of a Wildlife Biologist to assist in management of our bird problem and to conduct the research necessary upon which to base long term bird management decisions .

c. We must identify the magnitude of the problem: Identify the birds and their habits. We need help from US national wildlife professionals in this area. Gen Turner has said we need people smarter than us in these areas to assist. BASH people do not go on the road anymore; we go to them for training. There will be an AFRES BASH Inspection team here week after next k to look at our program.

d. We must get something done with the canals and culverts very soon. The culvert areas are lakes now; and the rainy season is on the way. Flooding will close the airfield. This was brought to the BCA's attention quite some time ago, and they were to "look into it". Mr. Mitchell, CE Environmental shop, has contacted DERM and natural resources people; it is reasonable that permits for clean-up will be granted, but it is a slow process.

e. We need to equip 3-4 vehicles with "scare" weapons, including a PA system and a tape player. Mr. Comber thinks for $1200-1300 per vehicle we can have lights, horns, whistles, etc. The vehicles selected will probably be the Base Ops vehicle, OG Vehicle, and the Mako SOF truck. OSA has a Bird Hazard Conditions OI which will be updated.

f. We need to specify the quantity of birds that make "low", "moderate" and "severe" activity. This information will be updated in the 482 Fighter Wing Bash Plan.

8. TASKINGS:

a. Mr. Handrahan, DCAD: Check with Dade County Solid Waste and any other Dade County sources regarding the future status of Mt. Trashmore; location of a new landfill in South Dade; and a new power plant in this area.

b. Mr. Comber, OSA: Research the costs to set up the Base Ops/SOF/OG vehicles with weapons for scaring birds. OG/CC will find the money.

c. Mr. Comber, OSA: Prepare and publish NOTAMs to advertise known and projected bird patterns to all involved military and civilian aircraft/personnel.

d. Mr. Bobick, BCE Environmental to Mr. Fernbacker: Find out exactly what clean-up was to be done for the canals/culverts/infield, originally to be funded by BCA.

e. Mr. Comber, OSA and Mr. Talbird, BCE: Determine the cycle of mowing along/around the airfield; where are personnel when aircraft are on the move (when birds are following the mowers), etc.

f. Mr. Hegge, AT and 482 OGV: Determine if we need an earlier turnout to avoid Mt. Trashmore.

g. 93 FS/CC: Review phase training and low-level weapons events relative to bird activities.

h. Lt Col Dunaway: Brief Brig Gen Turner on the need to retain a Wildlife Biologist to assist in managing our bird problem and formulating long term solutions..

i. 482 OGV: Prepare the proper language for Chapter 8 regarding Bird Watch Conditions.

j. Mr Fernbacher, BCE: Deliver the engineering plan for the cleanup of the airfield canals and culvert by 15 April 1996.

9. All concerned personnel/offices will be informed of the next meeting of the BHWG. We may need to meet soon after the 15 April 1996 suspense on the clean-up plan.

JOSEPH H. DUNAWAY III, Lt Col, USAFR
Recorder

STEVEN R. FULGHUM, Col, USAFR
Chairperson

Attachment:
USDA Bird Survey Letter

Attch 1

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Damage Control
2820 East University Ave
Gainesville, FL 32641
904/377-5556

March 4, 1996

Lt. Col. Joe Dunaway
482nd SE
Homestead ARB, FL 33039-1299

Dear Col. Dunaway,

It was a pleasure getting together with you, Flight Chief John Mitchell and Environmental Specialist Andy Bobick to review the bird situation at Homestead ARB as it relates to air traffic safety. I appreciate the opportunity to comment on the need for bird control at the base.

The cursory inspection tour of the airbase and part of the surrounding area gave me an indication of the magnitude and cause of the bird problems you are experiencing. Though I did not see large numbers of birds on the airbase, I noted several reasons for the reported excessive bird activity there. The main reason is that a county operated landfill located three miles north-northeast of the end of the runway is attracting large numbers of birds. Landfills are artificial attractants to birds because of the constant supply of available food and the large expanse of open land for loafing. As you are aware, we observed hundreds of vultures and gulls on the face of and soaring above the landfill. These two groups of birds are especially hazardous to aircraft because of their size and soaring habits. Vultures weigh from 4 to 5 pounds and will soar at great heights for several hours at a time. Gulls weigh 1 to 2.5 pounds and also soar for long periods of time. This situation is exacerbated by the fact that gulls using the landfill roost in an area just south or southeast of the airbase. According to base OPS personnel, hundreds of gulls fly through the runway area each morning and evening going to and from the landfill and roosting area. This will be hard to prevent unless gulls are deterred from using the landfill.

Ring-billed gulls were observed using a water puddle on the base. Gulls habitually use standing water on runways, parking lots and other concrete surfaces after a rain. Serious problems occur when this happens on or near runways. Gulls and wading birds will also frequent puddles in grassy areas in search of frogs, worms, insects and other small animals.

Other birds of concern at the airbase are wading birds, (e.g. egrets, herons, etc) and diving birds (e.g. cormorants, anhingas,

etc.). Some of these were observed using the drainage ditch and marshy area that parallels the runway. The standing water and marshy grasses in this area should be eliminated and measures taken to keep drainage ditches open to facilitate water flow and keep water from ponding.

Another concern is the reported congregating of cattle egrets and gulls around the tractor-mowers during grass cutting. This commonly happens as birds are attracted to the large number of insects, frogs and other small prey that become available when grass is cut.

As previously stated, the county landfill located north-northeast of Homestead ARB presents a major problem for air traffic using the base. The course of the runway directs air traffic almost directly over the landfill where bird activity is very heavy. Also, bird numbers in the area will always be artificially high because of the birds attracted to the landfill. The soaring habits of most of these birds inadvertently brings them over the airbase and into air traffic lanes. Controlling bird activity at the airbase will be difficult unless bird management is also implemented at the landfill.

Because of the complexities of bird usage at Homestead ARB, and the urgent need to reduce bird activity in the aerodrome, I recommend that a biological assessment and hazard action analysis be conducted concurrently with an operational hazard control program. This program would determine pertinent facts relative to bird use at Homestead ARB such as species composition, bird numbers, daily and seasonal activity and habitat factors that attract wildlife. It would also implement new control strategies based on observations and evaluate the effectiveness of the current bird control program. An assessment/operational program would allow us to develop long-range bird management plans for Homestead ARB. This assessment/operational program would be in compliance with the BASH Reduction plan for Homestead ARB.

Another benefit that can be realized from a bird control program at Homestead ARB is controlling birds in hangers and other open buildings. Birds using hangers for roosting and nesting can cause problems when their manure and nesting debris gets into engine parts or on airplane surfaces. Bird manure, because of the high acidic content, tends to corrode the body and canopy of airplanes, and manure and debris can contaminate sensitive mechanical and electrical equipment. In fact, it was stated during our meeting when discussing this problem that repainting areas where bird manure has corroded the paint can be quite a lengthy and expensive process.

I want to make you aware that I met with the Environmental Engineer for the Florida Air National Guard, Major David Youmans,

and informed him of the situation at Homestead ARB. Major Youmans said that he would recommend that the Air National Guard support any bird hazard management operations at Homestead.

As mentioned at our meeting, the USDA, ADC, Wildlife Services has Wildlife Biologists who are trained at assessing wildlife damage problems and implementing operational programs at airports and military air installations. I would be happy to provide assistance to your agency for implementing a bird hazard assessment/operational program.

I have enclosed the "Wildlife Hazard Prevention and Control" section of the ADC Airport Safety Manual. This section expounds on the principles and guidelines set forth in the BASH Reduction Plan for Homestead ARB. I have also submitted a draft Work Plan and budget for the USDA, Wildlife Services to conduct an assessment/operational program for Homestead ARB for your consideration.

Contact me should you have any questions or want to discuss the subject of this letter. I look forward to hearing from you soon. This office remains ready to serve you should you need our assistance.

Regards,

Bernice U. Constantin
State Director

Enclosure:

cc: John B. Mitchell, Flight Chief, Homestead ARB
Andrew L. Bobick, Environmental Specialist, Homestead ARB
Bart Vernace, District Office FAA, Airports

MEMO

HAFB
Bird Hazard

To: Rick Busch
From: Mike Handrahan
Subject: Bird Aircraft Strike Hazard
Date: December 16, 1996

I met with the BASH Work Group earlier today and left with a feeling that the USAFRes wants the County (DCAD) to take on a more active role in eliminating the hazard. They continue in no uncertain terms to indicate that the South Dade Landfill (2 1\2 miles away) wouldnt be where it is, if HST was a civilian airport. While the USAF is aggressively pursuing the elimination of an on airport TERPS clear zone forested area, they still imply that the very close proximity of the landfill to HST is actually the real problem and that it presents a very attractive environment to area gulls and vultures.

The BASH program was re-prioritized by the USAF as the result of the crash of an E-3 which killed all on board. Some USAF officers were later relieved of duty as the result of not developing a more pro-active program to minimize the hazard. Presently depending on the number of birds and sizes, the USAF restricts flying by either not allowing formations, low approaches or by simply closing the field. While we are a technically a military-civil airport, the closure would affect civil operations if we are otherwise open for business. After the long term JUA and we become a civil-military airport, we would more than likely still want to follow their lead for liability reasons and because they are our contract ATCT.

The USAF has contracted with the USDA for bird deprivation and to help them develop a locally viable program. The Birdman has obtained the necessary kill permits, assisted the USAF with obtaining technical improvements, trained ATC and Base Ops personnel and developed theories on the severity of the problem. The issue of the land fill activities came up at the first meeting earlier this year. I visited the site and made an informal presentation on conditions there. To date I have been unable to locate any significant information other than some FAA stats on strikes and a flyer on landfill locations. As I have told the group in the past, DCAD has not experienced a notable problem with bird strikes and effectively uses vehicle PA systems with horns and sirens and occasionally special bird shot to resolve the limited bird problems that we have experienced. I also obtained your approval to contact and work with Mr. Bruce Furlow a County Entomologist to investigate the situation and to work with the military to mitigate the problem.

The USAF birdman was apparently tasked with looking into the situation for the USAF and he has apparently validated their perception that the landfill is a significant contributor to the problem. He has dissected gulls and other birds and determined that insects they have eaten are found at the landfill and would exist there because of dead animal remains (in plastic bags) which he has often seen laying uncovered for hours and other similar conditions. His opinions

appear to have been validated by Mr. Constantine of USDA who has also visited the sites.The USDA Birdman also located and contacted a Lee Casey, and German Hernandez of County Solid Waste and asked them to attend todays meeting.

After the meeting broke up, I introduced myself to Mr Casey and Mr. Hernandez and a Steve B, their staff biologist and provided them with an overview of the situation. I toured the group around the airfield and discussed the overall issue with them. They had already picked up on the USAF comments concerning the airport proximity to the landfill and we agreed that it is in the best interests of all involved to look at incorporating some best management practices at the landfill to minimize the problem. They will definitley staff the item up their chain of command.

The following were among those in attendance at todays meeting, Col. Eustace (Commander), L/Col Fulghum (Deputy), L/Col Dunaway (SAFETY), 482nd Pilots, Base OPS, ATC, CE shop Solid Waste and myself.

I am concerned that the situation may get worse, be construed as a lack of safety awareness by DCAD, affect the FAR 139 application, go interdepartmental to fiscally resolve the who pays for fixing the situation scenario or deteriorate to another unacceptable level.

Prior to the next BASH meeting planned for mid-January I would like to further discuss this issue and develop a better understanding of our options, and course of action if my concerns appear well founded. BASH meetings will now be held (seasonally) monthly through April.

Thank you for your cooperation.

c: GManion
DShannon

U.S. Department
of Transportation
**Federal Aviation
Administration**

Orlando Airports District Office
9677 Tradeport Drive, Suite 130
Orlando, Florida 32827-5397
407-648-6582

May 28, 1996

Mr. Rick Busch
Manager, General Aviation Airports
Dade County Aviation Department
P.O. Box 592075
Miami, Florida 33159-2075

Dear Mr. Busch:

We have recently been contacted by the United States Department of Agriculture (USDA), Animal Damage Control that a county operated landfill is located within three miles of the approach end of Runway 23 at Homestead Air Force Base.

The USDA has completed an evaluation of bird problems at the request of the Air Force. The USDA concluded that the landfill contributed substantially to this problem and recommended that the Air Force pursue a bird control program at Homestead, which would be conducted by the USDA Animal Damage Control .

The Dade County Aviation Department (DCAD) is encouraged to contact either the Air Force or the USDA directly to monitor the situation since DCAD is planning to acquire the facility via a public benefit conveyance for public airport purposes.

If you have any questions concerning this matter, t
(407) 648-8583, extension 27.

HAFB
Bird Hazard

Sincerely,

Bart Vernace, P.E.
Airport Plans & Programs Manager

cc:
FDOT/6

facsimile
TRANSMITTAL

to: Rick Busch
fax #:
re: HST USAF Bird Strike meeting
date: March 28, 1996
pages: 9, including this cover sheet

The attached info on the USAF Bird Strike problem arrived in today's mail. I have already contacted a County Urban Entomologist, Bruce Furlow, to help filter some of this stuff out, provide direction and protect our interests. He has agreed to informally help if needed, until a formal request for his services is made.

The USDA letter from the State Director of Animal Damage Control indicates that Mt. Trashmore appears to be a bigger part of the overall bird issue than originally suspected. I toured Mt. Trashmore before the letter arrived and made a local contact with Solid Waste. There are a lot of gulls and vultures in, on, and over the landfill.

Mt.Trashmore is going to grow by current design and plans. Closed Sites 1 & 2 are 147ft high by 2200 long. They have started on #3, are ready for # 4 and #5 is available to develop. A future power plant is to be sited just West of the dump area.

Note references to culverts and canals and DERM.

How much emphasis does DCAD want to place on this, suggested next step ?

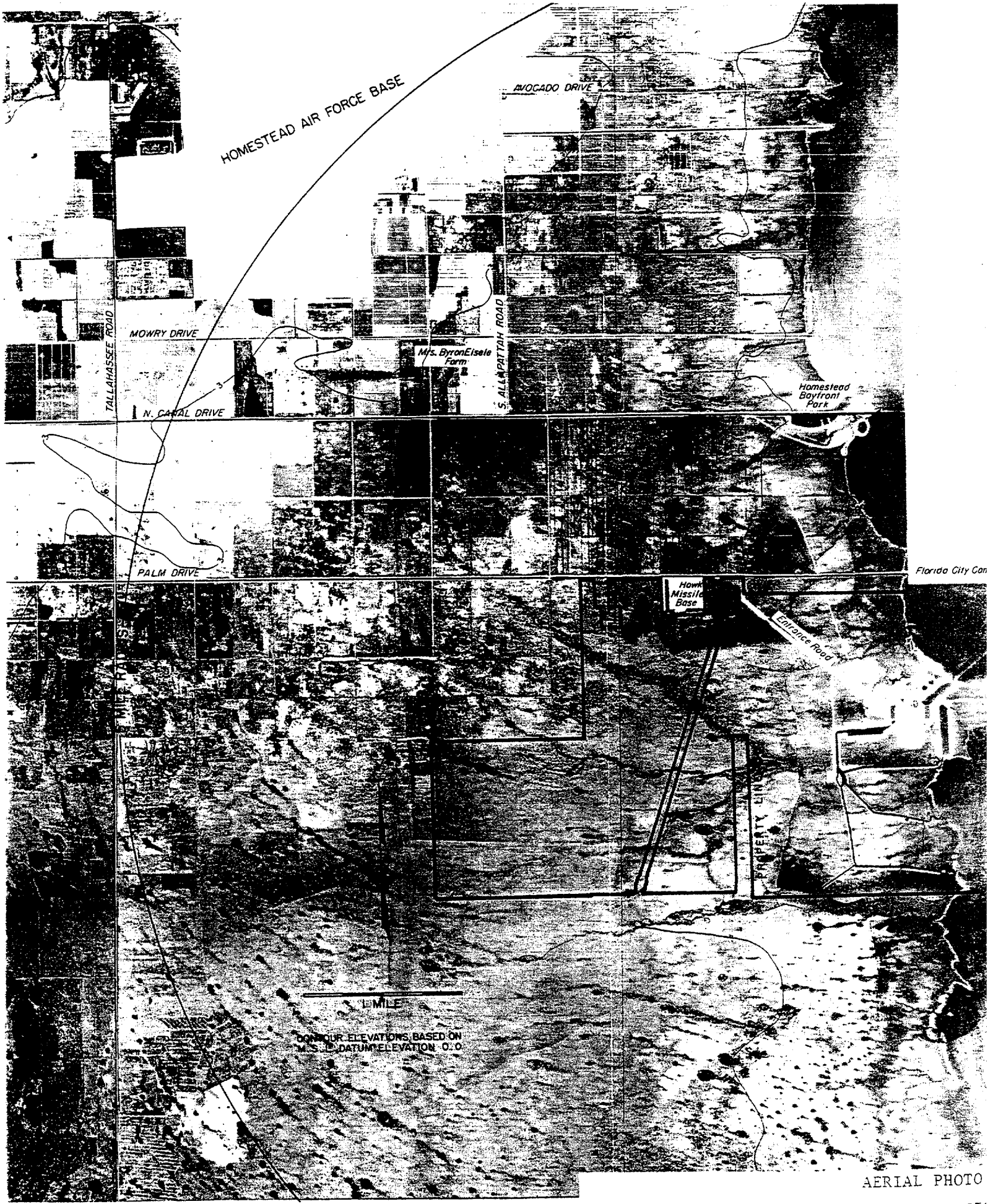
HAFB

Bird Hazards

From the desk of...

Mike Hendrahan
Manager, Kendall Tamiami Executive Airport
Dade County Aviation Department
12800 SW 137 Ave.
Miami, Fl. 33186

305 238-6083
Fax: 235-9180



AERIAL PHOTO

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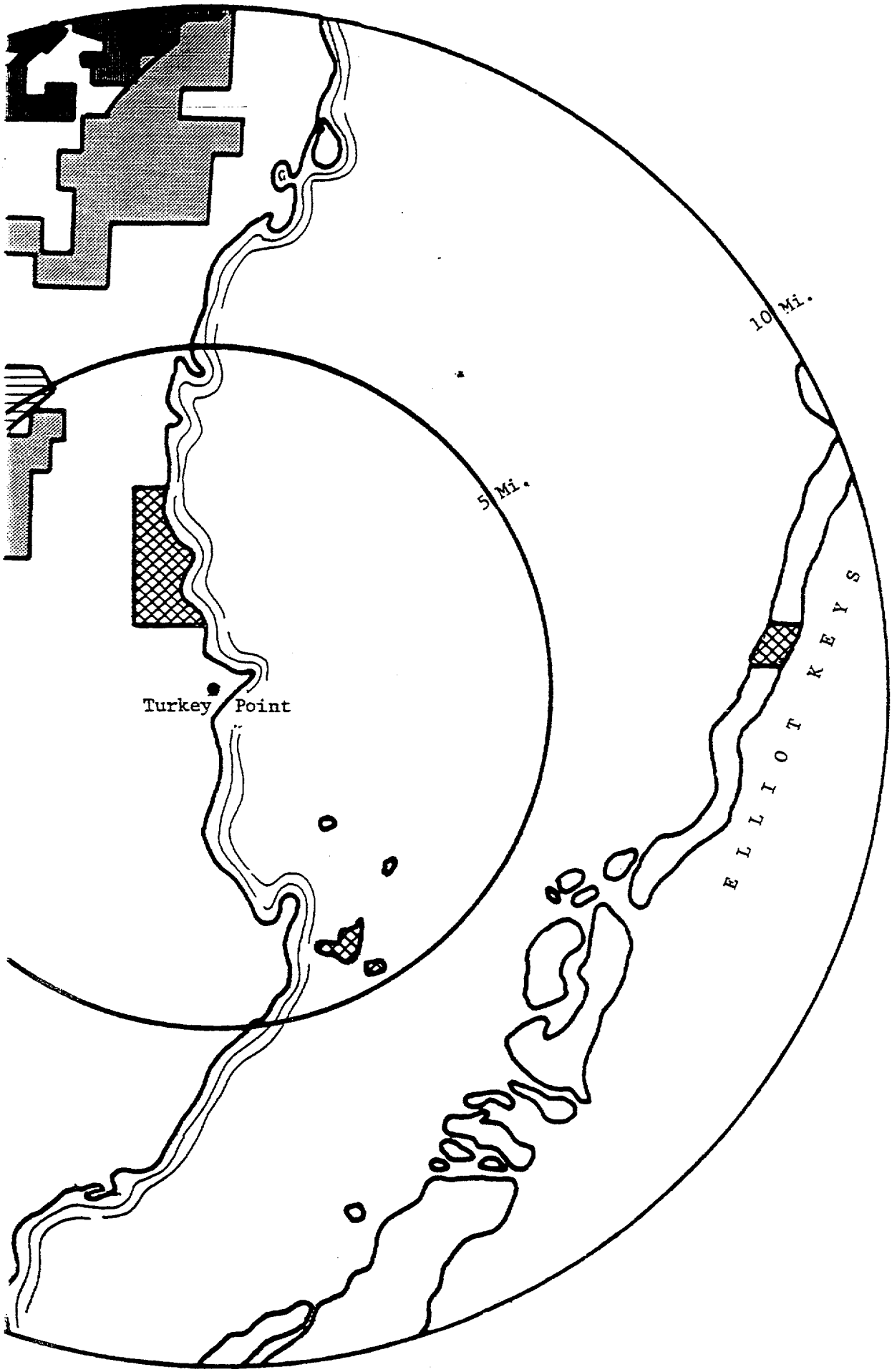
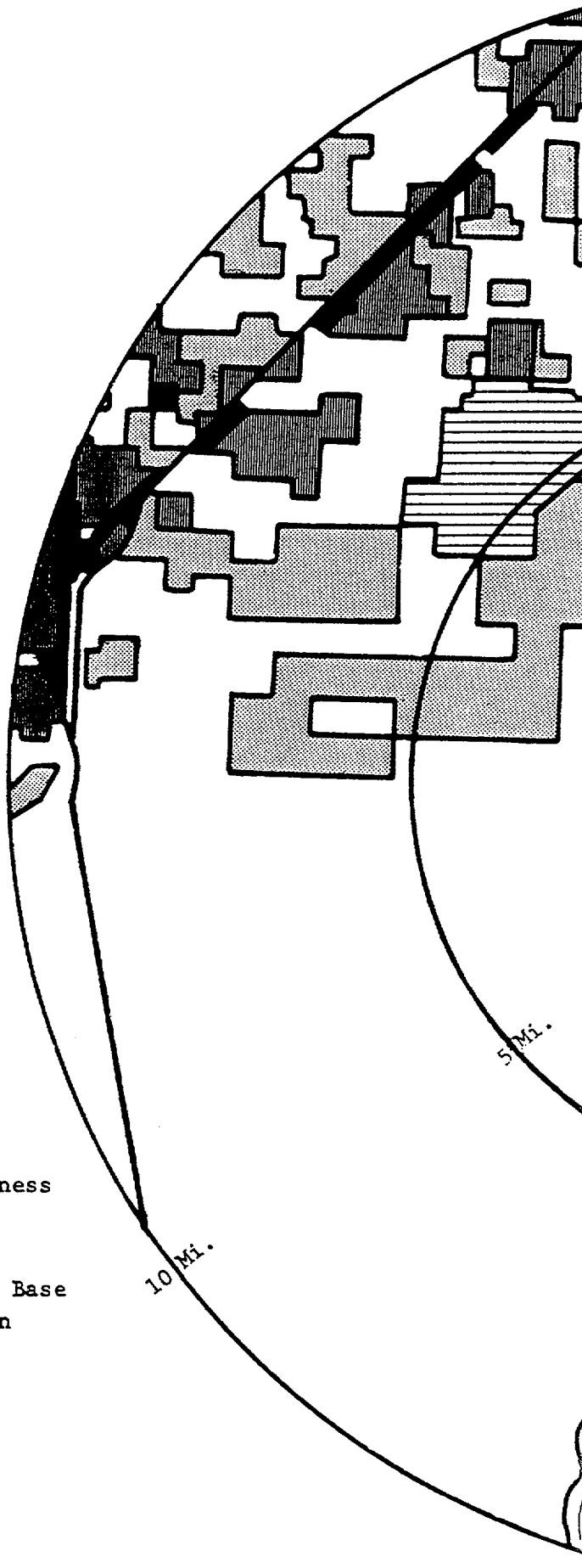


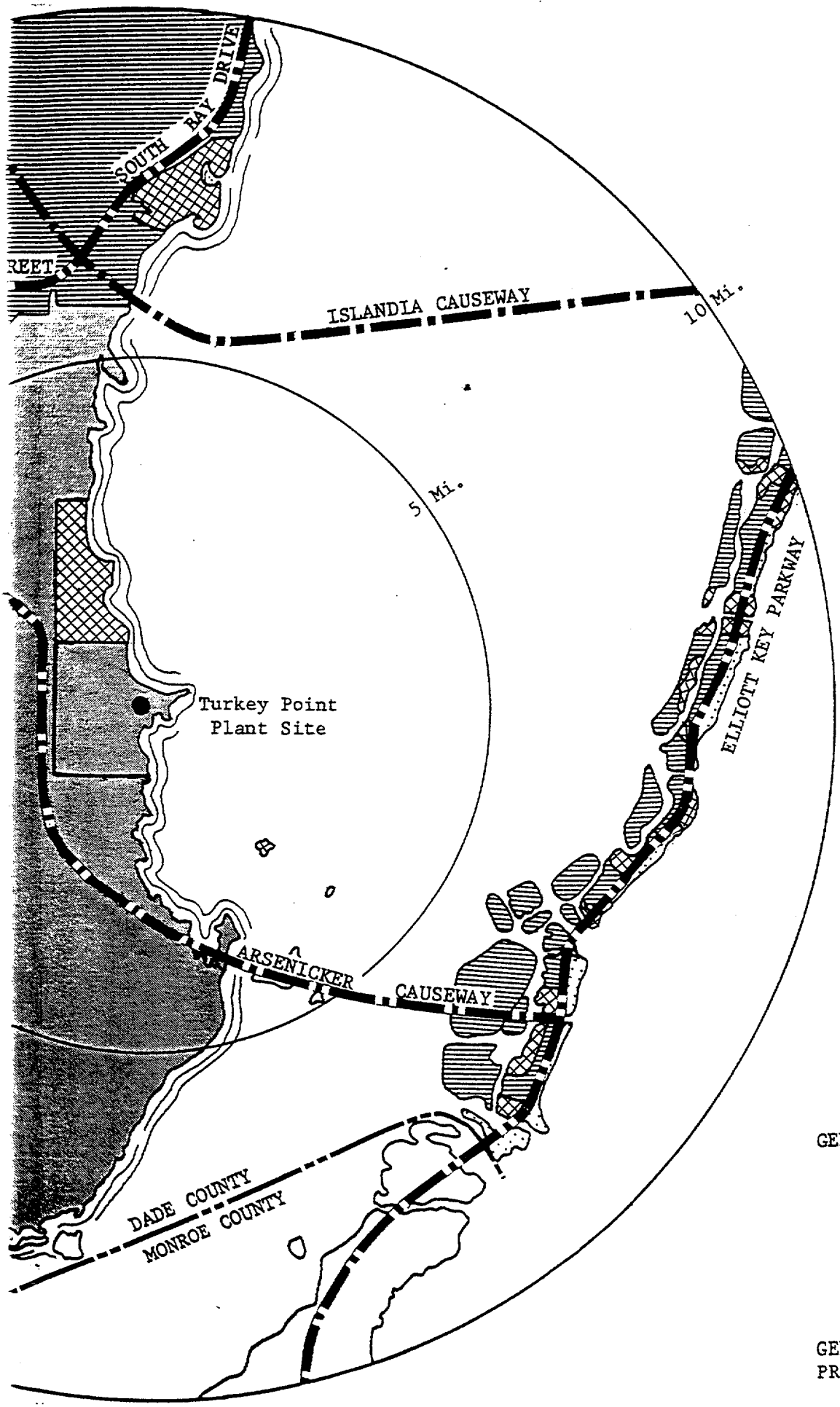
EXISTING GENERALIZED
LAND USE PATTERN
0 - 10 MILE RADIUS

EXISTING GENERALIZED
LAND USE PATTERN
FIG. 2.5-1



LEGEND

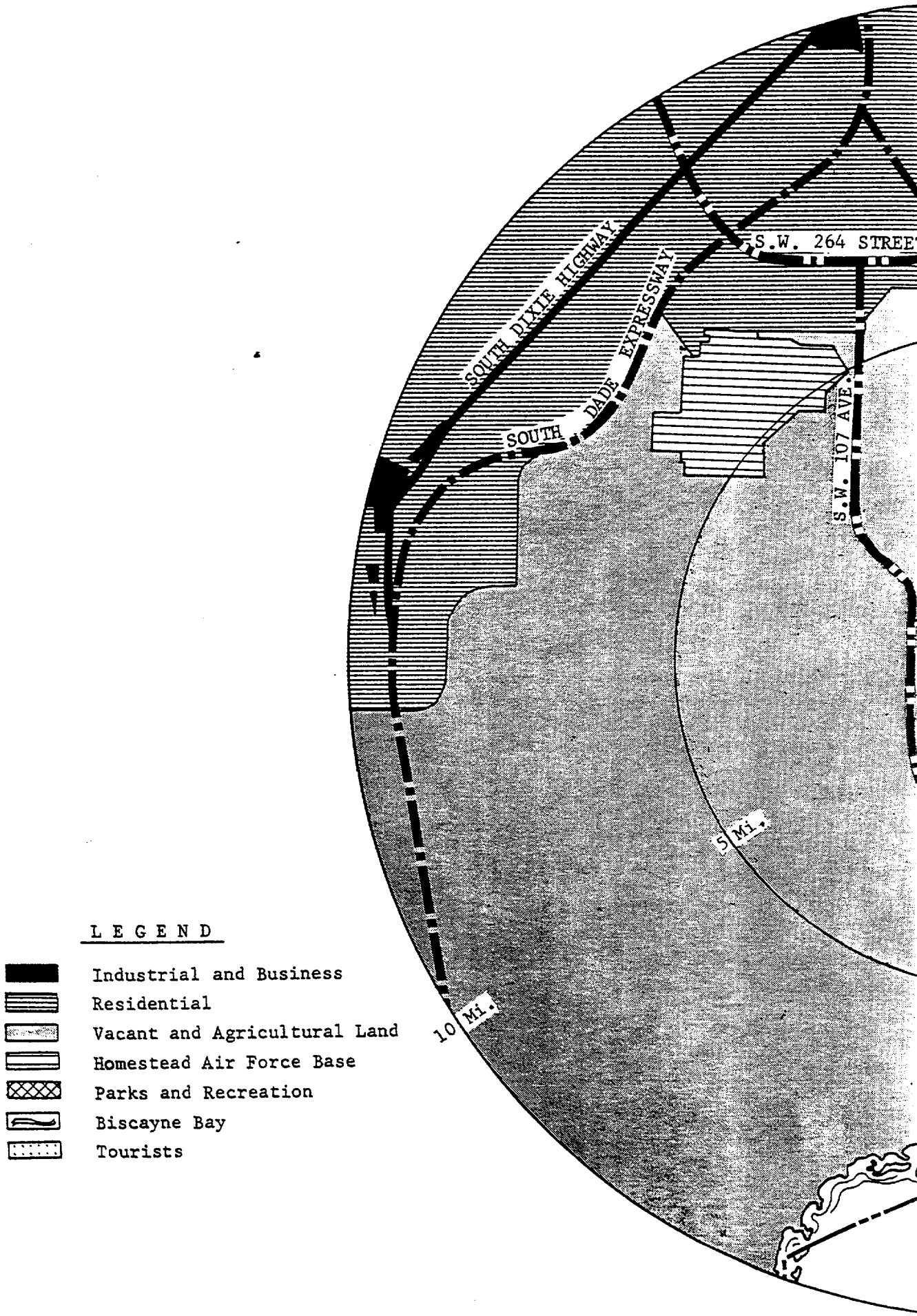
- Industrial and Business
- Residential
- Agriculture
- Homestead Air Force Base
- Parks and Recreation
- Vacant Land
- Biscayne Bay



PROJECTED (1985)
GENERALIZED LAND USE PATTERN
0 - 10 MILE RADIUS

GENERALIZED LAND USE PATTERN
PROJECTED TO 1985

FIG. 2.5-2


SOUTH DIXIE HIGHWAY
S.W. 264 STREE
SOUTH DADE EXPRESSWAY
S.W. 107 AVE.
5 Mi.
10 Mi.
LEGEND
Industrial and Business
Residential
Vacant and Agricultural Land
Homestead Air Force Base
Parks and Recreation
Biscayne Bay
Tourists