August 12, 1982

Docket No. 50-155
LS05-82- 08-016

Mr. David J. VandeWalle
Nuclear Licensing Administrator
Consumers Power Company
1945 W. Parnall Road
Jackson, Michigan 49201

Dear Mr. VandeWalle:

SUBJECT: SEP TOPIC III-4.D, SITE PROXIMITY MISSILES (INCLUDING AIRCRAFT)
BIG ROCK POINT NUCLEAR POWER PLANT

Enclosed is a copy of our final safety evaluation of Topic III-4.D, "Site Proximity Missiles" for the Big Rock Point plant. This assessment compares your facility, as described in Docket No. 50-155, with the criteria currently used by the regulatory staff for licensing new facilities.

Our review is based on your evaluation sent by letter dated December 14, 1981. Additionally, we have performed an independent review of the risks associated with all aircraft activities near the Big Rock Point site in response to intervenors contentions and Atomic Safety and Licensing Board questions regarding aircraft hazards (see paragraph B3). The staff concludes that potential site proximity missiles do not pose a significant hazard to the safe operation of the Big Rock Point plant.

This evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your facility. The assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this subject are modified before the integrated assessment is completed.

Sincerely,

Original signed by:

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
As stated

SEOA Add: Gary Stoley

cc w/enclosure:
See next page

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Docket No. 50-155
Big Rock Point
Revised June 1982

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SYSTEMATIC EVALUATION PROGRAM

TOPIC III-4.D

BIG ROCK POINT NUCLEAR POWER PLANT

TOPIC: III-4.D, Site Proximity Missiles (Including Aircraft)

I. INTRODUCTION

The safety objective of this topic is to ensure that the integrity of the safety-related structures, systems and components would not be jeopardized due to the potnetial for a site proximity missile.

II. REVIEW CRITERIA

General Design Criterion 4, "Environmental and Missile Design Basis," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that nuclear power plant structures, systems and components important to safety be appropriately protected against events and conditions that may occur outside the nuclear power plant.

III. RELATED SAFETY TOPICS

Topic II-1.C, "Potential Hazards or Changes in Potential Hazards Due to Transportation, Institutional, Industrial and Military Facilities" provides a description of the potential missile hazards.

IV. REVIEW GUIDELINES

The review was conducted in accordance with the guidance given in Standard Review Plan (SRP) Section 2.2.3, "Evaluation of Potential Accidents," 3.5.1.5, "Site Proximity Missiles (except Aircraft)," and 3.5.1.6, "Aircraft Hazards."

V. EVALUATION

The potential for hazardous activities resulting from nearby industrial, transportation, and military facilities in the vicinity of the Big Rock Point nuclear plant has been addressed in SEP Topic II-1.C. However, this topic will address all possible site proximity missiles, including those previously discussed in the above SEP topic report.

A. TRANSPORTATION ROUTES

1) Highways

The nearest highway that services the Charlevoix and Big Rock Point nuclear plant areas is U.S. Route 31. This two-lane, blacktop road is located 2,760 feet from the plant at its closest point. This highway is the main artery between the cities of Petoskey and Charlevoix. Local shipments of fuel oil and gasoline, along with limited shipments of explosives (ammonium nitrate) used at the local limestone quarry, pass by the plant on Route 31. There are no other regular shipments of explosive chemicals along Route 31 in the Big Rock Point area(1).

The distance between the highway and the Big Rock Point nuclear plant exceeds the minimum distance criteria given in Regulatory Guide 1.91 for truckload shipments of explosive materials. Therefore, it is concluded that an explosive accident on Route 31 will not adversely affect the safe operation of the plant.

2) Railways

A Chesapeake & Ohio (C&O) Railroad branch line runs approximately 5,600 feet south of the plant at its closest point. Information obtained from the railroad company indicates that three freight trains per week, providing local service only, use the line. The railroad company identifies propane as the only hazardous material shipped on the line. We have evaluated the consequences of a postulated explosion on the railroad in accordance with the guidance in Regulatory Guide 1.91. The distance between the railroad line and the plant exceeds the minimum criteria given in the regulatory guide for railroad shipments of explosive materials and, therefore, is acceptable(2).

A railroad spur off the main C&O Railroad line goes into the plant. This spur has been used sparingly in the past for transporting fuel bundles and other related equipment. No explosive-type material has been or is expected to be transported into the plant area on this railroad spur. Subsequently, no proximity missiles are postulated from the railway facilities.

3) Waterways

The Charlevoix harbor, located approximately 4 miles south of the plant, is a large recreational harbor used primarily for pleasure boating. However, some commercial ships use the harbor. The majority of this commercial traffic includes, shipping coal for a fossil fuel power plant on Lake Charlevoix, limestone and cement from a nearby cement

manufacturing plant, and occasional fuel oil and gasoline shipments to Beaver Island (approximately 31 miles northwest of Charlevoix). The fuel oil and gasoline are transported by barge to Beaver Island no more than 20 time a year. The closest these barges come to the plant is 4-1/2 miles, assuming a direct line between Charlevoix Harbor and the city of St. James on Beaver Island. Regular Lake Michigan commerical shipping lanes are approximately 15 miles away, at the closest point to the plant(3).

The distances between the commercial shipping lanes and the Big Rock Point nuclear plant exceed the minimum distance criteria provided in Regulatory Guide 1.91. It is therefore concluded that an explosive accident along the shipping lanes will not have an adverse effect on the safe operation of the plant.

B. AIRPORTS

1) Commerical

The closest airport to the Big Rock Point nuclear plant is the Charlevoix airport, located approximately 5 miles to the southwest. The airport is a general aviation facility used by light aircraft for charters, business, and recreactional activities. The airport consists of one blacktop runway (75 feet wide by 3,500 feet long), oriented in the east-west direction. This runway handles approximately 90% of all air traffic in and out of Charlevoix. In addition, there are two turf runways, 1,310 feet long and 1,550 feet long. In 1980, there were approximately 12,000 takeoffs or landings, with approximately half of these flights to or from Beaver Island. Currently, there are approximately 20 planes based at the airport. Future plans for main airport expansion are limited to extending the main runway from 3,500 feet to 4,500 feet in the spring of 1982(4).

The Emmet County Airport (located in Pellston, Michigan) is the closest commercial airport handling regularly scheduled passenger and freight traffic. The majority of commercial flights out of this airport are "commuter hops" to Traverse City or Sault Sainte Marie. The flight paths are straight runs between airports at an altitude of approximately 6,000 to 12,000 feet. The flight to and from Traverse City comes no closer than 8 to 10 miles to the southwest of the Big Rock Point nuclear plant(5).

As identified in SEP Topic II-1.C, there is no "undue risk to the safe operation of the nuclear plant and it meets the acceptance criteria of SRP 2.2.3."

2) Military Maneuvers

Bayshore Radar Station, located approximately 4-1/2 miles east of the plant, is used by the United States Air Force as a tracking station for simulated bombing runs. The flight corridor used for these simulated bombing runs is over Lake Michigan and is used primarily by the Strategic Air Command B-52s and FB-111s. It is also used occasionally by the National Guard. No live weapons/bombs are involved in these simulated bombing runs. The established corridor used by these planes is approximately 10 miles wide. The centerline of the corridor is located approximately 15 miles from the plant at its closest point. These military planes fly at an altitude between 400 and 1,200 feet, depending on the weather. All military planes in this corridor are tracked on radar, and any plane that deviates from this corridor is immediately notified to correct position. In addition, all military planes in the corridor have flight plans clearly showing the corridor boundaries, and all have instructions to stay within these borders(6).

As identified in SEP Topic II-1.C(2), a risk assessment was undertaken by the U.S. Air Force, which concluded that the probability of a crash at the plant was approximately 10^{-8} per year. This study was based on the corridor centerline located only 6.5 miles from the plant. Subsequent to this study, the corridor centerline was located 15 miles at the closest point from the plant. The probability of a crash is now even lower than 10^{-8}.

3) SUPPLEMENTARY AIRCRAFT HAZARD REVIEW FINDINGS

In addition to the above aircraft hazard review, we have performed an independent review of the risks associated with all aircraft activities near the Big Rock Point site in response to intervenor contentions and Atomic Safety and Licensing Board questions regarding aircraft hazards(13). Written testimony was submitted to the Board on the specific items addressing military and civilian aircraft activities. The military aircraft testimony addressed the B-52 training flights using the Bayshore low level training route, the Wolverine military operations area used by fighter aircraft for flight training, and the low level military training route (VR 1634) used by fighter aircraft. Our findings with respect to the above military flight activities are that the probability of an aircraft crash onto safety related portions of the Big Rock Point plant is acceptably low and does not pose a significant risk to the safe operation of the plant.

We also submitted written testimony regarding hazards associated with general aviation flights in the vicinity, as well as commercial aviation. Our findings indicate that both types of civilian aviation activities near Big Rock Point present a sufficiently low probability of a crash onto the safety related portions of the plant.

Thus we conclude that the risk of an aircraft crashing into the Big Rock Point Plant from any of the military or civilian flight activities in the vicinity is insignificant.

C. UNDERGROUND LINES

The closest underground pipeline is a 6-inch diameter natural gas line owned by Michigan Consolidated Gas Company, which is located approximately 1-1/2 miles south of the plant(7). Based on evaluations of pipline accidents conducted for previous licensing reviews, a pipline accident, at this distance, will not affect the safe operation of the plant(2). There are no gas or oil production fields, underground storage facilities or refineries in the vicinity of the plant.

D. INDUSTRY

The closest industrial complex to the Big Rock Point nuclear plant is a plastic molding processing plant located approximately 1/2 mile from the power plant, adjacent to the eastern property line of Consumers Power Company. This plant, which produces custom molded plastic fixtures, employs 126 people and processed 5 million plastic pellets last year. The materials stored at this facility are not of an explosive nature, except for small quantities of paint thinner(8).

A small industrial park is located approximately 2-1/4 miles southwest of the plant. Several light manufacturing companies, employing a total of about 200 persons, are located in the park(2). A survey made at one of the larger employers in this industrial park revealed that the only sources of potential explosives are small quantities of paint thinner and welding gas tanks(9). No hazardous materials in quantities large enough to affect the safe operation of the nuclear plant are known to be processed, stored, or transported in the industrial park.

A 10 kw windmill-type generator is located approximately 3 miles southwest of the plant and is approximately 100 feet above the ground. There is sufficient distance between the plant and the windmill-type generator to have no impact on the operation of the plant(10).

A large cement manufacturing facility and a quarry are located approximately 6 miles from the Big Rock Point nuclear plant and are far enough away to have no impact on the operation of the plant(11).

In conclusion, there are no industrial hazards in the vicinity of the Big Rock Point nuclear plant that could affect the safe operation of the plant.

F. GENERAL

The city of Charlevoix is the largest city in Charlevoix County and is located approximately 4 miles southwest of the Big Rock Point nuclear plant. The year-round population of Charlevoix County in 1980 was 19,907, with a projected year-round population of 27,600 in the year 2000.

The year-round population of Hayes Township (location of the Big Rock Point nuclear plant) in 1980 was 1,274, with a projected year-round population of 2,400 people in the year 2000. The main industry in this area is tourism, with peak summer population occurring in June, July, and August. The average daily population of Charlevoix County during this period is approximately 33,000 people.

The area along Route 31 adjacent to the Big Rock Point nuclear plant is zoned industrial. However, future expansion in this area is doubtful because the subsurface limestone fields make for poor drainage of industrial and sanitation wastes(12).

4. CONCLUSIONS

Based on our review, we conclude that operation of the Big Rock Point Plant does not present an undue risk to the health and safety of the public as a result of potential aircraft and site proximity missiles.

5. REFERENCES

1) Personal communication with Jack R. Mol, Chief of Police, City of Charlevoix, November 1981.

2) Response to SEP Topic II-1.C "Potential Hazards Due to Nearby Industrial, Transporation, and Military Facilities - Big Rock Point," letter LS05-81-05-018, dated May 13, 1981.

3) Personal communication with Petty Officer First Class Guy Veillette, United States Coast Guard, Charlevoix Station, November 1981.

4) Personal communication with Robert Haveman, Co-owner of McPhillips Flying Service, Inc., Charlevoix Airport, November 1981.

5) Personal communication with Raymond Broderick, Federal Avaiation Administration Facility Chief, Emmet County Airport, Pellston, Michigan, November 1981.

6) Personal communication with Captain Paul R. Schaffenberger, United States Air Force, Bayshore Radar Station, November 1981.

7) Personal communication with Kenneth Thiel, Staff Assistant, Michigan Consolidated Gas Company, Petoskey, Michigan, November 1981.

8) Personal communication with William Kenifeck, Production Manager, Lexalite International Corporation, Charlevoix, Michigan, November 1981.

9) Personal communication with Elaine McDonald, Will Flow Corporation, Charlevoix, Michigan, November 1981.

10) Personal communication with Don Demoor, Consumers Power Company, Charlevoix, Michigan, December 1981

11) Personal communication with Clement Wagner, Plant Manager, Medusa Cement Company, Charlevoix, Michigan, November 1981.

12) Personal communication with Lawrence Sullivan, Charlevoix County Planner, November 1981.

13) NRC staff testimony of Kazimieras M. Campe on Aircraft Hazards with Respect to the Big Rock Point Nuclear Plant, June, 1982.