

ENVIRON

FEB 17 1972

Docket Nos. 50-247 & 50-286

J. Kastner, Chief, Radiological Assessment Branch  
Division of Radiological and Environmental Protection

**RADWASTE SECTION FOR ENVIRONMENTAL STATEMENT FOR INDIAN POINT NUCLEAR  
GENERATING PLANT UNIT 1 AND UNIT 2**

In response to your request we have prepared the Radwaste Section for Indian Point Nuclear Plant Unit 2 100 percent power Environmental Statement. Included were the source terms to be used for both Unit 1 and Unit 2. In accordance with your request this material has been transferred directly to ORNL.

The source terms for Unit 2 were based on a power level of 2,758 MWt as compared to 3,216 MWt used by the applicant. The expected performance of the waste evaporator was based on a decontamination factor of  $10^4$  for all isotopes except iodine and tritium. Iodine was assumed to have a reduction factor of 100. Our evaluation assumed that the applicant will have completed modifications to the waste evaporator prior to power operation. In testimony before the ASLB on July 13, 1971 Consolidated Edison indicated that two major modifications were being made to the radwaste treatment systems. The modifications include an intertie between Unit 1 and Unit 2 steam generator blowdown tanks, a blowdown purification system and the installation of charcoal absorbers in the plant vent system. These modifications were not considered in our evaluations since the changes will not be completed prior to the end of the first fuel cycle.

The liquid source term for Unit 1 is based on operating history (reference your memo of February 10, 1972) to establish curies per year. The isotopic distribution is based on a Compliance Division Report Vol II, October 1971 covering operations at Indian Point Plant Unit 1. The gaseous effluent calculations were performed using the standard PWR assumptions (.25% failed fuel, 20 gpd primary to secondary leakage, etc). The results of these calculations were compared to the operating experience and found to be reasonably consistent.

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The source terms and technical write-up were prepared by D. Pomeroy and J. Collins with the assistance of ORNL. We are enclosing the technical background for our effluent release estimates and a list of references used in our evaluation for future reference.

V. Benaroya, Chief  
Effluent Treatment Systems Branch  
Division of Reactor Licensing

Enclosure:  
As stated

cc: P. A. Morris, w/encl.  
L. Rogers, w/encl.  
H. R. Denton, w/encl.  
A.D.s, DRL, w/encl.  
K. Kneil, w/encl.  
J. Keppler, w/encl.  
H. Brook, w/encl.

bcc: J. T. Collins  
D. Pomeroy

Distribution:

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Eff. Treat. Rdg.  
J. T. Collins  
D. Pomeroy  
VBenaroya

OFFICE ▶	DRL	DRL	DRL		
SURNAME ▶	JTCollins:va	D. Pomeroy	V. Benaroya		
DATE ▶	2/17/72	2/17/72	2/17/72		

TECHNICAL BACKGROUND

INDIAN POINT UNIT 2 - 100%

The following parameters were used in the calculation of Indian Point - Unit 2 estimated releases.

Percent fuel leak - 0.25

Power level - 2758 MWt

Primary to secondary leakage - 20 gal/day

Steam generator blowdown - 10 gal/min

Containment purge - 12 times/yr

Decay time - Waste Gas Processing Systems - 45 days

I. Gases

(a) Containment Purge Releases

Assumed 12 purges annually. It was assumed that the activity in the containment would be reduced to 10X the occupational MPC by drawing air through a prefilter, HEPA filter and charcoal adsorber before being discharged to the plant vent.

(b) Blowdown Tank Vent Releases

It has been estimated that 0.62 Ci/yr of I-131 will be released via the blowdown vent. This estimate assumes, a 20 gal/day primary to secondary leak, a 10 gal/min blowdown rate, 1/2 of the steam flashes in the tank and a  $10^{-1}$  iodine partition factor. The curies released is approx. 1/20 of the curie input. We have also estimated an annual release of 35 Ci/yr in liquid effluent without treatment. The proposed intertie between Unit 1 and 2 and the

*less than*

blowdown purification system should reduce this to  $\approx 3.5$  Ci/yr.

(c) Waste Gas System

Strip main coolant 4 times per year. Combined fill - hold - release time yields 45 effective days of holdup.

II Liquids

(a) CWCS

Release 4 P.C. Volumes per year (per supplement No. 5). Use  $10^5$  D.F. for Evap - Demi except  $10^3$  for Iodine, and 1 for  $H^3$  - 10 hr. holdup.

(b) Waste Disposal System

130,000 gallons per year - evap-  $10^4$  except  $10^2$  Iodine - 10hr holdup.

(c) S.G. Blowdown

20 GPD P.S. and 10 GPM released untreated.

REFERENCES -- INDIAN POINT

1. Applicant's Environmental Report, Letter to Dr. P. A. Morris from H. G. Woodbury, Con. Ed., dated August 6, 1970.
2. Detail Statement on the Environmental Considerations by DRL Related to the Proposed Operation of Indian Point Unit No. 2, November 20, 1970 (Section 5.0).
3. Supplement No. 2 to AEC Regulatory Staff Safety Evaluation in the Matter of Con.Ed. Co., Indian Point Nuclear Generating Plant Unit 2, dated July 1971.
4. Supplement No. 3 to Safety Evaluation by DRL In the Matter of Con. Ed. Co., Indian Point Nuclear Generating Unit No. 2 dated September 3, 1971.
5. Supplement No. 1 to Environmental Report, Indian Point Plant - Unit No. 2, dated September 1971.
6. Supplement No. 2 to Environmental Report, Letter to L. R. Rogers from W. J. Cahill, Con. Ed. Co., dated October 15, 1971. (Solid Waste)
7. Discussion and Conclusion by DRL Pursuant to Appendix D of 10 CFR 50 Authorizing Limited Operation of Indian Point - Unit 2, dated December 30, Page 19.
8. Transcript of the Atomic Safety and Licensing Board in the Matter of Consolidated Edison Company, Indian Point - Unit 2 dated July 13, 1971 - Question No. 7 (B) (TR 686).