UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. (Indian Point Station, Unit No. 3)	)	Docket No. 50-286

AFFIDAVIT OF CARL L. NEWMAN

STATE OF NEW YORK)
) ss.:
COUNTY OF NEW YORK)

CARL L. NEWMAN, being duly sworn, says:

1. I am a Vice President of the Consolidated Edison Company of New York, Inc. ("Consolidated Edison"), 4 Irving Place, New York, N. Y. 10003. I make this affidavit in support of Consolidated Edison's "Motion for Fuel Loading, Subcritical and Low-Power Testing and Limited Operating License".

2. My duties include: (a) managing the activities of the Company's Civil, Electrical, General, Mechanical, Nuclear and Emissions Control and Project Engineering Departments and Engineering Administrative Services; and (b) maintaining a liaison function with the Company's Office of Environmental Affairs, Public Relations, and Quality Assurance as well as with City, State and Federal agencies.

EXHIBIT B

3. The present startup schedule for Indian Point Unit No. 3 ("Indian Point 3") is described in the affidavit of William J. Cahill, Jr., sworn to on July 19, 1974. This schedule will lead to continued operation at approximately 873 MW(e) (2760 MW(t)), 91% of rated power, at the conclusion of the test program.

4. As explained in the Benefit-Cost Analysis section herein and in the affidavits of Bertram Schwartz, sworn to on July 19, 1974 and Harry G. Woodbury, Jr. sworn to on July 19, 1974, there will be no significant or irreversible adverse environmental effects from the proposed activities.

5. Chemical discharges during the testing period will be kept at a minimum. Since testing is scheduled during the winter months, no chlorination is anticipated. Both the existing Environmental Technical Specification Requirements (ETSR) for two-unit operation and the proposed ETSR for three-unit operation preclude routine chlorination at times when the river temperature is below 45°F. The sections on chemical discharges herein (Paragraphs 9, 13, 18 and 19 below) cover this topic in greater detail.

6. During the testing phase, radioactive discharges from the unit will be small in comparison with those that might be anticipated from continuous full-power operation. This is because radioactive discharges are related to fission and activation product inventory, which is built up as the core is used

up. Also, because of the short duration of the testing period, equilibrium values of the fission product inventory associated with each power level will not be reached (except for prolonged operation at 91% of rated power) and discharges at a given power level will be below the equilibrium value for that level. Radioactive releases at 91% of rated power are anticipated to be only a small fraction of those allowed by 10 CFR Part 20. A full explanation of these discharges at all power levels is presented below in Paragraphs 20 through 22.

7. The six circulating water pumps at Indian Point 3 are rated at 140,000 gpm each. These pumps generally will be operated at that flow rate when the river water temperature is above 40°F. Subject to availability of the recirculation loops, the circulating water pumps will operate at approximately 84,000 gpm (60% of rated flow) each when the river water temperature is below 40°F. All six recirculation loops are scheduled to be in service before the end of 1974. The service water pumps will operate year round at a maximum flow of 30,000 gpm.

Fuel Loading and Subcritical Testing

8. During the fuel loading stage, the circulating water pumps will be operated only intermittently for the purpose of biological, mechanical or electrical testing. Upon completion of fuel loading and the start of subcritical testing, all facility systems (primary, secondary, service and condenser water systems) will be in operation with

generally no more than three circulating water pumps in operation except for testing purposes.

Thermal discharges during these phases of operation will be extremely small with the service water delivering most of the heat going to the river.

9. During the fuel loading stage, chemical discharge concentrations and dissolved oxygen changes will be minimal since the reactor is not operating and only service water is required for plant operation.

Since water treatment procedures are governed by the rate of water use rather than by the reactor power level, chemical additions and subsequent discharge concentrations during subcritical testing will be approximately the same as for full-power operation. The major exception is chlorine, which is used to maintain condenser cleanliness. At this time, however, it is anticipated that fuel loading and subcritical testing will take place during times when the river water temperature is below 45°F and therefore no chlorination is expected.

The complete list of chemicals which may be discharged from Indian Point 3 is found in Table 1.

10. During this phase of operation, there will be no radioactive releases since the fuel is not irradiated.

Initial Criticality and Low Power Testing

11. This portion of the test program involves testing the unit at up to 10% of rated reactor power, or approximately 45 MW(e) (see Figure 1).

12. During this portion of the testing program, normally three circulating water pumps, one for each condenser, will be required in addition to service water. This will result in a ΔT of less than 11°F (Figure 2) across the Indian Point 3 circulating water system at 60% of rated flow per pump. The use of additional pumps or the use of pumps at 100% of rated flow (if testing is delayed) will result in a proportionately smaller ΔT (Figures 2 and 3).

13. During low power testing, chemical use at the plant will be as explained in Paragraphs 18 and 19. Should this phase of the testing program be delayed until the river water temperature is above 45°F, chlorination might be necessary. Each chlorination of the system will not exceed one hour with a maximum of three chlorinations per week, with chlorine residual in the discharge canal expected to average less than 0.2 ppm, as has been the case with Indian Point 1 and 2.

Operating experience at Indian Point 2 shows that dissolved oxygen levels are only slightly affected as water passes through the plant. In fact, many of the measurements reported to the State of New York show an increase in dissolved oxygen levels between the intake and discharge, probably as a result of air curtain operation.

14. Because of the short duration of this testing phase, radioactive releases are anticipated to be below the computed equilibrium value associated with the reactor power level. Releases are expected to be approximately 10% or less of the equilibrium value associated with rated power operation. Such releases will be no more than small fractions of those allowed in 10 CFR Part 20.

Further Testing and Limited Operation

15. Three to six circulating water pumps will be in operation during testing above 10% of rated power. Below about 40% of rated power, the unit may operate with as few as three circulating water pumps. This would result in the maximum ΔT (for that type of operation) allowed in the proposed ETSR for three-unit operation at Indian Point.

Figures 2 and 3 present the ΔT across the circulating water system for the various combinations of power level and number of circulating water pumps which could be expected to be in operation during the startup testing program. Intake velocity versus flow per intake bay is shown in Figure 4. Each intake bay serves one circulating water pump which in turn feeds one half of one of the main condensers. Each condenser half-section can be dewatered as necessary while the unit remains in operation. The cooling water makes a single pass through the condenser before being released to the discharged canal.

Besides the circulating and service water pumps, there are two deicing pumps which are isolated from the discharge canal by means of individual slide gates. The deicing pumps take water heated in the condensers from the discharge canal and recirculate it to the intake bays. This water, which may be pumped by either or both of the deicing pumps serves to remove (or prevent the formulation of) ice in the intake structures. Ice formation in front of the intake bays, besides resulting in possible damage to the trash racks or travelling screens (which are flush with the river edge at Indian Point 3), could result in excessive head loss inside the intake bay leading to circulating water pump malfunctions or unit deratings due to low cooling water flow.

16. Cooling water from the unit will be discharged along with the water from the other two units through a common discharge canal. The combined flow from all three units, 2,058,000 gpm including service water, would be discharged through ports in the discharge canal. These ports have moveable gates which allow an operator to maintain a head of 1.5 to 1.7 feet inside the canal in order to keep a discharge velocity of approximately 10 feet per second.

During the period of the requested authorization, cooling water discharged from Indian Point 3 will in general experience a ΔT smaller than the maximum allowed by the proposed ETSR and at times considerably smaller than the allowable figures. At such times, Indian Point 3 would serve to reduce the overall ΔT when compared with the ΔT for the other two units. The extent of this reduction would depend primarily on the percent of full power at which the unitswwere operating.

17. Consolidated Edison has employed various physical and mathematical models to predict the behavior of the thermal discharges resulting from three unit operation (see Environmental Report Appendices I, J, K, M, N, CC, DD and EE). Mathematical models more sophisticated than those reported in the Environmental Report indicate that some of these previous predictions are overly conservative. For example, the models employed during the latter stage of the Indian Point 2 Operating License hearings(1), when modified to include three-unit operation(2) indicate the conservatism inherent in the earlier models. These earlier models are summarized in Section 9 of the Environmental Report.

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(1) "Additional Testimony of John P. Lawler, PhD, Quirk, Lawler & Matusky Engineers, on the Cumulative Effects of Bowline, Roseton and Indian Point Generating Stations on the Hudson River," March 30, 1973, Docket No. 50-247.

(2) Con Edison Responses to the Interrogatories from New York State Attorney General, May 10, 1974, Docket No. 50-286; Question VI-C, Appendix. For example, with a fresh water flow of 20,800 cfs, the most recent model indicates an area average temperature rise at Indian Point of about 2.0°F, while the early model (Appendix DD-1) indicates a rise above 3.4°F.

The thermal survey of the Indian Point (Units 1 and 2) plume currently being conducted as part of the Unit 2 environmental monitoring program will be used to evaluate and, if necessary, improve these predictive techniques.

Surveys with three units operating will be used to measure the extent of the Indian Point plume. These surveys will be utilized to determine what actions, if any, are needed to alter the thermal plume resulting from plant discharges.

18. Chemical releases from Indian Point are related to water treatment of one or more of the cooling water systems, and are much the same at all power levels.

A list of chemicals which will be used at Indian Point 3 is found in Table 1, along with data concerning usage and discharge and the proposed discharge limits found in the proposed ETSR for three-unit operation. These discharge limits are based on expected releases from Indian Point 3 and actual releases from Indian Point 2. It should be pointed out that the possibility of release of all of these chemicals at one time (or simultaneously also from other units) is extremely remote and that in any case, there will be a minimum water flow in the common discharge canal of 100,000 gpm during releases of chemicals from the site.

Decreases in dissolved oxygen levels at Indian Point Unit 2 have not been significant. Because of the similarity between Units 2 and 3, it is expected that similar results will be obtained with Indian Point 3 operating at up to 91% of rated power.

Chlorination of the cooling water system will take place a maximum of three times a week, for a duration of one hour, at times when the river water temperature is above 45°F. The method of chlorination involves the simultaneous release for one-half hour of a sodium hypochlorite solution into one half of each of the three condensers. This is followed by a similar treatment in the other half of the three condensers. Chlorination of Units 1 and 2 has resulted in chlorine residual measurements in the discharge canal generally below 0.2 ppm and often below 0.1 ppm. Staggered chlorination of each of the units, chlorinating half of a unit's condensers at one time, and chlorinating only in the daytime assures that chlorination effects on the biota are kept to a minimum.

19. All of the proposed chemical discharge limits are based on extensive bioassay studies and were attained by using conservative safety factors in reducing the concentrations obtained from the bioassay studies.

Chemical discharges from Indian Point 3 and indeed, from the site, are expected to have negligible effects on the environment for several reasons:

(a) Planned discharge of chemicals occur in an orderly manner which assures minimal ecological impact.

(b) No deleterious effects have been observed as a result of chemical discharges from Indian Point Unit No. 2.

(c) A facility for neutralizing acids and bases from the makeup water plant prior to discharge will be operational during the summer of 1974.

(d) Contact time between organisms and chemicals is essentially limited to the transit time through the plant (since river water will dilute concentrations greatly), and this is minimized by the simultaneous operation of the three units.

20. In general, both radioactive releases during normal operation and from potential accidents are dependent on the quantity of fission products present.

Fission products are produced beginning with initial criticality and generally increase as a function of time and power level to an equilibrium value for each isotope.

For such significant isotopes as I-131 and Xe-133, the full power equilibrium values of the fission product inventories will not be achieved until after at least thirty days of continuous full power operation.

Since the equilibrium fission product inventory for significant isotopes is approximately proportional to power level, there is an equilibrium level associated with each power level which is substantially less than that for full-power operation. For example, operation at a level of 50% of rated power would mean that releases are based, at most, on half the inventory associated with full-power operation, and less when equilibrium has not been reached. In the case of testing activities, the equilibrium values will not even be reached during the respective tests as presently planned.

21. Liquid and gaseous radioactive releases resulting from the activities as planned will be minimal since:

(a) Operation is planned for limited duration.

(b) Operation is planned at less than full power and

(c) Performance of fuel and equipment is expected to be much better than worst case design estimates.

Radioactive releases in the period beyond initiation of low-power testing are best estimated by observing the releases during similar startup operations of Indian Point 2. Tables 2 and 3 show gaseous and liquid releases from Indian Point 2 in a detailed manner over this period. Such small releases are of no environmental significance and there is no reason to believe that Indian Point 3 releases, over a similar period, would be significantly different. All releases are expected to be very small fractions of those allowed by 10 CFR Part 20.

22. The radiological effects of several classes of postulated accidents have been calculated. The Environmental Report for Indian Point 3 describes these accidents in considerable detail and shows in Table 19.1 the environmental consequences of each class of accident when considering continuous full-power operation. Full power was assumed to be the "stretch" rating of 3216 MW(t) in the Environmental Report whereas the ACRS Interim Report suggested a provisional limit of plant operation at 2760 MW(e) or 86% of the stretch rating (91% of the license application rating of 3025 MW(t). For expected fission product activities, the inhalation and whole body doses at the site boundary due to these postulated accidents would be lower by an amount at worst proportional to the ratio of actual operating power to the assumed full power level (3216 MW(t)).

Benefit-Cost Analysis

23. The environmental effects of plant operation described herein can be broken into three general categories: thermal, chemical and radiological. For a discussion of direct

biological effects, see the affidavit of Harry G. Woodbury, Jr., sworn to on July 19, 1974.

24. Various mathematical models (see Paragraph 17) have been employed to predict the extent of the thermal plume resulting from three-unit operation at Indian Point. The actual extent of the plume will be determined after Indian Point 3 operates continuously at full power. Effects of the thermal plume, in any event, are not expected to be significant in terms of impact on river biota. (See affidavit of Harry G. Woodbury, Jr., sworn to on July 19, 1974).

25. Chemical releases from Indian Point 2 have been well within the allowable limits and similarity between Units 2 and 3 leads to the conclusion that releases from Unit 3 will be equally small. Indirect measurements of water quality such as pH and dissolved oxygen levels taken since Indian Point 2 began operating indicate there will be little if any effect on water quality in the river because of Indian Point 3 operation.

Operation of Indian Point 3 will also result in a reduced need for the burning of fossil fuels. Based on the use of 0.3% sulfur residual oil, and distillate oil composed of 50% kerosene at 0.04% sulfur and 50% No. 2 oil at 0.2% sulfur, the following would be the reduction in emission of pollutants between May 1, 1975 and May 1, 1976 if Indian Point 3 operates at 873 MW(e) during that period:

Sulfur Dioxide	-	10,400 tons
Nitrogen Oxides	-	7,738 tons
Particulates	-	3,548 tons

Overall this indicates a strong balance in favor of operation of the plant.

26. Radiological emissions from Unit 3 are anticipated to be extremely small based on Unit 2 operating experience. These releases will be only a small fraction of those allowed by Atomic Energy Commission regulations.

27. In conclusion, the benefits of electrical power to be derived from the testing and continued operation of Indian Point 3 at up to 91% of rated power (as explained herein, in Section 19 of the Indian Point 3 Environmental Report, and in the affidavit of Bertram Schwartz sworn to on July 19, 1974) far outweigh the environmental costs (as explained in the affidavit of Harry G. Woodbury, Jr. sworn to on July 19, 1974) to be incurred during such short-term operation.

Carl L. Newman

Carl L. Newman

Sworn to before me
on July 19, 1974

Arthur M. Brown

Notary Public

ARTHUR M. BROWN
No. 24-5470901
Notary Public State of New York
Qualified in Kings County
Commission Expires March 30, 1976

TABLE I

Indian Point Unit 3

Chemical Discharges

Chemical	Proposed Maximum, Discharge Concentration (ppm)	Maximum Sustained Release (lb/day)	Concentration with Dilution Flow of 100,000 GPM (ppm)	Use of Chemical	Frequency of Release
Boron 1/	1.0	105	0.26	Used as a chemical shim in primary coolant	Released in event of evaporator breakdown
Chlorine (Residual) 2/	0.5	Not Applicable	Not Applicable	Used as a biocide to treat condenser and auxiliary cooling water systems	Released during condenser chlorination
Chromium (Hexavalent)	0.05	30	0.025	Used as corrosion inhibitor	Released in the event of system leakage
Cyclohexylamine	0.1	12	0.01	Used to adjust pH of feedwater to steam generator	Released continuously
Hydrazine	0.1	5	0.0042	Used as oxygen scavenger of secondary system	Released continuously
Lithium Hydroxide 1/	0.01	2.5	0.0021	Used to adjust pH of primary coolant	Released in the event of evaporator breakdown
Phosphate (orthophosphate)	1.5	38	0.032	Used for maintaining the chemistry in the secondary system	Released continuously
Sodium Hydroxide 3/	10.0	12	0.12	Used as a chemical regenerant	Released in the event of evaporator breakdown

1/ This release (in lbs/day) is based upon the direct release of maximum reactor coolant system concentrations at the maximum rate of the waste disposal system. The occurrence of this release is therefore very unlikely.

2/ Chlorination will take place a maximum of three times a week for a maximum duration of one hour.

3/ Sodium hydroxide is released from Indian Point 3 for two hours once every four to seven days during evaporator breakdown.

Table 2 - Gaseous Releases - Unit No. 2

Airborne Releases		May22 - 30	June	July	August	September	October	
1. Total Noble Gases	Curies		0.16	3.7×10^{-2}	4.5×10^{-1}	11.35	3.01	
2. Total Halogens	Curies		5.2×10^{-5}	2.8×10^{-6}	1.57×10^{-5}	1.33×10^{-4}	7.58×10^{-5}	
3. Total Particulate Gross Radioactivity (β,γ)	Curies		1.2×10^{-11}	9.3×10^{-10}	4.89×10^{-6}	6.7×10^{-6}	2.02×10^{-6}	
4. Total Tritium	Curies		-	-	-	0.96	0.80	
5. Total Particulate Gross Alpha Radioactivity	Curies		-	-	-	5.7×10^{-7}	2.10×10^{-7}	
6. Maximum Noble Gas Release Rate	uCi/Sec		1.2×10^{1}	3.7	2.6×10^{1}	1.58×10^{3}	1.48×10^{2}	
7. Percent of Applicable Limit for:								
a) Noble Gases	%		< 0.1	< 0.1	< 0.1	< 0.1	0.1	
b) Halogens	%		< 0.1	< 0.1	< 0.1	< 0.1	0.1	
c) Particulates	%		< 0.1	< 0.1	< 0.1	< 0.1	0.1	
8. Isotopes Released:	Curies							
Particulates								
Cs-134			-	5.7×10^{-11}	-	-	2.48×10^{-7}	
Cs-137			2.5×10^{-13}	1.1×10^{-10}	-	-	3.21×10^{-7}	
Sr-89			$< 4 \times 10^{-12}$	$< 4 \times 10^{-12}$	$< 4 \times 10^{-12}$	$< 3 \times 10^{-6}$	9.85×10^{-7}	
Sr-90			$< 8 \times 10^{-13}$	$< 8 \times 10^{-13}$	$< 2.1 \times 10^{-12}$	$< 6 \times 10^{-7}$	1.97×10^{-7}	
Mn-54			-	9.2×10^{-11}	1.1×10^{-10}	2.11×10^{-7}	1.3×10^{-8}	
Co-58			-	1.3×10^{-10}	2.1×10^{-10}	3.43×10^{-7}	2.38×10^{-8}	
Co-60			1.1×10^{-13}	2.6×10^{-10}	1.5×10^{-10}	1.75×10^{-7}	2.34×10^{-7}	
I-131			-	2.8×10^{-10}	1.3×10^{-8}	2.38×10^{-6}	-	
Halogens	Units							
I-131	Ci		5.2×10^{-5}	2.8×10^{-6}	1.57×10^{-5}	1.33×10^{-4}	7.58×10^{-5}	
Gases								

Table 3 - Liquid Releases - Unit No. 2

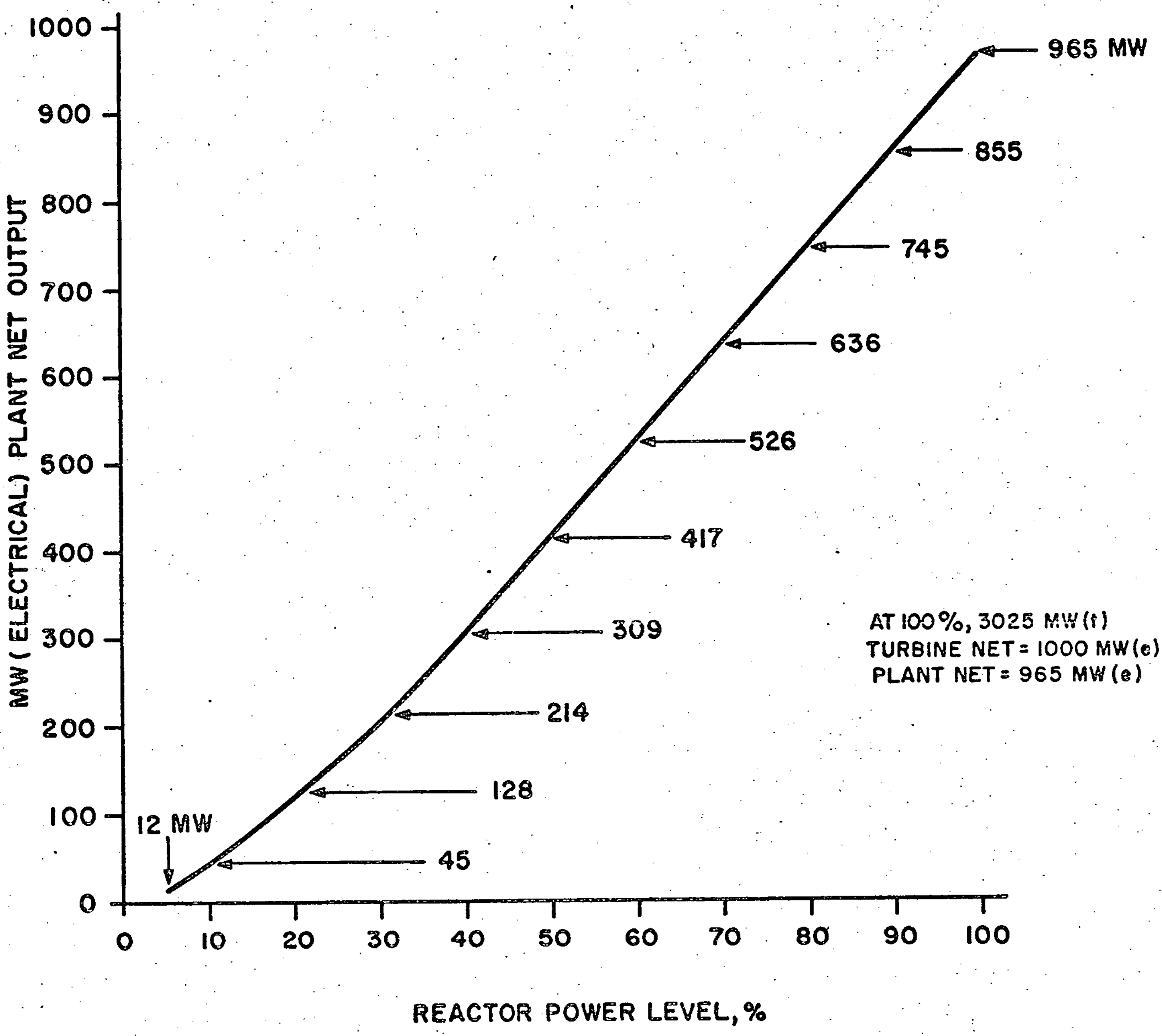
Liquid Releases		May 22 to 30	June	July	August	September	October	
1. Gross Radioactivity (β γ)	Units							
a. Total Release	Curies		0.077	0.089	0.108	0.355	1.13	
b. Average Concentration Released	uCi/ml		1.42×10^{-9}	1.06×10^{-9}	1.15×10^{-9}	5.57×10^{-9}	1.46×10^{-8}	
c. Maximum Concentration Released	uCi/ml		3.64×10^{-8}	4.10×10^{-8}	7.9×10^{-8}	1.51×10^{-7}	1.43×10^{-7}	
2. Tirtium								
a. Total Release	Curies		1.2	1.4	3.2	3.84	14.37	
b. Average Concentration	uCi/ml		2.21×10^{-8}	1.69×10^{-8}	3.40×10^{-8}	6.02×10^{-8}	1.87×10^{-7}	
3. Dissolved Noble Gases								
a. Total Release	Curies		5.3×10^{-3}	6.5×10^{-2}	2.88×10^{-3}	0.73	1.36	
b. Average Concentration Released	uCi/ml		9.8×10^{-11}	7.7×10^{-10}	3.06×10^{-11}	1.14×10^{-8}	1.76×10^{-8}	
4. Gross Alpha Radioactivity								
a. Total Release	Curies		$< 6 \times 10^{-4}$	$< 2 \times 10^{-4}$	$< 8 \times 10^{-5}$	$< 4.9 \times 10^{-6}$	$< 1.48 \times 10^{-5}$	
b. Average Concentration Released	uCi/ml		$< 1 \times 10^{-11}$	$< 2 \times 10^{-12}$	$< 8 \times 10^{-13}$	$< 7.7 \times 10^{-12}$	$< 1.92 \times 10^{-13}$	
5. Volume of Liquid Waste to Discharge Canal	Liters		2.61×10^{6}	5.32×10^{5}	3.63×10^{5}	2.65×10^{6}	9.98×10^{5}	
6. Volume of Dilution Water	Liters		6.20×10^{10}	8.39×10^{10}	9.40×10^{10}	6.37×10^{10}	7.70×10^{10}	
7. Isotopes Released	Curies							
Ba-La-140	Ci		-	-	$< 2 \times 10^{-2}$	$< 1.2 \times 10^{-3}$	-	
Sr-89	Ci		2.63×10^{-4}	3.67×10^{-5}	7.25×10^{-4}	3.30×10^{-4}	3.90×10^{-4}	
Sr-90	Ci		5.92×10^{-4}	9.50×10^{-5}	1.59×10^{-4}	4.90×10^{-6}	1.30×10^{-5}	
I-131	Ci		2.38×10^{-2}	1.34×10^{-2}	3.66×10^{-2}	3.49×10^{-2}	5.57×10^{-2}	
Xe-133	Ci		-	-	-	7.30×10^{-1}		
Cs-134	Ci		1.98×10^{-2}	1.43×10^{-3}	6.40×10^{-4}	2.39×10^{-4}	2.1×10^{-3}	
Cs-137	Ci		2.69×10^{-2}	1.12×10^{-3}	4.30×10^{-4}	8.59×10^{-4}	3.9×10^{-3}	
Co-58	Ci		5.22×10^{-2}	2.02×10^{-2}	1.08×10^{-2}	2.20×10^{-1}	9.04×10^{-1}	
Co-60	Ci		1.04×10^{-2}	3.54×10^{-3}	2.52×10^{-3}	9.33×10^{-3}	4.06×10^{-2}	
Mn-54			5.09×10^{-3}	8.46×10^{-3}	3.00×10^{-3}	2.02×10^{-2}	3.21×10^{-2}	
8. Maximum Percent of Technical Specification Averaged over a single release	% (a)		0.236	1.28				
9. Percent of Technical Specification Limit for Total Activity Released	% (b)		0.133	0.566	0.134	0.192	0.264	

Table 3 - Continued

Liquid Releases (Cont.)	Units	November	December					
1. Gross Radioactivity (β,γ)								
a. Total Release	Curies	0.205	0.208					
b. Average Concentration Released	uCi/ml	6.09×10^{-9}	7.39×10^{-9}					
c. Maximum Concentration Released	uCi/ml	1.87×10^{-7}	1.95×10^{-7}					
2. Tritium								
a. Total Release	Curies	0.59	2.90					
b. Average Concentration Released	uCi/ml	1.77×10^{-8}	1.03×10^{-7}					
3. Dissolved Noble Gases								
a. Total Release	Curies	0.235	0.916					
b. Average Concentration Released	uCi/ml	6.97×10^{-9}	3.25×10^{-8}					
4. Gross Alpha Radioactivity								
a. Total Release	Curies	$< 4.84 \times 10^{-6}$	$< 6.68 \times 10^{-6}$					
b. Average Concentration Released	uCi/ml	$< 1.43 \times 10^{-13}$	$< 2.37 \times 10^{-13}$					
5. Volume of Liquid Waste to Discharge Canal	Liters	3.27×10^{5}	4.52×10^{5}					
6. Volume of Dilution Water	Liters	3.37×10^{10}	2.82×10^{10}					
7. Isotopes Released	Curies							
Ba-La-140	Ci	$< 2.6 \times 10^{-3}$	$< 1.7 \times 10^{-3}$					
Sr-89	Ci	$< 1.3 \times 10^{-6}$	2.66×10^{-4}					
Sr-90	Ci	$< 2.6 \times 10^{-7}$	2.9×10^{-5}					
I-131	Ci	6.40×10^{-3}	1.08×10^{-3}					
Xe-133	Ci							
Cs-134	Ci	1.9×10^{-3}	1.01×10^{-2}					
Cs-137	Ci	2.7×10^{-3}	1.51×10^{-2}					
Co-58	Ci	5.9×10^{-1}	5.55×10^{-1}					
Co-60	Ci	4.25×10^{-2}	4.14×10^{-2}					
Mn-54	Ci	2.48×10^{-2}	1.87×10^{-2}					
Others								
I-132	Ci	-	-					

Table 3 - Continued

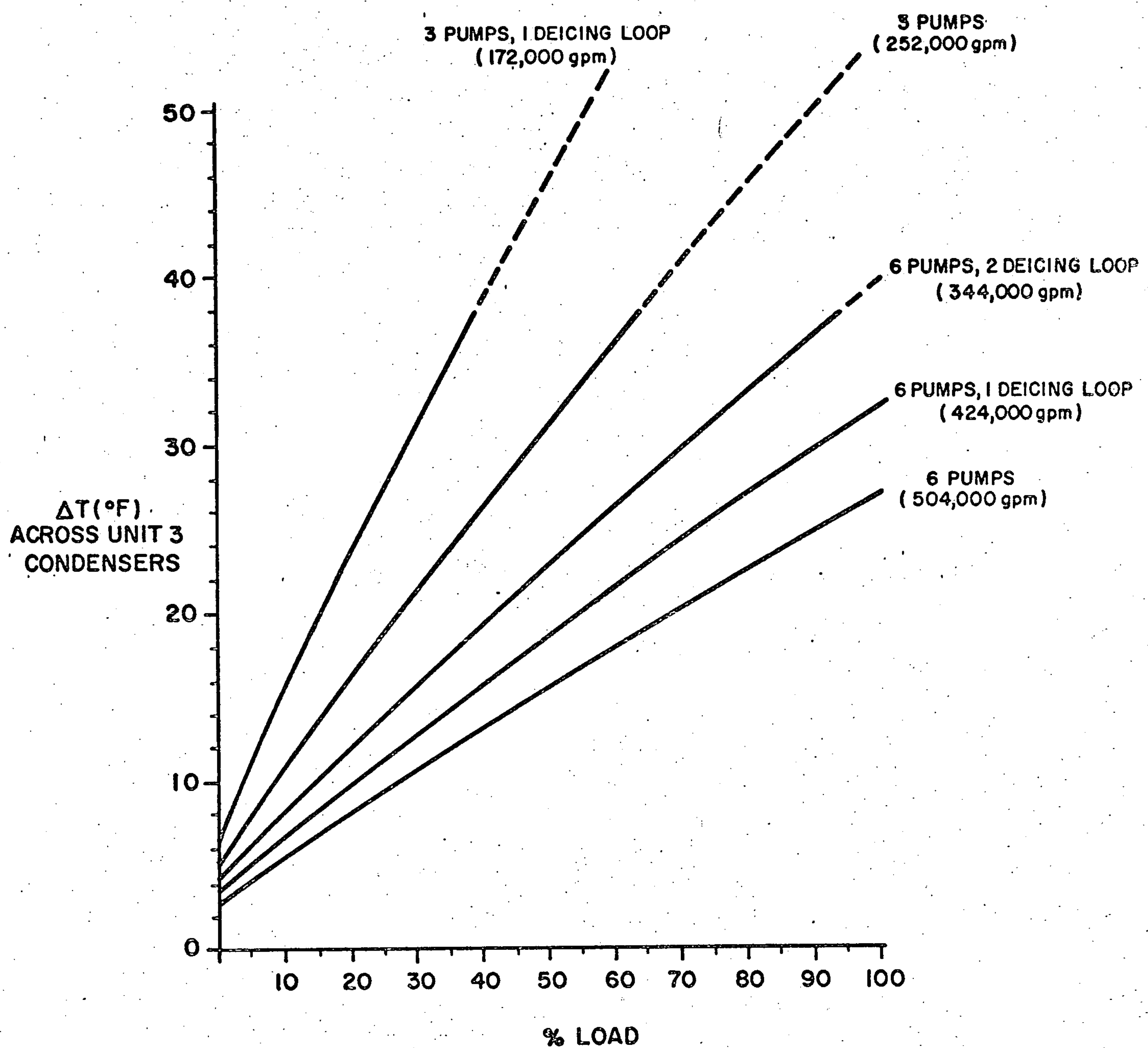
Liquid Releases (Cont.)		November	December					
I-133	Ci	-	-					
I-134	Ci	-	-					
I-135	Ci	-	-					
8. Percent of Technical Specification Limit for Total Activity	%	0.057	0.044					



INDIAN POINT UNIT Nº 3

PLANT NET OUTPUT (MW(e))
VS
% REACTOR POWER

Figure 1

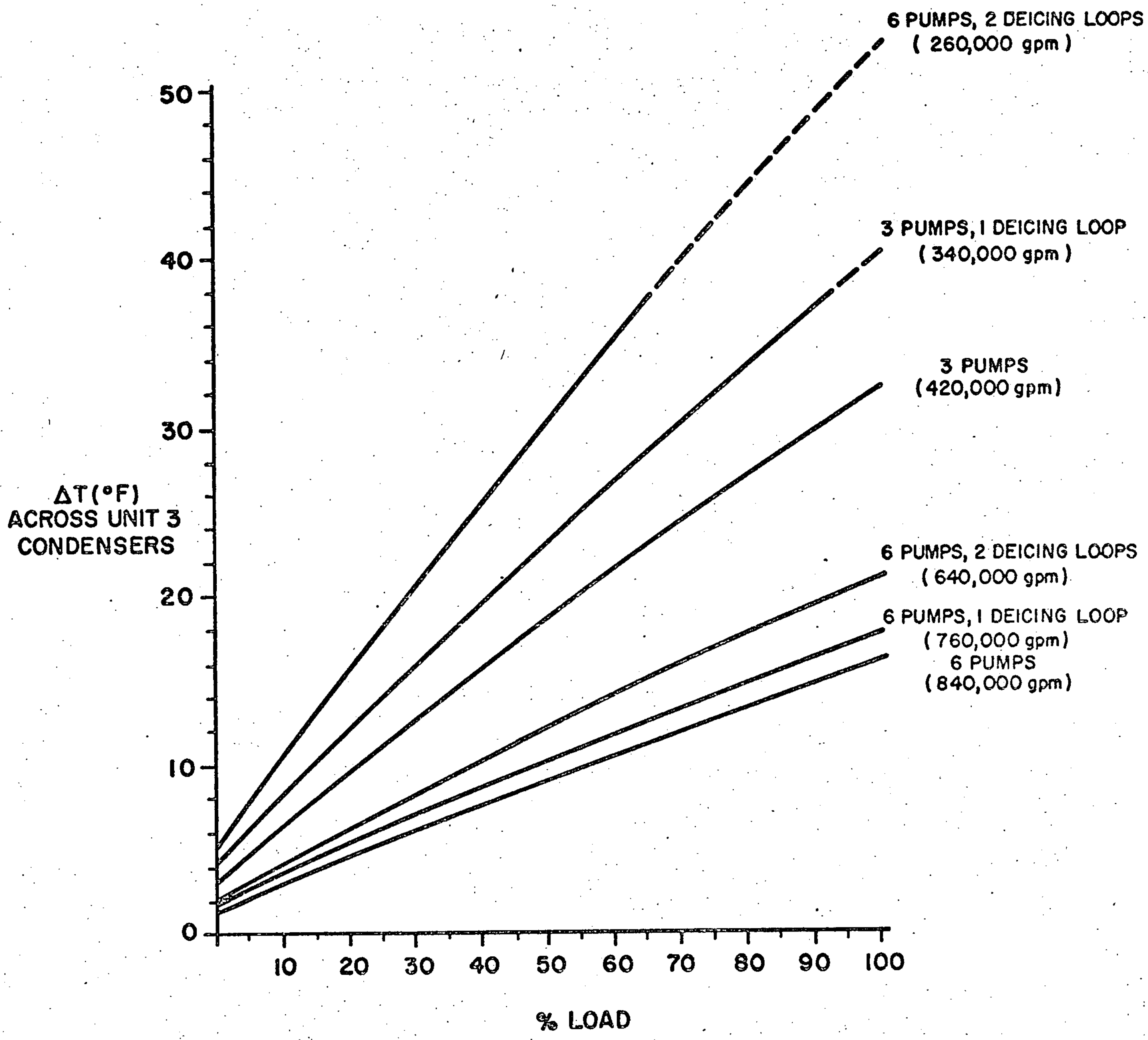


INDIAN POINT UNIT Nº 3

ΔT vs % LOAD
(Assumes 1.5" HGA at all Power Levels)
Based on FSAR figures 10-4 to 10-7

60 % FLOW PER PUMP

Figure 2



INDIAN POINT UNIT Nº 3

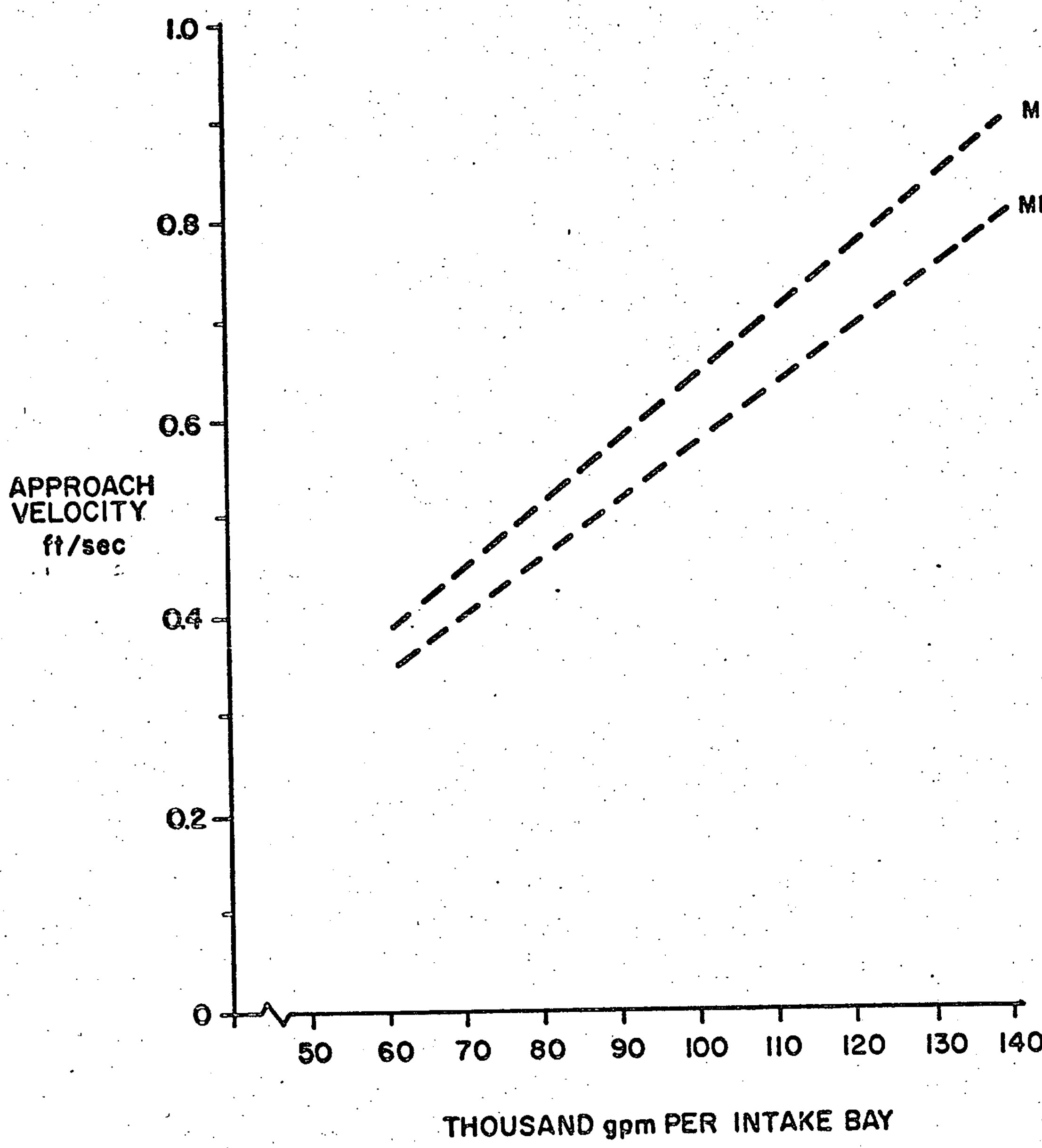
ΔT vs % LOAD

(Assumes 1.5" HGA at all Power Levels)

Based on FSAR figures 10-4 to 10-7

100 % FLOW PER PUMP

Figure 3



INDIAN POINT UNIT № 3

APPROACH VELOCITY
vs
WATER FLOW RATE

Figure 4