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SUBJECT: Forwards results of investigation of effect of inadvertently loading 3.75 weight percent bundles in non-poison design spent fuel storage racks in north spent fuel pool. Resultant K-infinity below 0.95 limit.

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RESULTS: Forward results of investigation of effect of inadvertently loading 3.75 weight percent bundles in non-poison design spent fuel storage racks in north spent fuel pool. Resultant k-infinity below 0.95 limit.

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December 21, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Vassallo:

The non-poison design spent fuel storage racks in the north half of the Nine Mile Point Unit 1 spent fuel pool were designed to accommodate fuel bundles with a peak lattice enrichment of 3.00 weight percent. Our existing submittal for reracking the south half of the spent fuel pool with the poison design spent fuel storage racks allows for peak lattice enrichments of 3.75 weight percent. As requested by your staff, we have investigated the effect of inadvertently loading 3.75 weight percent bundles in the non-poison design spent fuel storage racks located in the north half of the spent fuel pool. The results are summarized in Figure 1.

Figure 1 reports the final calculated K-infinity (including appropriate biases and uncertainties) for the non-poison design spent fuel storage racks as a function of the number of adjacent rows which contain 3.75 weight percent enriched fuel bundles. The remaining rows contain 3.00 weight percent enriched fuel bundles. The solid curve on Figure 1 shows the results without taking any credit for the negative reactivity effect of the gadolinia burnable absorber. The dashed curve on Figure 1 shows the resulting K-infinities for the case where the gadolinia absorber effect is included. As shown on Figure 1, when no credit is taken for the gadolinia, several rows of the highly enriched fuel must be placed into the non-poison spent fuel racks before 0.945 is reached. Including a credit for gadolinia, the entire non-poison spent fuel rack could be filled with the 3.75 weight percent fuel and the resultant K-infinity would be below the 0.95 limit.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

C. V. Mangan
C. V. Mangan
Vice President

Nuclear Engineering and Licensing

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11

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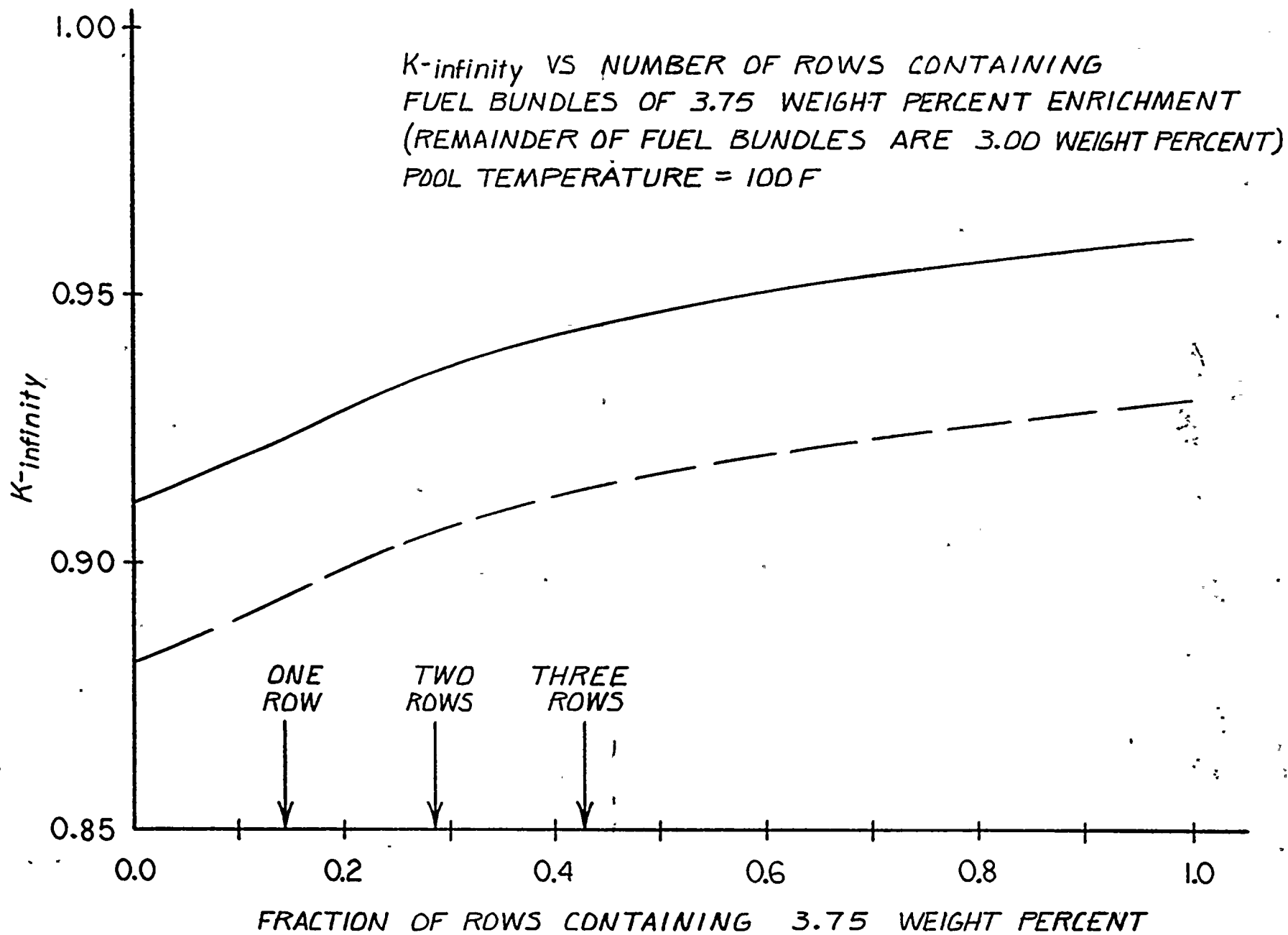


FIGURE I

