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| FROM: Niagara Mohawk Power Corp. Syracuse, N.Y. 13202 Gerald K. Rhode | | DATE OF DOC 1-7-76 | DATE REC'D 1-9-76 | LTR XX | TWX | RPT | OTHER |
| TO: Mr. George Lear | | ORIG 1 signed | CC | OTHER | SENT NRC PDR <u>XX</u> | | SENT LOCAL PDR <u>XX</u> |
| CLASS | UNCLASS XXX | PROP INFO | INPUT | NO CYS REC'D 1 | DOCKET NO: 50-220 | | |

DESCRIPTION: Ltr trans the following:

PLANT NAME: Nine Mile Pt. Unit 1 Plant

ENCLOSURES: Addl info concerning the proposed modification to the Spent Fuel Pool at Nine Mile Pt. Unit 1 Plant:...

(1 cy encl rec'd)

~~Do Not Remove~~
ACKNOWLEDGED

FOR ACTION/INFORMATION

DHL 1-13-76

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NIAGARA MOHAWK POWER CORPORATION

NIAGARA  MOHAWK

300 ERIE BOULEVARD WEST
SYRACUSE, N. Y. 13202



January 7, 1976

Director of Nuclear Reactor Regulation
Attn: Mr. George Lear, Chief
Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



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

Dear Sir:

Your recent telecommunication requested additional information concerning the proposed modification to the Spent Fuel Pool at Nine Mile Point Unit 1. The attached information addresses itself to your request.

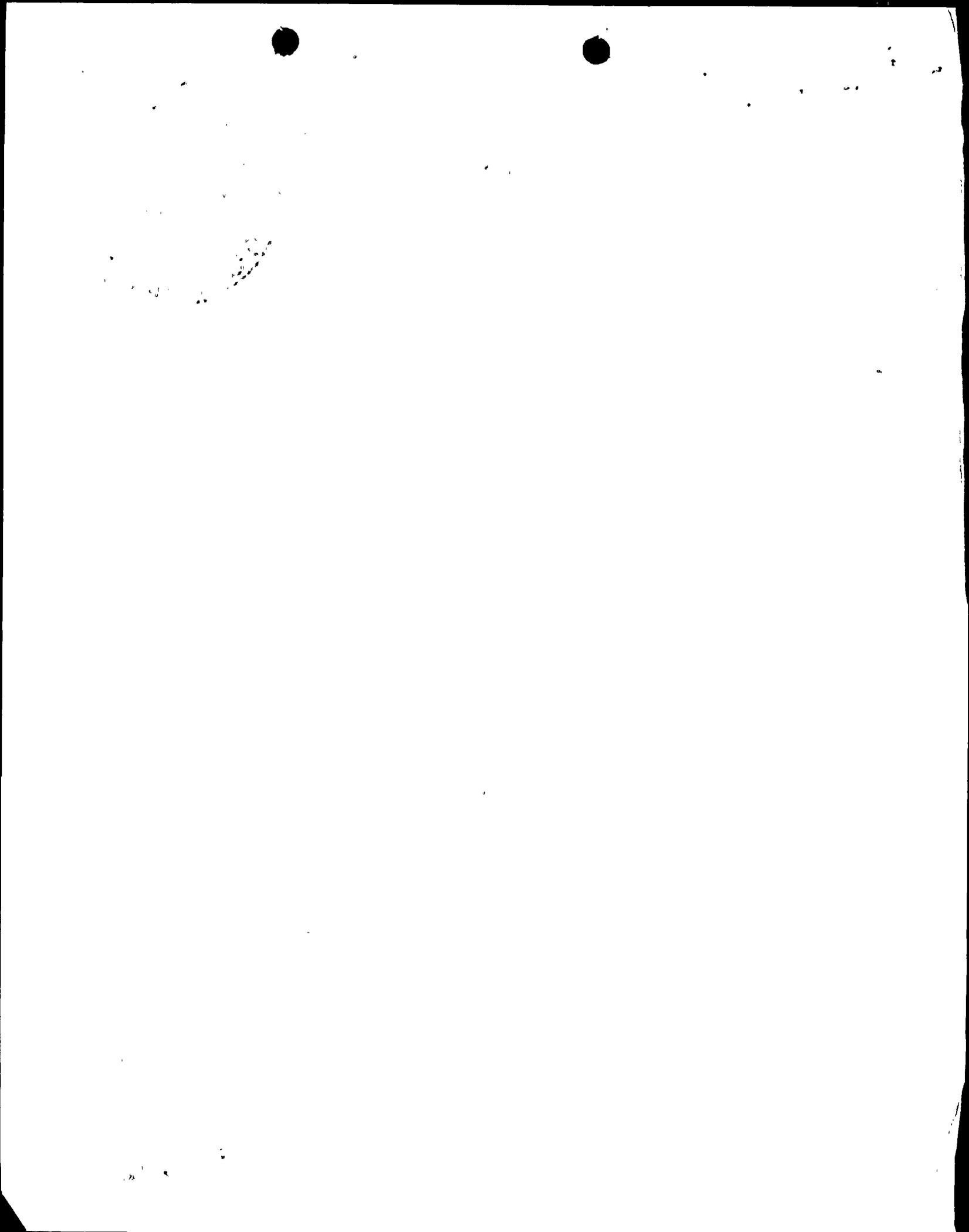
Very truly yours,

NIAGARA MOHAWK POWER CORPORATION


GERALD K. RHODE
Vice President - Engineering

MGM/sz

Attachment



Received by Mr. Doherty 1-7-76

1. Question

What are the specific needs that require increased storage capacity in the spent fuel pool (SFP)? Include in the response:

- a) status of contractual arrangements, if any, with fuel-storage or fuel-reprocessing facilities, and
- b) proposed refueling schedule.

Response

The following table shows the present plans with regard to refuelings at Nine Mile Point Unit 1, through 1981.

| <u>Date</u> | <u>Bundles Discharged</u> | <u>Bundles in Pool</u> |
|-------------|---------------------------|------------------------|
| 9/75 | - | 500 |
| 3/77 | 160 | 660 |
| 9/78 | 170 | 830 |
| 3/80 | 170 | 1000 |
| 9/81 | 170 | 1170 |

The present storage capacity of 800 bundles will be exhausted following the March 1977 refueling. The proposed expansion would provide storage for 1140 bundles, enabling sufficient capacity until the 9/81 refueling.

Niagara Mohawk does not presently have any contracts for off-site storage or reprocessing of spent fuel. Negotiations are in process with Allied General Nuclear Services (AGNS) for storage and reprocessing services. However, it is unlikely that these services would relieve the short-term problem.

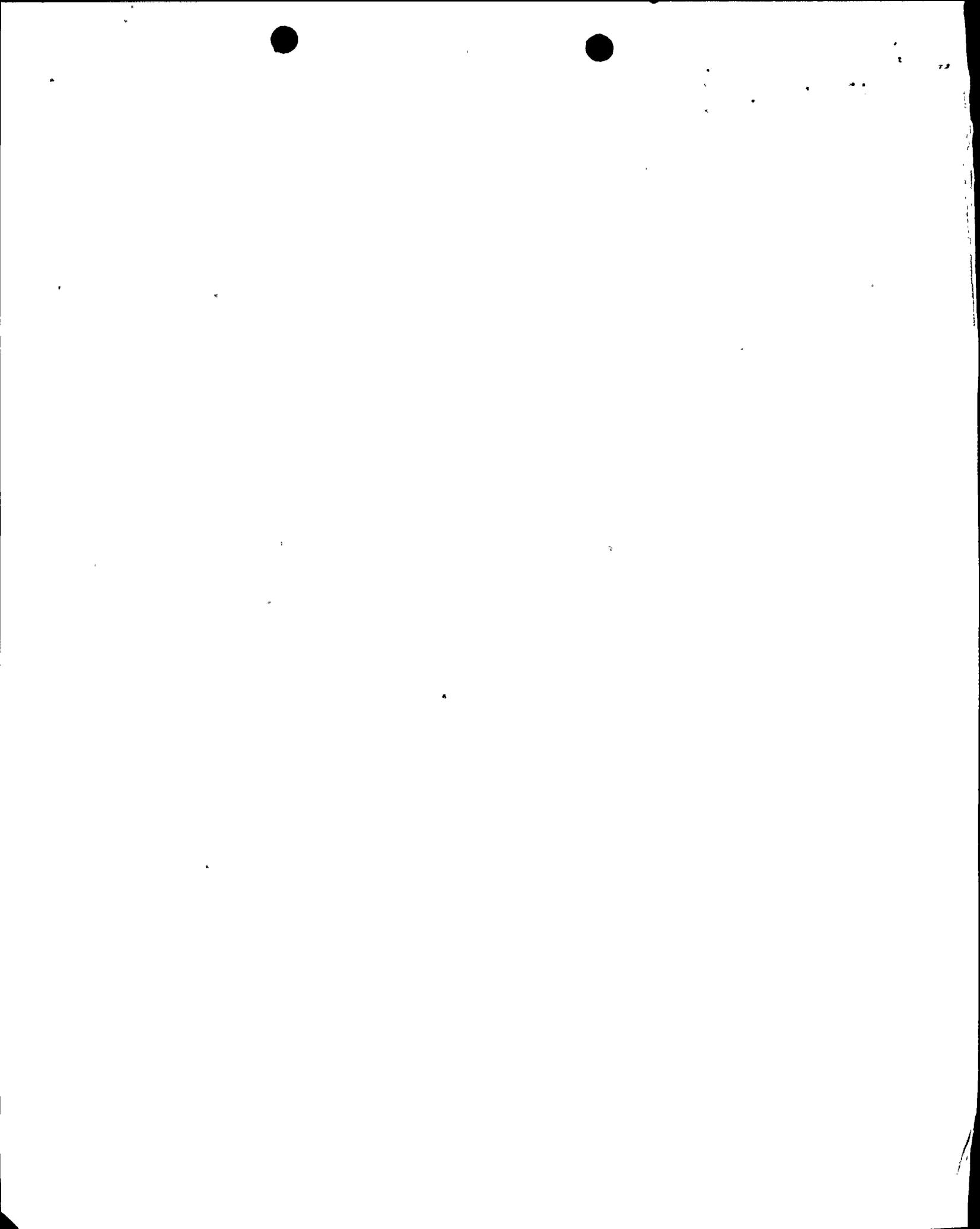
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2. Question

What is the total construction cost associated with the proposed modification of the SFP storage facilities?

Response

The total construction cost associated with the proposed modification of the spent fuel storage facilities is estimated to be \$175,000.



3. Question

What are the alternatives to increasing the storage capacity of the SFP? The alternatives considered should include:

- a) shipment to a fuel reprocessing facility
- b) shipment to another reactor site
- c) shutting down the reactor

The discussion of options (a) and (b) should include a cost comparison in terms of dollars per KgU stored. The discussion of (c) should include the cost for providing replacement power either from within or outside the licensee's generating system.

Response

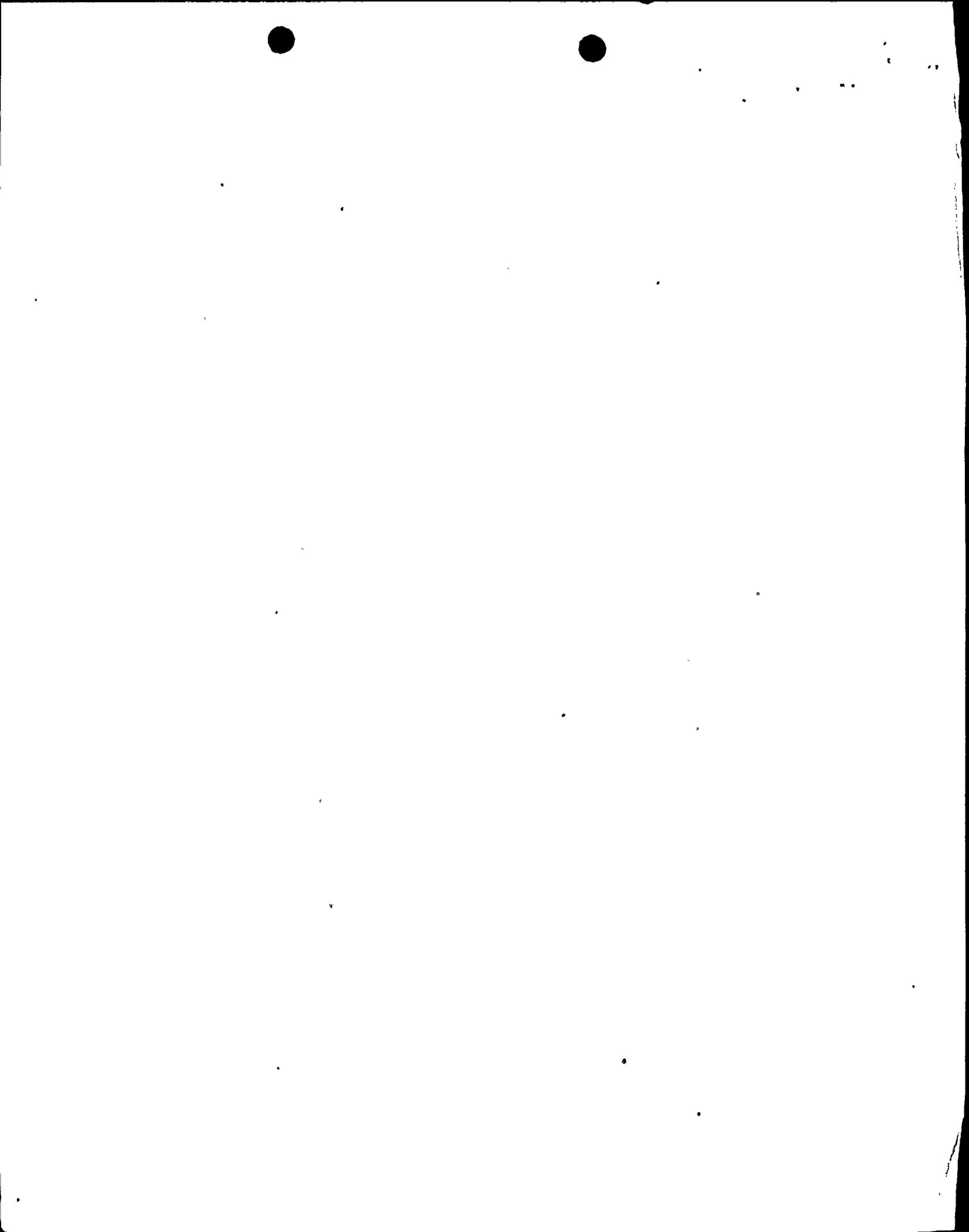
At the present time spent fuel storage space is unavailable at reprocessing facilities. This situation is not likely to change in the near future. However, if it were to change, the associated cost would be \$700,000 through 1981. This is based on a cost of \$10 per year for each kilogram of uranium. Each of the 370 bundles requiring storage contains approximately 190 kilograms of uranium.

Niagara Mohawk believes it highly unlikely that shipment to another reactor site would be practical, since many other utilities are experiencing similar storage problems. If such an alternative were available, additional shipping charges of \$15-\$25/KgU would be incurred as compared to shipping directly to a reprocessor. Storage charges imposed by the other reactor site would also be incurred. The added shipping charges for the 370 bundles would be over \$1,000,000.

Two other storage alternatives, which would not be available for the short term, are as follows:

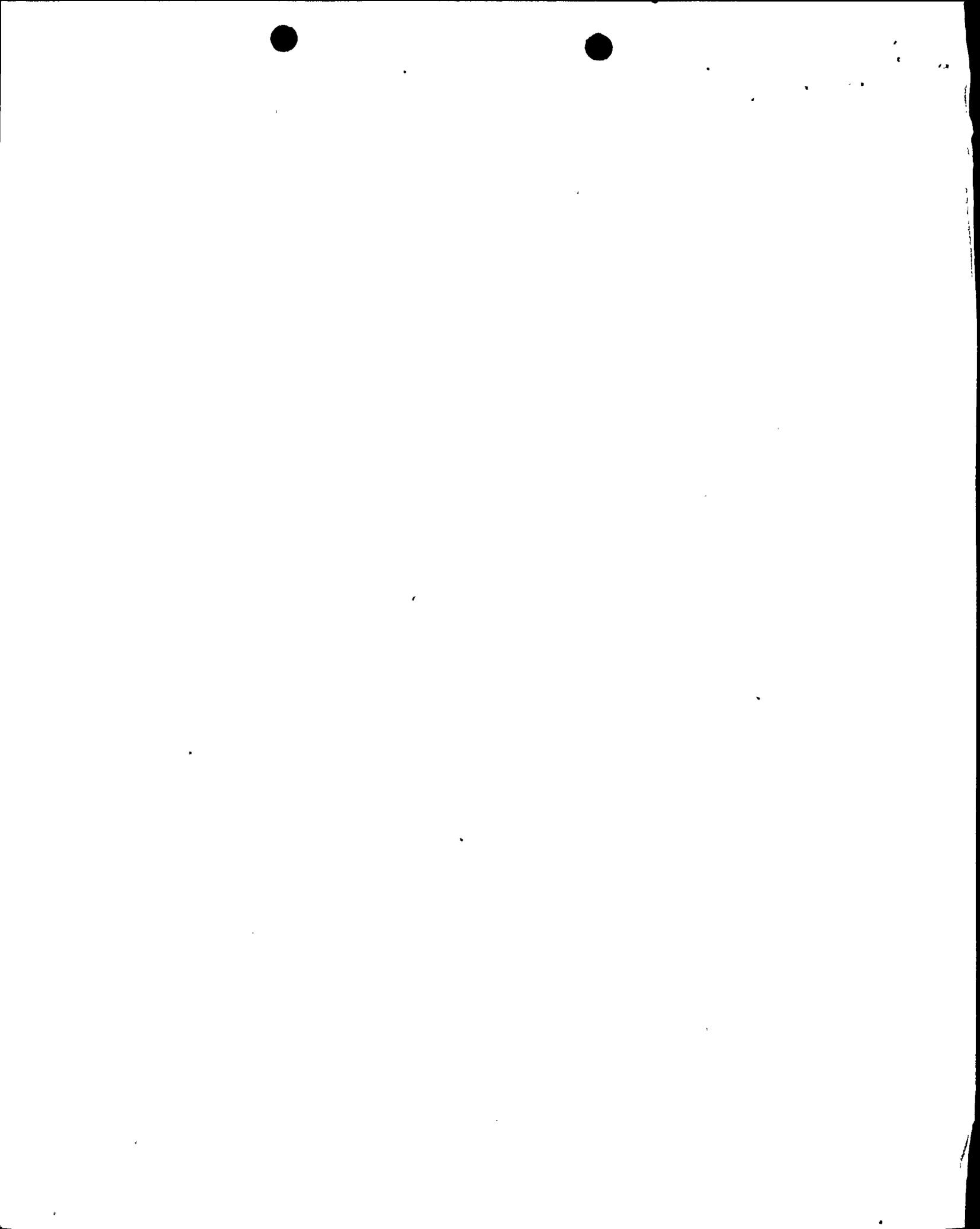
1. Construction of a separate fuel storage facility (1981)
2. Nine Mile Point Unit 2 spent fuel pool (late 1981)

.....Response Continued



3. Response (Cont'd)

Nine Mile Point Unit 1 supplies approximately 18 percent of the Niagara Mohawk system load. If the unit were to be shut down, 300 MW(e) of replacement capacity would have to be purchased, using 1979 as a representative year. The estimated cost of this is \$11,000,000 per year based on a purchase rate of \$36,500/MW/year. In addition, the energy from 600 MW(e) of generating capacity would be required from our present oil burning units, at 25-30 mills/kwhr. The resulting total additional cost to replace Nine Mile Point Unit 1 would be approximately \$100,000,000/yr.



4. Question

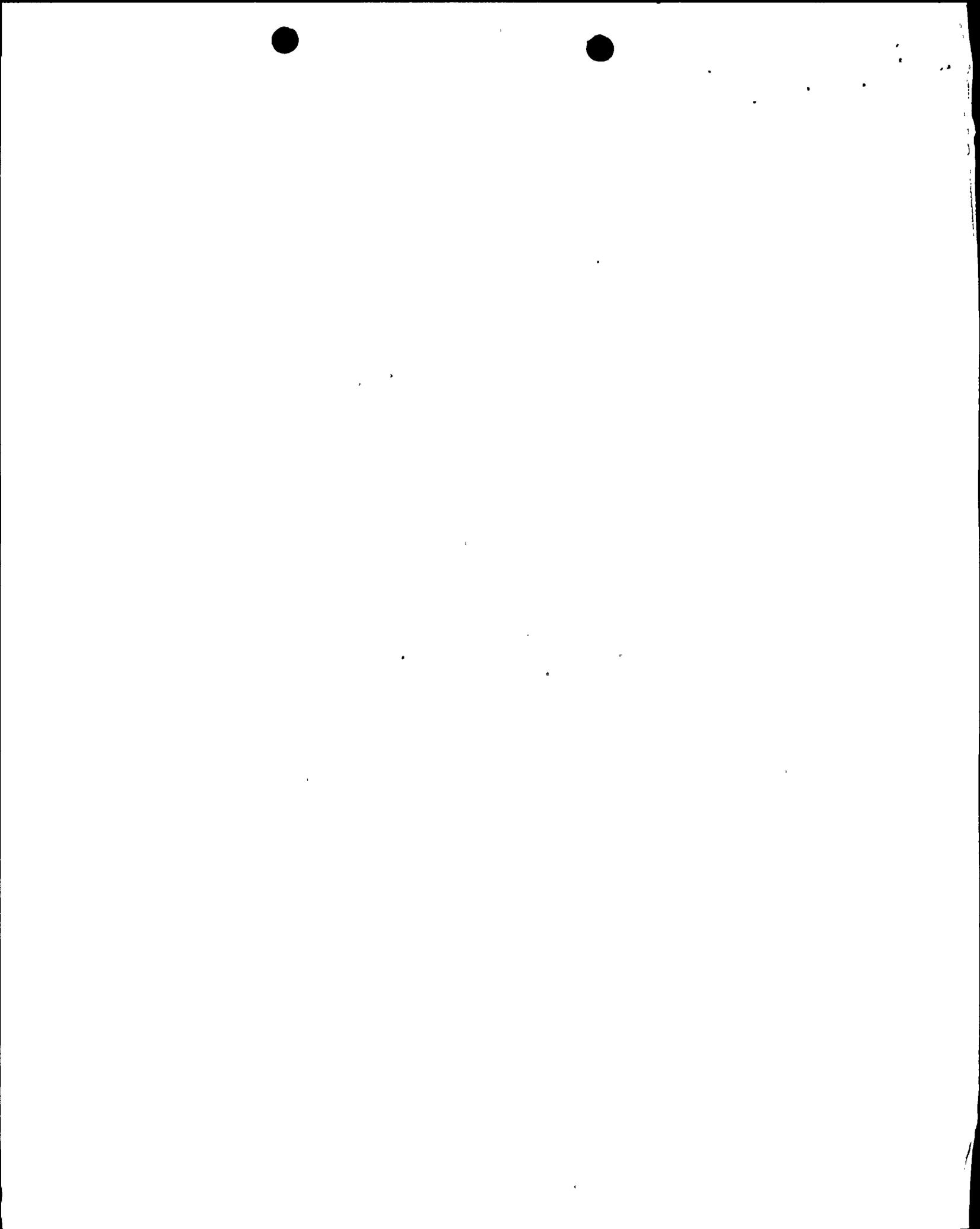
Provide data on the empty weight of the new storage racks and the associated neutron absorbing racks if any are used. Discuss the kinds and quantities of materials that would be used in the proposed modification, for example, the amounts of stainless steel or boral.

Response

The empty weight of the new spent fuel storage racks is 1850 pounds. A list of materials used in the racks is included in the following table.

Spent Fuel Rack Materials

| <u>Part Name</u> | <u>Material</u> |
|-------------------|---|
| Lifting Lug | ASTM B209, B211, or B221 Alloy 6061-T6 Alum. |
| End Channel | ASTM B221, Type 6063-T5 Alum. Extrusion |
| Column | ASTM B221, Type 6063-T5 Alum. Extrusion |
| Tube | ASTM B221, Type 6061-T6 Alum. |
| Numerical Channel | ASTM B26-SG70A-T51 or ASTM B108-SG70A-T6 |
| Tube | ASTM B221, Type 6061-T6 Alum. |
| Divider | ASTM B221, Type 6061-T6 Alum. |
| Base | ASTM B108 Alloy SG70A-T6 |
| Guide | ASTM B108 Alloy SG70A-T6 |
| Block | ASTM B209, B211, or B221 Alloy 6061-T4, or T6, or 6063-T5 |
| Plate | ASTM B209, Type 6061-T6 |



5. Question

What would be the additional time period that spent fuel assemblies could be stored onsite, as a result of the proposed expansion?

Response

The proposed expansion of the spent fuel pool would enable bundles to be stored for about an additional three years.



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6. Question

What would be the additional heat load and the anticipated maximum temperature of the water in the SFP which would result from the proposed expansion?

Response

Our letter of October 31, 1975 to Mr. George Lear contains the requested heat load and temperature analysis.



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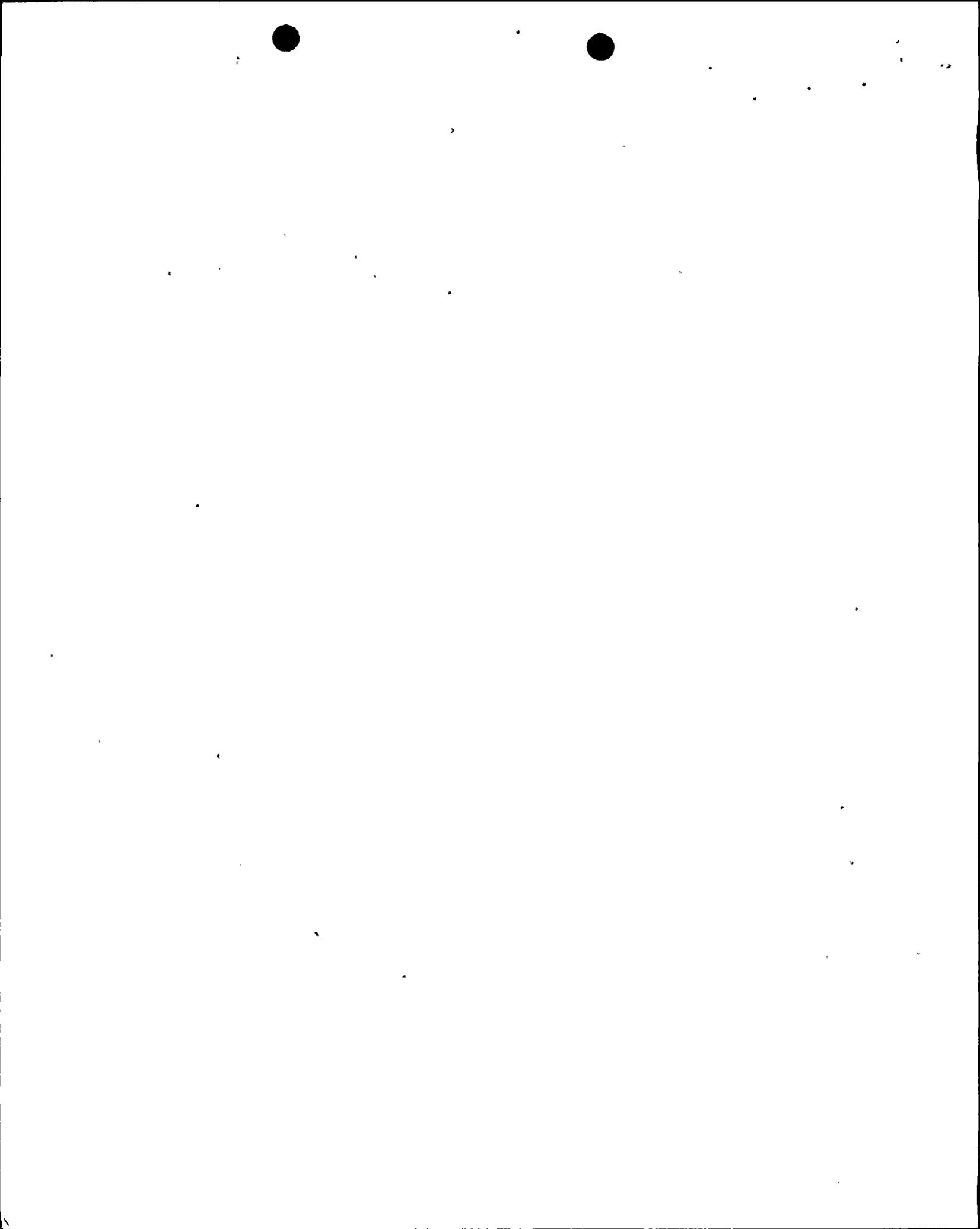
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7. Question

How much additional solid waste would result from the proposed expansion?

Response

Approximately six additional drums of solid waste would be generated annually because of the proposed modification of the spent fuel pool. This additional waste is expected due to the more frequent filter changes which would be required for the spent fuel pool filtering and cooling system.



8. Question

Provide data on the quantities of Krypton-85, Tritium, and Iodine-131 that have been measured as releases to the environment from the fuel building ventilation system during each year from the last three years. If data are not available from the ventilation system, provide data measured from the overall plant.

Response

The spent fuel pool is located in the Reactor Building at Nine Mile Point Unit 1. Since all building ventilation air is routed to the stack, data on the requested isotopes is available only on an overall plant basis. The following is a tabulation of the overall plant stack releases for the period 1972-74.

| | Annual Curie Releases | | |
|------|-----------------------|----------------|--------------|
| | <u>Kr-85m</u> | <u>Tritium</u> | <u>I-131</u> |
| 1972 | 4.03×10^4 | 18.26 | 0.8934 |
| 1973 | 6×10^4 | 26.75 | 1.962 |
| 1974 | 4.3×10^4 | 26.98 | 0.72 |

The vast majority of these releases is attributed to the offgas system. The spent fuel pool contribution to the total is very small.



9. Question

What would be the maximum radionuclide concentration ($\mu\text{Ci/cc}$) in the SFP as a result of the proposed expansion? Estimate the incremental dose rate above the surface of the SFP that would result from the proposed modification. Estimate the increased annual occupational man/rem exposure based on operations performed by personnel in the pool vicinity.

Response

The maximum radionuclide concentration expected in the expanded spent fuel pool would be 10^{-3} $\mu\text{Ci/cc}$. Most of the dose rate contribution above the pool is due to activity in the water from bundles recently discharged. Since the proposed expansion would not increase this number, the incremental dose rate above the pool would be insignificant because of the expansion. Presently the dose rate above the pool is controlled to between 5-10 mr/hr , by frequency of change of the spent fuel pool filter. This policy is expected to continue with the proposed expansion. Therefore, no increased occupational exposure is anticipated due to personnel working in the pool vicinity.

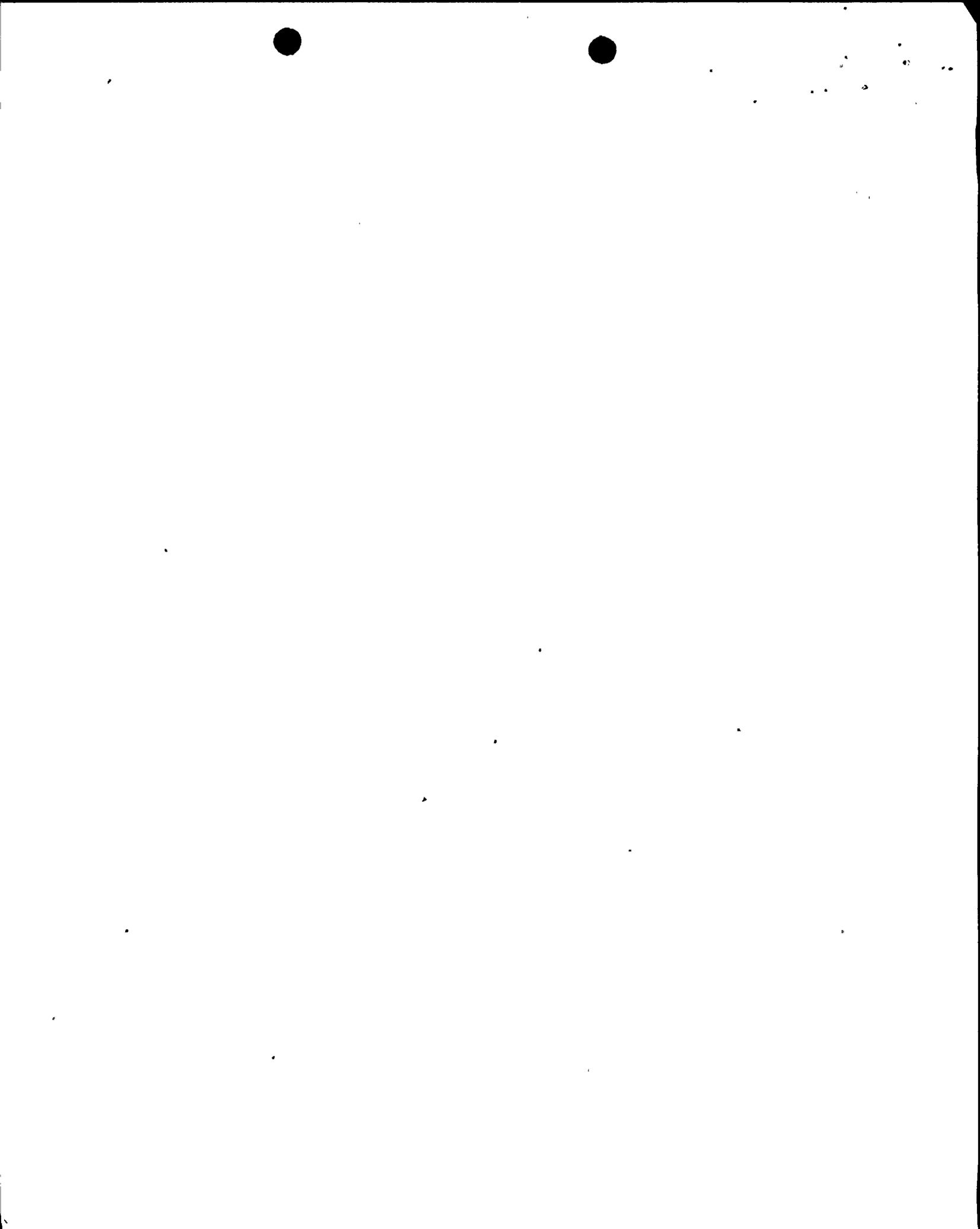


10. Question

Discuss the effect of the proposed modification on the efficiency of the filter system in the fuel storage building.

Response

No significant change is anticipated in the efficiency of the filter system due to the proposed modification of the spent fuel pool. Additional solid waste would be produced, however, as detailed in the response to Question #7, above.



11. Question

Discuss potential fuel handling and fuel cask accidents and address the resultant doses that could ensue from such accidents relative to the expanded SFP.

Response

Our letters of October 31, 1975 and November 25, 1975 to Mr. George Lear discussed a worst case potential accident, and resultant doses, from dropping a heavy object into the pool.



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12. Question

Discuss the way in which the original spent fuel storage racks would be removed and disposed of or stored.

Response

The proposed modification involves the addition of seventeen spent fuel storage racks. All of the existing racks will remain in the pool.



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