Attachment A

1. Make the following changes in the Technical Specifications.

Remove	Insert
pages 3.11-2 through 3.11-3 3.11-5	pages 3.11-2 through 3.11-3

e. Charcoal adsorbers shall be installed in the ventilation system exhaust from the spent fuel storage pit area and shall be operable.

3.11.2 Radiation levels in the spent fuel storage area shall be monitored continuously.

3.11.3 The trolley of the auxiliary building crane shall never be stationed or permitted to pass over storage racks containing spent fuel.

3.11.4 The spent fuel pool temperature shall be limited to 150°F.

3.11.5 The spent fuel shipping cask shall not be carried by the auxiliary building crane, pending the evaluation of the spent fuel cask drop accident and the crane design by RG&E and NRC review and approval.

Basis:

Charcoal adsorbers will reduce significantly the consequences of a refueling accident which considers the clad failure of a single irradiated fuel assembly. Therefore, charcoal adsorbers should be employed whenever irradiated fuel is being handled. This requires that the ventilation system should be operating and drawing air through the adsorbers.

The desired air flow path, when handling irradiated fuel, is from the outside of the building into the operating floor area, toward the spent fuel storage pit, into the area exhaust ducts, through the adsorbers, and out through the ventilation system exhaust to the facility vent. Operation of a main auxiliary building

Amendment No. ~~1~~1, ~~3~~4, ~~3~~6
Proposed

exhaust fan assures that air discharged into the main ventilation system exhaust duct will go through a HEPA and be discharged to the facility vent. Operation of a main auxiliary building exhaust fan assures that air discharged into the main ventilation system exhaust duct will go through a HEPA and be discharged to the facility vent. Operation of the exhaust fan for the spent fuel storage pit area causes air movement on the operating floor to be towards the pit. Proper operation of the fans and setting of dampers would result in a negative pressure on the operating floor which will cause air leakage to be into the building. Thus, the overall air flow is from the location of low activity (outside the building) to the area of highest activity (spent fuel storage pit). The exhaust air flow would be through a roughing filter and charcoal before being discharged from the facility. The roughing filter protects the adsorber from becoming fouled with dirt; the adsorber removes iodine, the isotope of highest radiological significance, resulting from a fuel handling accident. The effectiveness of charcoal for removing iodine is assured by having a high throughput and a high removal efficiency. The throughput is attained by operation of the exhaust fans. The high removal efficiency is attained by minimizing the amount of iodine that bypasses the charcoal and having charcoal with a high potential for removing the iodine that does pass through the charcoal.

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Proposed

Attachment B

In 1976, Rochester Gas & Electric replaced the original R. E. Ginna spent fuel storage racks, increasing the storage capacity of the pool by decreasing the center-to-center spacing of the storage locations.

In evaluating the radiological consequences of missiles, RG&E proposed a spent fuel storage pattern whereby the probability of a missile impact on spent fuel that had decayed less than 60 days was not increased. Therefore, the density of fission product inventory maintained in any local area was less than that which had been stored in the original storage racks. This was accepted by the NRC and the required storage pattern was incorporated into the Technical Specifications (Reference 1).

Because of anticipated requirements upon the storage capacity of the racks, RG&E requested U.S. Tool & Die (USTD) to perform an analysis of the effect of a vertical and horizontal impact of the missile with the greatest potential for damage to the rack and contained fuel assemblies (attached). Design values for tornado wind speed and missile characteristics were those established in the NRC review of Systematic Evaluation Program (SEP) Topics III-2, Wind and Tornado Loadings, and III-4.A, Tornado Missiles (Ref. 4 and 5). This missile is characterized as a 1490 lb. wood pole, 35 ft. in length with a diameter of 13.5 inches. USTD assumed a tornado wind velocity of 132 mph and accounted for the drag effects of the pool water above the racks using Reference 3.

The results of this analysis indicated that vertical deformation would be no greater than 1.40 inches and there would be no deformation from a horizontal impact. This limited deformation does not change appreciably for higher tornado wind speeds. Additional margins are available to accommodate higher tornado wind speeds. For example, calculations performed assuming a tornado wind speed of 200 mph yield a vertical deformation of 1.8 inches and at worst a small amount of localized plastic deformation for a horizontal impact.

These results are conservative for the following reasons:

1. The energy absorbed by the pole is neglected. It is likely that upon impact the pole would split along the grain reducing the fraction of total energy absorbed by the rack.

2. It is assumed that the missile enters the water at an orientation exposing the minimum cross sectional area perpendicular to the direction of travel. For a vertical impact in the 132 mph case, a change in the missile orientation of only 5° would decrease the kinetic energy on impact from 79,000 ft./lb. to approximately 12,000 ft./lb. Similar reductions would occur at higher wind speeds also.

3. For a horizontal impact, the increase in the distance that the missile must travel through water relative to a vertical impact was neglected.

In October 1981, the NRC completed an evaluation of the consequences of a postulated fuel handling accident inside containment (Reference 2). In this evaluation the staff calculated the offsite dose consequences assuming damage to all the rods of one fuel assembly occurring 100 hours after shutdown, and 100% of the activity released from the pool was released to the atmosphere. The resulting calculated dose at the EAB was 96 rem.

This analysis used a X/Q value of 4.8×10^{-4} sec/m^3 corresponding to a probability level of .5%. The RG&E submittal of June 30, 1981 for SEP Topic II-2.C determined that the direction dependent X/Q at a 5% probability level is 6×10^{-5} sec/m^3. This value is still very conservative and more appropriate given the high winds and excellent dispersion associated with tornado conditions.

If the 5% X/Q value was used, the dose at the (Exclusion Area Boundary) EAB would be reduced by a factor of 8 ($6 \times 10^{-5}/4.8 \times 10^{-4}$) resulting in a value of 12 rem for damage to all rods of one fuel assembly 100 hours after shutdown.

The worst position for impact of a missile would be centered on a fuel storage location where, because of the 13.5 inch missile radius compared to a diagonal dimension of the box of 11.9 inches, the corners of four other fuel storage locations would be damaged. Because of the limited deformation of the storage box, it is difficult to postulate damage beyond the equivalent of one assembly. However, even assuming that all 5 fuel assemblies were severely damaged, and that all fuel assemblies could be moved to the spent fuel pool within 100 hours, and that all 5 fuel assemblies were peak power assemblies, the upper bound on the dose at the EAB would be 5 x 12 or 60 rem. This result is well within the guidelines of 10CFR 100 (300 rem) and is less than what the NRC previously considered acceptable and approved for Ginna for the postulated fuel handling accident inside containment.

Therefore it is acceptable to delete the restriction on storage of recently discharged fuel in the spent fuel pool.

References

1. Letter, A. Schwencer, USNRC to L. D. White, RG&E, November 15, 1976.

2. Letter, D. M. Crutchfield, USNRC, to J. E. Maier, RG&E, October 7, 1981.

3. D. R. Miller, W. A. Williams, "Tornado Protection for the Spent Fuel Storage Pool," General Electric APED-5696, November 1968.

4. Letter, D. M. Crutchfield, USNRC to J. E. Maier, RG&E, August 22, 1983.

5. NUREG-0821, Supplement No. 1, Integrated Plant Safety Assessment, Systematic Evaluation Program, August 1983.