

GENERAL ELECTRIC COMPANY
AFFIDAVIT

I, Paul S. Stansbury, being duly sworn, depose and state as follows:

- (1) I am a Senior Nuclear Safety Engineer in the Nuclear Safety Engineering Unit of Wilmington Manufacturing Department, General Electric Company. My education includes Bachelors and Masters Degrees in Physics and a Doctor of Philosophy in Nuclear Engineering with specialty in Health Physics. All three degrees are from the Georgia Institute of Technology. Subsequent to my education, I held the position of Assistant Professor for five years in the Radiological Hygiene Program, Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill. I joined the General Electric Company in my present position in April of 1982. My prime responsibility is radiological safety. It is part of my duties to make radiological calculations.
- (2) The information described herein relates to a calculation of exposure rates in various assumed configurations of specified quantities of uranium enriched to 1.85% in the isotope U-235. The assumed amounts and relative locations of uranium used in the calculation are shown in Attachment A.
- (3) Each mass of uranium was assumed to be an un-shielded point source. No provisions were made to reduce the calculated amounts of radiations emitted due to the self-absorption that would occur in an actual mass of uranium.

- (4) All of the source points and all of the points of calculated radiation fields are in the same horizontal plane.
- (5) The exposure rates, under the various assumed conditions, were calculated using the approximate exposure rate formula found on Page 32 of the Radiological Health Handbook, (U.S. Public Health Service, January 1970). The gamma ray data used in the formula were the most conservative values that could be found in (1) Table of the Isotopes, 6th Edition, C. M. Lederer, et al (Wiley: New York), 1967, (2) Radiological Health Handbook (op cit), (3) Amersham/Searle Catalog, 1977.
- (6) All gamma rays with a probability of emission higher than 0.1% were considered in the calculation. Radiations expected to travel less than approximately 25 feet (i.e., alpha, beta, and L-x radiation) were not considered.
- (7) The isotopes considered in the calculation were U-238 and its daughters Th-234 and Pa-234m, U-235 and its daughters Th-231, U-234 and U-236. Daughters were assumed to be present in equilibrium with their parents.
- (8) I am informed by Applicant that both the point source array (uranium quantities and relative location) and the approximate relative location of the new Fuel Storage Area are as shown in Attachments A, B, and C hereto, but can make no independent affirmation of that fact.
- (9) The calculations, based on Attachment A and the other assumptions specified herein, are estimated to be accurate to within $\pm 10\%$.
- (10) Because of the simplifying assumptions of no shielding and no self-absorption, it is estimated that the exposures calculated are up to twice as large as might be measured in the presence of these factors.

- (11) Dose equivalent rate (in millirems per hour) may be assumed to be 90% of the exposure rate (milliroentgens per hour).
- (12) Attachments B and C indicate the calculated exposure rates in and around the assumed uranium configuration at grid spacings of 25 feet and 50 feet, respectively.
- (13) Attachments D and E indicate the calculated exposure rates around single sources of 17.5 metric tons of uranium and 23.3 metric tons of uranium, respectively, at a grid spacing of 25 feet.

STATE OF NORTH CAROLINA

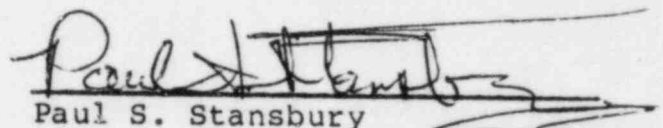
SS:

COUNTY OF NEW HANOVER

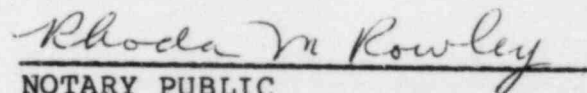
Paul S. Stansbury, being duly sworn, deposed and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at Wilmington, North Carolina, this 12th day of March 1984.

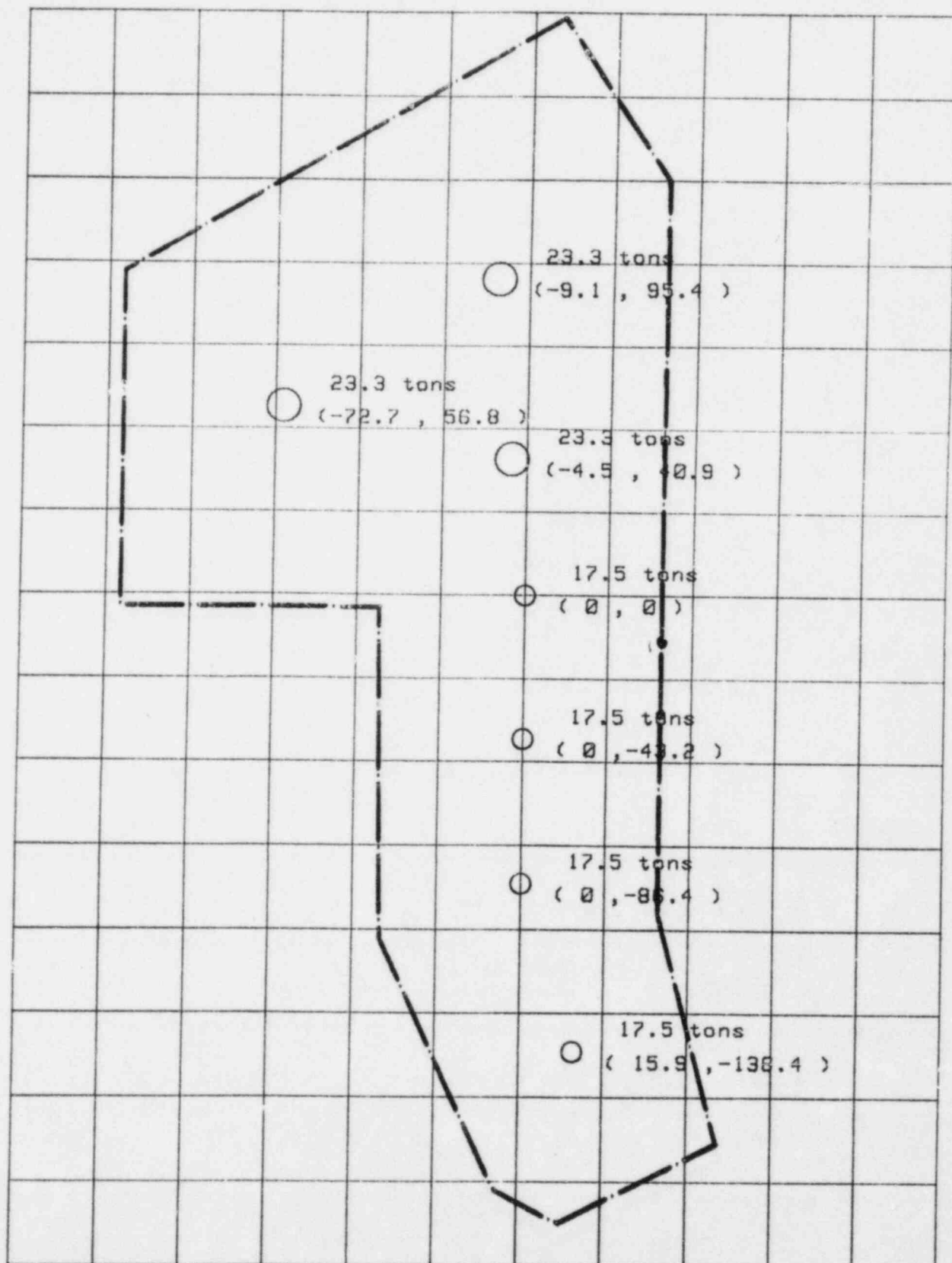

Paul S. Stansbury
GENERAL ELECTRIC COMPANY

Subscribed and sworn before me this 12th day of March 1984 in New Hanover County.


NOTARY PUBLIC
STATE OF NORTH CAROLINA

My Commission Expires 3-12-86

Parentetical values are relative X-Y coordinates in feet.
Shown is the approximate location of the new Fuel Storage Area fence.



| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|------|-------|------|------|-------|------|------|-----|-----|-----|-----|-----|-----|
| .15 | .17 | .20 | .24 | .27 | .31 | .34 | .36 | .35 | .33 | .29 | .25 | .21 | .18 | .16 | .13 | .12 |
| .17 | .21 | .25 | .30 | .36 | .42 | .49 | .53 | .52 | .47 | .39 | .32 | .26 | .22 | .18 | .15 | .13 |
| .20 | .24 | .31 | .39 | .49 | .61 | .76 | .90 | .91 | .73 | .54 | .41 | .32 | .25 | .21 | .17 | .14 |
| .22 | .28 | .38 | .51 | .70 | .93 | 1.28 | 2.05 | 2.25 | 1.28 | .77 | .52 | .38 | .29 | .23 | .19 | .16 |
| .25 | .33 | .46 | .69 | 1.09 | 1.61 | 2.14 | 6.97 | 16.56 | 2.12 | 1.01 | .64 | .45 | .33 | .26 | .21 | .17 |
| .26 | .36 | .53 | .90 | 2.04 | 5.67 | 3.49 | 4.43 | 5.30 | 2.34 | 1.21 | .74 | .51 | .37 | .28 | .22 | .18 |
| .27 | .37 | .56 | .98 | 2.62 | 32.43 | 4.53 | 5.25 | 17.56 | 3.00 | 1.38 | .82 | .55 | .40 | .30 | .23 | .19 |
| .27 | .37 | .53 | .84 | 1.50 | 2.50 | 2.69 | 4.56 | 8.88 | 3.21 | 1.48 | .88 | .58 | .42 | .31 | .24 | .19 |
| .26 | .35 | .47 | .68 | .92 | 1.39 | 1.96 | 3.89 | * | 3.57 | 1.52 | .90 | .60 | .43 | .32 | .25 | .20 |
| .25 | .32 | .42 | .57 | .78 | 1.09 | 1.66 | 3.24 | 6.66 | 3.13 | 1.49 | .89 | .60 | .43 | .32 | .25 | .20 |
| .23 | .29 | .38 | .49 | .67 | .95 | 1.51 | 3.34 | 28.24 | 3.31 | 1.45 | .87 | .58 | .42 | .31 | .24 | .19 |
| .22 | .27 | .34 | .44 | .58 | .83 | 1.36 | 3.03 | 11.33 | 3.09 | 1.40 | .84 | .56 | .40 | .30 | .24 | .19 |
| .20 | .24 | .30 | .38 | .51 | .72 | 1.16 | 2.52 | 8.02 | 2.96 | 1.40 | .81 | .53 | .38 | .29 | .22 | .18 |
| .18 | .22 | .27 | .34 | .44 | .60 | .91 | 1.63 | 4.39 | 6.66 | 1.56 | .77 | .49 | .35 | .26 | .21 | .17 |
| .16 | .19 | .23 | .29 | .37 | .49 | .70 | 1.18 | 3.35 | 5.06 | 1.32 | .66 | .43 | .31 | .24 | .19 | .16 |
| .15 | .17 | .20 | .25 | .30 | .38 | .51 | .72 | 1.05 | 1.11 | .75 | .49 | .35 | .27 | .21 | .17 | .14 |
| .13 | .15 | .18 | .21 | .25 | .30 | .37 | .45 | .53 | .53 | .45 | .35 | .28 | .22 | .18 | .15 | .13 |

ATTACHMENT B RADIATION EXPOSURE (IN MR/HR) FROM AN ARRAY OF 1.85% ENRICHED URANIUM POINT SOURCES

Grid Spacing is 25 ft. Fenceline location is approximate.

* Marks approximate location of 17.5 metric ton point sources

Marks approximate location of 23.3 metric ton point sources

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|------|------|-------|------|-----|-----|-----|-----|-----|-----|-----|
| .03 | .04 | .04 | .05 | .05 | .06 | .06 | .07 | .07 | .06 | .06 | .06 | .05 | .04 | .04 | .03 | .03 |
| .04 | .04 | .05 | .06 | .07 | .08 | .08 | .09 | .09 | .09 | .08 | .07 | .06 | .05 | .04 | .04 | .03 |
| .04 | .05 | .06 | .07 | .09 | .10 | .12 | .13 | .13 | .12 | .10 | .09 | .07 | .06 | .05 | .04 | .04 |
| .05 | .06 | .07 | .09 | .11 | .14 | .17 | .19 | .20 | .18 | .15 | .12 | .09 | .08 | .06 | .05 | .04 |
| .05 | .07 | .08 | .11 | .15 | .20 | .27 | .34 | .35 | .29 | .21 | .16 | .12 | .09 | .07 | .06 | .05 |
| .06 | .07 | .10 | .13 | .20 | .31 | .49 | .76 | .91 | .54 | .32 | .21 | .14 | .10 | .08 | .06 | .05 |
| .06 | .08 | .11 | .16 | .25 | .46 | 1.09 | 2.14 | 16.56 | 1.01 | .45 | .26 | .17 | .12 | .09 | .07 | .05 |
| .06 | .08 | .11 | .17 | .27 | .56 | 2.62 | 4.53 | 17.56 | 1.38 | .55 | .30 | .19 | .13 | .09 | .07 | .05 |
| .06 | .08 | .11 | .17 | .26 | .47 | .99 | 1.96 | * | 1.52 | .60 | .32 | .20 | .13 | .10 | .07 | .06 |
| .06 | .08 | .11 | .15 | .23 | .38 | .67 | 1.51 | 28.24 | 1.45 | .58 | .31 | .19 | .13 | .09 | .07 | .06 |
| .06 | .08 | .10 | .14 | .20 | .30 | .51 | 1.16 | 8.02 | 1.40 | .53 | .29 | .18 | .12 | .09 | .07 | .05 |
| .06 | .07 | .09 | .12 | .16 | .23 | .37 | .70 | 3.35 | 1.32 | .43 | .24 | .16 | .11 | .08 | .06 | .05 |
| .05 | .06 | .03 | .10 | .13 | .18 | .25 | .37 | .53 | .45 | .28 | .18 | .13 | .10 | .07 | .06 | .05 |
| .05 | .05 | .07 | .08 | .10 | .13 | .17 | .21 | .23 | .22 | .18 | .13 | .10 | .08 | .06 | .05 | .04 |
| .04 | .05 | .06 | .07 | .08 | .10 | .12 | .13 | .14 | .13 | .12 | .10 | .08 | .07 | .06 | .05 | .04 |
| .04 | .04 | .05 | .06 | .07 | .07 | .08 | .09 | .10 | .09 | .09 | .08 | .06 | .06 | .05 | .04 | .03 |
| .03 | .04 | .04 | .05 | .05 | .06 | .06 | .07 | .07 | .07 | .06 | .06 | .05 | .05 | .04 | .04 | .03 |

ATTACHMENT C RADIATION EXPOSURE (IN MR/HR) FROM AN ARRAY OF 1.85% ENRICHED URANIUM POINT SOURCES

Grid Spacing is 50 ft. Fenceline location is approximate.

* Marks approximate location of 17.5 metric ton point sources

Marks approximate location of 23.3 metric ton point sources

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|------|-----|-----|-----|-----|
| .02 | .02 | .02 | .02 | .02 | .03 | .03 | .03 | .03 | .03 | .03 | .03 | .02 | .02 | .02 | .02 | .02 |
| .02 | .02 | .02 | .03 | .03 | .03 | .04 | .04 | .04 | .04 | .04 | .03 | .03 | .03 | .02 | .02 | .02 |
| .02 | .02 | .03 | .03 | .04 | .04 | .05 | .05 | .05 | .05 | .05 | .04 | .04 | .03 | .03 | .02 | .02 |
| .02 | .03 | .03 | .04 | .05 | .06 | .07 | .07 | .08 | .07 | .07 | .06 | .05* | .04 | .03 | .03 | .02 |
| .02 | .03 | .04 | .05 | .06 | .08 | .10 | .11 | .12 | .11 | .10 | .08 | .04 | .05 | .04 | .03 | .02 |
| .03 | .03 | .04 | .06 | .08 | .11 | .15 | .19 | .22 | .19 | .15 | .11 | .08 | .06 | .04 | .03 | .03 |
| .03 | .04 | .05 | .07 | .10 | .15 | .24 | .39 | .49 | .39 | .24 | .15 | .10 | .07 | .05 | .04 | .03 |
| .03 | .04 | .05 | .07 | .11 | .19 | .39 | .97 | 1.95 | .97 | .39 | .19 | .11 | .07 | .05 | .04 | .03 |
| .03 | .04 | .05 | .08 | .12 | .22 | .49 | 1.95 | * | 1.95 | .49 | .22 | .12 | .08 | .05 | .04 | .03 |
| .03 | .04 | .05 | .07 | .11 | .19 | .39 | .97 | 1.95 | .97 | .39 | .19 | .11 | .07 | .05 | .04 | .03 |
| .03 | .04 | .05 | .07 | .10 | .15 | .24 | .39 | .49 | .39 | .24 | .15 | .10 | .07 | .05 | .04 | .03 |
| .03 | .03 | .04 | .06 | .08 | .11 | .15 | .19 | .22 | .19 | .15 | .11 | .08 | .06 | .04 | .03 | .03 |
| .02 | .03 | .04 | .05 | .06 | .08 | .10 | .11 | .12 | .11 | .10 | .08 | .06 | .05 | .04 | .03 | .02 |
| .02 | .03 | .03 | .04 | .05 | .06 | .07 | .07 | .08 | .07 | .07 | .06 | .05 | .04 | .03 | .03 | .02 |
| .02 | .02 | .03 | .03 | .04 | .04 | .05 | .05 | .05 | .05 | .05 | .04 | .04 | .03 | .03 | .02 | .02 |
| .02 | .02 | .02 | .03 | .03 | .03 | .04 | .04 | .04 | .04 | .04 | .03 | .03 | .03 | .02 | .02 | .02 |
| .02 | .02 | .02 | .02 | .02 | .03 | .03 | .03 | .03 | .03 | .03 | .03 | .02 | .02 | .02 | .02 | .02 |

ATTACHMENT D RADIATION EXPOSURE (IN MR/HR) FROM A SINGLE 17.5 METRIC TON POINT
SOURCE OF 1.85% ENRICHED URANIUM

Grid Spacing is 25 ft.

* Marks location of point source

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| .02 | .02 | .03 | .03 | .03 | .04 | .04 | .04 | .04 | .04 | .04 | .04 | .03 | .03 | .03 | .02 | .02 |
| .02 | .03 | .03 | .04 | .04 | .04 | .05 | .05 | .05 | .05 | .05 | .04 | .04 | .04 | .03 | .03 | .02 |
| .03 | .03 | .04 | .04 | .05 | .06 | .07 | .07 | .07 | .07 | .07 | .06 | .05 | .04 | .04 | .03 | .03 |
| .03 | .04 | .04 | .05 | .06 | .08 | .09 | .10 | .10 | .10 | .09 | .08 | .06 | .05 | .04 | .04 | .03 |
| .03 | .04 | .05 | .06 | .08 | .10 | .13 | .15 | .16 | .15 | .13 | .10 | .08 | .06 | .05 | .04 | .03 |
| .04 | .04 | .06 | .08 | .10 | .14 | .20 | .26 | .29 | .26 | .20 | .14 | .10 | .08 | .06 | .04 | .04 |
| .04 | .05 | .07 | .09 | .13 | .20 | .33 | .52 | .65 | .52 | .33 | .20 | .13 | .09 | .07 | .05 | .04 |
| .04 | .05 | .07 | .10 | .15 | .26 | .52 | 1.30 | 2.60 | 1.30 | .52 | .26 | .15 | .10 | .07 | .05 | .04 |
| .04 | .05 | .07 | .10 | .16 | .29 | .65 | 2.60 | * | 2.60 | .65 | .29 | .16 | .10 | .07 | .05 | .04 |
| .04 | .05 | .07 | .10 | .15 | .26 | .52 | 1.30 | 2.60 | 1.30 | .52 | .26 | .15 | .10 | .07 | .05 | .04 |
| .04 | .05 | .07 | .09 | .13 | .20 | .33 | .52 | .65 | .52 | .33 | .20 | .13 | .09 | .07 | .05 | .04 |
| .04 | .04 | .06 | .08 | .10 | .14 | .20 | .26 | .29 | .26 | .20 | .14 | .10 | .08 | .06 | .04 | .04 |
| .03 | .04 | .05 | .06 | .08 | .10 | .13 | .15 | .16 | .15 | .13 | .10 | .08 | .06 | .05 | .04 | .03 |
| .03 | .04 | .04 | .05 | .06 | .08 | .09 | .10 | .10 | .10 | .09 | .08 | .06 | .05 | .04 | .04 | .03 |
| .03 | .03 | .04 | .04 | .05 | .06 | .07 | .07 | .07 | .07 | .07 | .06 | .05 | .04 | .04 | .03 | .03 |
| .02 | .03 | .03 | .04 | .04 | .04 | .05 | .05 | .05 | .05 | .05 | .04 | .04 | .04 | .03 | .03 | .02 |
| .02 | .02 | .03 | .03 | .03 | .04 | .04 | .04 | .04 | .04 | .04 | .04 | .03 | .03 | .03 | .02 | .02 |

ATTACHMENT E RADIATION EXPOSURE (IN MR/HR) FROM A SINGLE 23.3 METRIC TON POINT SOURCE
OF 1.85% ENRICHED URANIUM

Grid Spacing is 25 ft.

* Marks location of point source

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