

MAY 31 1994

License Nos. 37-02006-05
SUB-831
Docket No: 030-06046
040-07344
Control No: 113059
113058

Martin Marietta Corporation
ATTN: Marcus C. Bennett,
Vice President & Chief Financial Officer
P.O. Box 8555
Philadelphia, Pennsylvania 19101

Subject: Financial Assurance for Decommissioning

This is in reference to your submittals dated July 27, 1990, April 4, 1991, and April 26, 1994 to provide financial assurance for License Nos. 37-02006-05 and SUB-831. We have reviewed these documents and have no further questions at this time.

Based on the information provided in the above referenced documents, you are presently in compliance with the financial assurance requirements outlined in the decommissioning rule in 10 CFR 30.35, and 40.36.

Please note that a decommissioning funding plan, including an actual cost estimate must be submitted along with any application for license renewal.

If you have any questions, please contact Anthony Dimitriadis, of my staff, at (610) 337-6953.

Your cooperation with us is appreciated.

Sincerely,

Original Signed By:
Mohamed M. Shanbaky

Mohamed M. Shanbaky, Chief
Research and Development Section
Division of Radiation Safety
and Safeguards

Information in this record was deleted in
accordance with the Freedom of Information Act.
Exemptions 4
FOIA/PA 1001-309

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11

F-21

cc:

Martin Marietta Corporation
ATTN: S.J. Mucha, M.D., Chairman
Ionizing Radiation Advisory Group
P.O. Box 8555
Philadelphia, Pennsylvania 19101

Martin Marietta Corporation
ATTN: John L. Andrews
Radiation Safety Officer
Astro Space
P.O. Box 8555
Philadelphia, Pennsylvania 19101

bcc:

M. Shanbaky, RI
A. Dimitriadis, RI

DRSS:RI
Dimitriadis
05/27/94

DRSS:RI
Shanbaky
05/27/94

MARTIN MARIETTA CORPORATION**ASTRO SPACE
P.O. BOX 8555, PHILADELPHIA, PA 19101
PHONE: (215) 354-3840
FAX: (215) 354-3974**

April 26, 1994

Mr. Mohamed M. Shanbaky, Chief
Division of Radiation Safety and Safeguards
US Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Shanbaky:

Subject: Financial Assurance for Decommissioning

re License Nos. SUB-831	37-02006-05	37-02006-09
Control Nos. 113058	113059	unassigned
Docket Nos. 040-07344	030-06046	030-12894

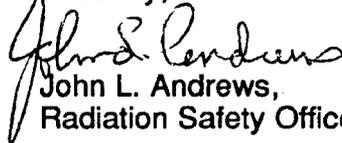
In response to your letter of March 1 to Dr. Mucha at this location, by this letter and enclosures, Martin Marietta Astro Space hereby submits necessary documentation to comply with 10CFR 30.35 and 40.42 for the three radioactive materials licenses held at this 'Valley Forge' facility. We appreciate the several week extension provided to complete the activity a first time.

Attachment No. 1 is a Decommissioning Funding Plan which is an update of the one submitted to Mr. R. Bernero (NRC Hdqrs) by John F. McLaverty of the then GE Astro Space in January 1992.

Attachment No. 2 is a Self Guarantee that funds will be available if and when a DFP is implemented, per the method of 10CFR30, App. C.

If you have any questions regarding this, feel free to call me.

Sincerely,


John L. Andrews,
Radiation Safety Officer

cc: S.J. Mucha, M.D.

Original
Annual Report
Appended

ATTACHMENT NO. 1

Decommissioning Funding Plan

for

NRC Materials Licenses

SUB-831

37-02006-05

37-02006-09

April 22, 1994

**Martin Marietta Corporation
Astro Space
(Valley Forge Facility)
P.O. Box 8555
Philadelphia, PA 19101**

Decommissioning Funding Plan (DFP)

1.0 Scope

Martin Marietta Corporation, Astro Space (Valley Forge Facility) herein presents its updated DFP for NRC Materials License Nos. SUB-831, 37-02006-05 and 37-02006-09. This plan describes the radioactive byproduct and source material in inventory, their ownership and the current estimated costs for their proper removal.

2.0 Radioactive Material Inventory

Radioactive material inventory on these licenses generally consists of sealed sources. At the present time there is no identifiable radioactive contamination, fixed equipment or structure at sites identified on these licenses; any such item has been decontaminated.

Table 1 tabulates the activity and status of the complete current inventory. The items "A-N" are those identified in the original DFP; a copy of same is appended. Additions to the inventory since October 1991 are shown as items "O-S". For this status, reductions occurred because of transfer, decay in storage, inventory correction and decontamination activity. For item 'J', two Gammacells, the activity is nominal since 'reloads' occur from time to time and these do not affect DFP costs.

3.0 DFP Cost Estimate

Table 1 also presents estimated costs, by item, for decommissioning of inventory which is Martin Marietta property. These costs come directly from the appended original DFP or are reasonable estimates for the newly added items, if they are Martin Marietta property. Of the new items, we expect only 'R' to be here after 1994.

It is presumed that, with respect to radioactive materials owned by agencies of the U.S. government and held here for use, the U.S. government will assume any and all costs of physical transfer.

The decommissioning costs shown in Table 1 total to the amount of \$ 230,000; inventory items add to the subtotal of \$ 218,700 and the remainder covers estimated supervisory and other 'office-type support' charges of an administrative nature. The item-specific costs are a reduction from the total of \$ 370,000 in the original DFP because of the exclusion of government property (\$ 145,000) and elimination of items removed from inventory (\$ 8500). Additions for new items total \$4,000 and a separate cost of \$ 1,000 has been given for item 'G'.

4.0 Financial Assurance

Martin Marietta by separate Attachment (No. 2) provides Self Guarantee per the method of App. C of 10CFR30. A biannual review and update of the required amount of Self Guarantee will be performed to provide full and current coverage.

Table 1 Radioactive Materials and Estimated Decommissioning Costs (\$)

Rad. Mat'l Item	Isotope / Activity (Curies)	NRC License #		*: Notes	
		SUB 831	37- 02006-05		37- 02006-09
Decommissioning Costs					
A	Am241 / 1.0		160,000		
B	Sr90 / 10.0		3,700		
C	Sr90 / 0.1		1,500		
D	Pu239 / 5 micro		5,000		
E	Pu238 / 0.09		15,000		
F	Co60 / 0.016		1,500		
G	Various / < 0.001		1,000	Density gauge and instrument calibration sources.	
H	Kr85 / 0			Transferred in 1992.	
I	Cs137 / 0.1 nano		*see note.	DOD/DNA property; transfer in process.	
J	Co60 (b)(4) <i>674</i>			25,000 Two Gammacells	
K	Depleted U (DU) / < 10 micro	2,000		Urethane resin with DU as a filler (250 cc).	
L	U235 / 0			Container tag marking was in error; see item 'O' for contents.	
M	Th232 / 0.0063	*see note.		USAF property (form is MgTh plates); transfer in process.	
N	Various / 0			Decontamination of Room U8604 completed (1/94).	
O (new)	U / approx. 45 lbs	2,000		Covered metal pail marked as item 'L' has 2 bags of low enrichment U dioxide.	
P (new)	Kr85 / 0.66		1,500	Activity as of 1/94.	
Q (new)	Depleted U / < 0.1	*see note.		Two items of DOE property on short term loan from Sandia and Los Alamos.	
R (new)	Th232 / approx. 0.003	*see note.		USAF property (MgTh) in multiple spacecraft ready for shipment.	
S (new)	Various / < 1 milli		500	Waste, to be removed in 1994.	
SUBTOTALS		4,000	189,700	25,000	218,700
Administration (See text).					11,300
TOTAL					230,000

The following information provides a itemized breakdown of the cost estimate.

<u>License</u>	<u>ISOTOPE</u>	<u>ACTIVITY</u>	<u>COST</u>
A 37-02006-05	Am-241	1.0 Ci	\$ 160,000

This source will have to be disposed of as Class C radioactive material (long half life). The source will need to be placed in a mass weighing at least 22,000 pounds to be below the 100nCi/g limit. The final volume is estimated to be 216 cubic feet. US Ecology in Richland WA was contacted in July 1990 and quoted a disposal price of \$80,000.00. Considering the anticipated increases in disposal costs over the next 5 years, this price is doubled for this cost estimate.

B 37-02006-05	Sr-90	10.0 Ci	\$ 3,700
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This source will have to be disposed of as Class B radioactive material in a 55 gallon drum (7.4 cft). For this estimate the basic burial cost for Class B material is \$500/cft.

C 37-02006-05	Sr-90	0.1 Ci	\$ 1,500
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This source will have to be disposed of as Class A radioactive material in one 55 gallon drum. For this estimate the basic burial cost for Class A material is \$200/cft.

D 37-02006-05	Pu-239	0.000005 Ci	\$ 5,000
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E 37-02006-05	Pu-238	0.09 Ci	\$ 15,000
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These sources are special nuclear material and therefore a limit of 100nCi/g applies. These sources can be placed in individual 55 gallon drums filled with concrete (approx. 1000 lbs). Pu-239 - Class A. Pu-238 - Class C. The basic burial cost for Class C material is \$1000.00/cft.

F 37-02006-05	Co-60	0.081 Ci	} \$ 1,500
G 37-02006-05	Density gauge & assorted check sources	<0.001Ci	

Class A radioactive material in one 55 gallon drum.

H

37-02006-05

Kr-85

21.0 Ci

\$ 5,000

The Kr-85 gas is contained in eleven Type K compressed gas cylinders totaling 15,800 psi. Our options for disposition at this point include land burial, venting or recycling.

1. Land burial restrictions would require that the gas be dispensed into 720 type A bottles at 1.5 atmospheres. The total volume would approach 3800 cft. at a disposal cost (Class A) of \$775,000.00.

2. GE has conducted an Environmental Impact Assessment addressing the release of Kr-85 gas from the King of Prussia facility. As a result of this study, a request for an amendment to license 37-02006-05 was submitted to the Region I NRC offices on May 31, 1991. The amendment incorporates release limits of:

0.5 Ci/week

2.0 Ci/quarter

7.5 Ci/year

1.2 x10 uCi/ml point of discharge limit

Request was drawn after Kr-85 was transferred off-site license

With these limits in place, venting the Kr-85 gas could be accomplished over a four year period at minimal cost (<\$1000).

3. Due to the national shortage in supplies of Kr-85 gas, Amersham Corporation has expressed interest in acquiring the Kr-85 gas for recycling. GE is currently pursuing this preferred course of action. Costs may include packaging and transportation at a cost of \$5000.00.

I

37-02006-05

contaminated
satellite (Cs-137)

0.001uCi

\$100,000

This item is a satellite midbody assembly which was contaminated during underground nuclear testing. The structure was decontaminated at the test site in 1985. A survey conducted in April 1991 indicated external radiation levels of about 1.5 to 3.0 microR/hr above background. Removable radiation levels (beta) did exceed 1000 dpm for one location on the structure. Volume reduction would definitely be appropriate for this item which is now housed in 512 cft box. This estimate, however, covers the cost of disposal as a Class A waste without volume reduction.

J

37-02006-09

Co-60

(b)(4)

\$ 25,000

EX4

(b)(4) This item consists of two irradiators containing (b)(4) and (nominal) of Co-60 in Certified Special Form. Nordion (formerly AECL) has agreed to remove the sources from the GE facility for \$18,600.00. The current cost estimate has been adjusted for an inflation rate of 10%/year over 5 years.

Y SUB-831 Contaminated oil ? \$ 2000
(250 cc)

This material was surveyed in October 1991 and showed gamma radiation levels just above background levels. Aliquots of the oil are being collected for further analysis. For this estimate it is assumed that the oil can be solidified and disposed of as a Class A waste. The estimate also includes the cost of analysis.

L SUB-831 U-235 0.01 Ci \$ 2000

U-235 is fissionable material which will be returned to the DOE. The cost of disposal will be incurred in packaging and shipping.

M SUB-831 MgTh 4500 lbs \$ 45,000

A 1991 disposal price quote of \$5/lb. was obtained from Spectralite Consortium Inc. This price is doubled for this cost estimate.

Costs for preparing sources for shipment, shipping expenses etc. have been factored into the cost estimates by doubling the burial costs. The burial costs were provided by Mr. William Dornisfe, who is chief technical expert for the Appalachian Compact at PA Department of Environmental Resources. The basic burial cost of \$100/cft. for Class A waste, \$250/cft. for Class B waste and \$500/cft. for Class C waste was doubled for the current estimate.

→ U8609
One room remains within the facility where there may be a possibility of decontamination activity. This is a lab which was designed to control airborne radioactivity (low specific activity materials). The lab contains two HEPA filtered hoods and a glove box. Radioactive material use has been terminated in this area. The decontamination work and final clearance radiation survey will be conducted by GE personnel. Assume one drum of Class A waste (HEPA filters, rags etc.) at a cost of \$1,500.

Based on the available information, the comprehensive cost estimate for decommissioning facilities under the cited NRC licenses is \$370,000.00. This estimate has been corrected for inflation in that the disposal costs are based on the 1996 anticipated cost for the Pennsylvania Low Level Radioactive Waste Repository. However, it should be noted that since the costs for radioactive waste contractors and disposal costs have significantly exceeded the national inflation rate, projections of this nature are difficult at best. It is the intention of GE Aerospace to revise these estimates as necessary to ensure that sufficient financial assurance is maintained in compliance with NRC regulations.

If there are any questions concerning this report, feel free to contact the undersigned at phone (215) 354-1085.



John F. McLaverty
Senior Industrial Hygienist
Environmental, Health &
Safety Department

cc: Mr Bertram Wolfe
Vice President & General Manager
GE Company, San Jose, CA

Mr. Melvin B. Schweiger
Manager, Environmental Programs
GE Aerospace, King of Prussia, PA

Mr. Paul Vincent
Manager, EHS Department
GE Astro Space Division, King of Prussia, PA

ATTACHMENT NO. 2

**Decommissioning Funding
Self Guarantee Documents**

for

**NRC Materials Licenses
SUB-831
37-02006-05
37-02006-09**

April 27, 1994

**Martin Marietta Corporation
Astro Space
(Valley Forge Facility)
P.O. Box 8555
Philadelphia, PA 19101**

Self-Guarantee of Martin Marietta Corporation

License Nos. 37-02006-05
 SUB-831
 37-02006-09
Docket Nos. 030-06046
 040-07344
 030-12894
Control Nos. 113059
 113058
 Not available

Martin Marietta Corporation (hereinafter, "Licensee"), licensee of the above referenced Licenses issued by the U. S. Nuclear Regulatory Commission (hereinafter, "Commission"), in order to provide reasonable assurance of the availability of funds for decommissioning of facilities utilized pursuant to the referenced licenses, hereby guarantees to the Commission that funds will be available for decommissioning costs in the amount of \$230,000, as detailed in the Decommissioning Funding plan for the facilities, (Attachment 1 hereto) and as evidenced by the demonstration (Attachment 2 hereto) that the Licensee satisfies the financial test of Section II, Appendix C to 40 C. F. R. Part 30.

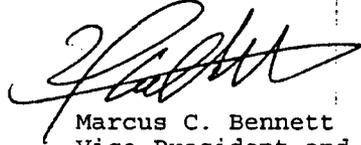
As further required by 10 C. F. R. Part 30, Appendix C, Licensee agrees:

- A. This guarantee will remain in force unless Licensee sends notice of cancellation by certified mail to the Commission. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by the Commission, as evidenced by the return receipt.
- B. Licensee shall provide alternative financial assurance as specified in the Commission's regulations within 90 days following receipt by the Commission of a notice of cancellation of the guarantee.
- C. The guarantee and financial test provisions must remain in effect until the Commission has terminated the license or until another financial assurance method acceptable to the commission has been put in effect by Licensee.
- D. Licensee will promptly forward to the Commission and Licensee's independent auditor all reports covering the latest financial year filed by the licensee* with the Securities and Exchange Commission pursuant to the requirements of Section 13 of the Securities and Exchange Act of 1934.
- E. If, at any time, Licensee's most recent bond issuance ceases to be rated in any category of "A" or above by either Standard and Poor's or Moody's, Licensee will provide notice in writing of such fact to the Commission within 20 days after publication of the change by the rating service. If Licensee's most recent bond issuance ceases to be rated in any category of A or above by both Standard and Poor's and Moody's, Licensee no longer meets the requirements of Section II.A of this appendix.

* 1993 Annual Report appended.

F. When required by regulation or order of the Commission, Licensee will fund and carry out required decommissioning activities, or Licensee will set up and fund a trust in the amount of the current cost estimates for decommissioning, upon issuance of an order by the Commission to do so.

Agreed to this 26th day of April, 1994



Marcus C. Bennett
Vice President and
Chief Financial Officer

Table 1 Radioactive Materials and Estimated Decommissioning Costs (\$)

Rad. Mat'l	Isotope /	NRC License #			*: Notes
Item	Activity (Curies)	SUB 831	37-	37-	
			02006-05	02006-09	
		Decommissioning Costs			
A	Am241 / 1.0		160,000		
B	Sr90 / 10.0		3,700		
C	Sr90 / 0.1		1,500		
D	Pu239 / 5 micro		5,000		
E	Pu238 / 0.09		15,000		
F	Co60 / 0.016		1,500		
G	Various / < 0.001		1,000		Density gauge and instrument calibration sources.
H	Kr85 / 0				Transferred in 1992.
I	Cs137 / 0.1 nano		*see note.		DOD/DNA property; transfer in process.
J	Co60 / (b)(4) EXY			25,000	Two Gammacells
K	Depleted U (DU) / < 10 micro	2,000			Urethane resin with DU as a filler (250 cc).
L	U235 / 0				Container tag marking was in error; see item 'O' for contents.
M	Th232 / 0.0063	*see note.			USAF property (form is MgTh plates); transfer in process.
N	Various / 0				Decontamination of Room U8604 completed (1/94).
O (new)	U / approx. 45 lbs	2,000			Covered metal pail marked as item 'L' has 2 bags of low enrichment U dioxide.
P (new)	Kr85 / 0.66		1,500		Activity as of 1/94.
Q (new)	Depleted U / < 0.1	*see note.			Two items of DOE property on short term loan from Sandia and Los Alamos.
R (new)	Th232 / approx. 0.003	*see note.			USAF property (MgTh) in multiple spacecraft ready for shipment.
S (new)	Various / < 1 milli		500		Waste, to be removed in 1994.
SUBTOTALS		4,000	189,700	25,000	218,700
Administration (See text).					11,300
TOTAL					230,000

License Nos. 37-02006-05
SUB-831
Docket Nos. 37-02006-09
030-06046
040-07344
030-12894
Control Nos. 113059
113058
Not available

Attachment 2 to Self-Guarantee of Martin Marietta Corporation
Demonstration that Company Passes Financial Test of Part 30, Appendix C

A. To pass the financial test, a company must meet all of the following criteria:

(1) Tangible net worth at least 10 times the total current decommissioning cost estimate (or the current amount required if certification is used) for all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor.

Tangible net worth of Martin Marietta Corporation	\$186,345,000
Total current decommissioning estimate per Attachment 1	\$ 230,000

Tangible net worth exceeds 10 Times the total current decommissioning estimate.

(2) Assets located in the United States amounting to at least 90 percent of total assets or at least 10 times the total current decommissioning cost estimate (or the current amount required if certification is used) for all decommissioning activities for which the company is responsible as self-guaranteeing licensee and as parent-guarantor.

The Corporation certifies that over 90% of its total assets (\$7.7 Billion at December 31, 1993) are located in the United States and that these assets exceed the total current decommissioning cost estimate as disclosed in Attachment 1.

(3) A current rating for its most recent bond issuance of AAA, AA or A as issued by Standard and Poor's (S&P), or Aaa, Aa, or A as issued by Moody's.

The Corporation's most recent bond issue, dated April 25, 1993 was rated "A" by Standard and Poor's.

B. To pass the financial test, a company must meet all of the following additional requirements.

(1) The company must have at least one class of equity securities registered under the Securities Exchange Act of 1934.

The Corporation's equity securities are registered under the Securities Exchange Act of 1934.

Report Of Independent Auditors

Martin Marietta Corporation

We have audited the balance sheet of Martin Marietta Corporation and consolidated subsidiaries as of December 31, 1993, and the related statements of earnings, shareowners' equity, and cash flows for the year then ended, and have issued our report thereon dated January 21, 1994. These financial statements are the responsibility of the Corporation's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We have read "Attachment 2 to Self-Guarantee of Martin Marietta Corporation" prepared by the Corporation in connection with its Financial Assurance Submission. We have compared the amount for Item A1 appearing therein with the amount derived from the Corporation's consolidated financial statements for the year ended December 31, 1993. We have reviewed the Corporation's balance sheet to determine whether 90% or more of the consolidated assets are located in the United States and, therefore, the response to Item A2 is appropriate.

Because the above procedures do not constitute an audit made in accordance with generally accepted auditing standards, we do not express an opinion on the specified information referred to above. In connection with the procedures referred to above, no matters came to our attention that caused us to believe the specified information should be adjusted.

This letter is furnished solely to assist the Corporation in fulfilling its 1994 Financial Assurance Submission and is not to be used for any other purpose.

Ernst + Young

March 24, 1994



General Electric Company
175 Curtner Avenue, San Jose, CA 95125

April 4, 1991

030-06096
040-07344

Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406
Attention: Regional Director

Region II
US Nuclear Regulatory Commission
101 Marietta Street, N.W. Suite 2900
Atlanta, GA 30323
Attention: Regional Director

Region III
US Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137
Attention: Regional Director

Region V
US Nuclear Regulatory Commission
1450 Maria Lane
Suite 210
Walnut Creek, CA 94596
Attention: Regional Director

Dear Sir/Madam:

Re: Financial Assurance for Decommissioning
Nuclear Facilities (53 Fed. Reg. No. 123,
pages 24019 et seq., 6/27/88)

Enclosed are copies of the financial assurance documents submitted by Dr. Bertram Wolfe, Vice President and General Manager, GE Nuclear Energy, on behalf of GE business components that operate facilities licensed by the NRC under Chapter I of Title 10 of the Code of Federal Regulation. The originals of these documents were personally delivered to Mr. John H. Austin, Chief, Decommissioning and Regulatory Issues Branch, LLW Division on March 22, 1991 at NRC's Washington, D. C. offices (White Flint).

Delivery was made in this manner in order to comply with the deadline arising out of the denial, on March 7, of GE's petition for reconsideration of the Commission's rejection of our request for an exception from the decommissioning rule's requirements for parent company guarantees.

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113058/113059
4/9/91

USNRC Regions I, II, III, V
April 4, 1991
Page 2

For your information, the March 22 meeting with Mr. Austin and representatives of the NRC's Office of General Counsel, which was also attended by representatives of Westinghouse Electric Corporation, was for the purpose, among other things, of discussing a possible petition for rule-making with regard to the relevant provision of the decommissioning rule.

If further information is needed, please let me know.

Sincerely,

Harry C. Burgess

Harry C. Burgess, Counsel
Technologies & Government Programs

HCB:e

cc: B. Wolfe



Bertram Wolfe

Senior Vice President and General Manager

GE Nuclear Energy
1111 North 4th Street, Room 24 95125
Pittsburgh, PA 15222

March 22, 1991

Mr. Robert M. Bernero
Director
Office of Nuclear Material
Safety and Safeguards
U.S. Nuclear Regulatory Commission
One White Flint North Bldg.
11555 Rockville Pike
Rockville, Maryland 20852

Re: Financial Assurance for Decommissioning
Nuclear Facilities (53 Fed. Reg. No. 123,
pages 24019 et seq., 6/27/88)

Dear Mr. Bernero:

General Electric Company (GE) is in receipt of the Commission's response, dated March 7, denying our petition for reconsideration of the Commission's denial of a request for an exception from the financial assurance requirements of the NRC's Decommissioning Rule, effective July 27, 1988 (Rule). Pursuant to that notification, and in accordance with the provisions of the Rule, we are submitting to you herewith evidence of compliance with the financial assurance requirements for those facilities owned and operated by GE and licensed by the Nuclear Regulatory Commission under the applicable parts of Chapter I of Title 10 of the Federal Code of Regulations.

Financial assurance is being provided pursuant to a single mechanism; namely, a standby letter of credit from the Manufacturers Hanover Trust Company and an associated Standby Trust Agreement to receive funds when and if paid under the letter of credit. Since this single instrument provides financial assurance with respect to a number of GE facilities located in different NRC Regions and licenses under different Parts of Chapter I of Title 10, we are first submitting this package to you, with the originals of the financial documents, including a Certification of Financial Assurance covering all these facilities. Copies of these documents will be promptly submitted to each NRC Regional Office with jurisdiction over one or more of the listed licensed facilities for which financial assurance for decommissioning is provided by the Manufacturers Hanover letter of credit enclosed herewith.

Mr. Robert M. Bernero
March 22, 1991
Page 2

We appreciate your cooperation in assuring that the documents submitted herewith come to the attention of the appropriate responsible personnel at the NRC Headquarters and are properly maintained there for future reference.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Lawrence Wolfe".

/ci

cc w/encl:

Regional Administrator
NRC Regions I, II, III and V

DATE: MARCH 19, 1991
PAGE NO.: 1

IRREVOCABLE STANDBY LETTER OF CREDIT NO. (b)(4)

(THIS CREDIT EXPIRES: MARCH 22, 1992)

ISSUED TO: U.S. NUCLEAR REGULATORY COMMISSION;
WASHINGTON, DC 20555

DEAR SIR OR MADAM:

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO. (b)(4) IN YOUR FAVOR, AT THE REQUEST AND FOR THE ACCOUNT OF GENERAL ELECTRIC CO. 570 LEXINGTON AVE. NEW YORK, N.Y. 10022 ATTN: R.A. LATTERNER UP TO THE AGGREGATE AMOUNT OF THIRTY FIVE MILLION SIX HUNDRED THOUSAND U.S. DOLLARS (XXXX35,600,000.00 U.S. DOLLAR) AVAILABLE UPON PRESENTATION OF:

- (1) YOUR SIGHT DRAFT BEARING REFERENCE TO THIS LETTER OF CREDIT NO. (b)(4) AND
- (2) YOUR SIGNED STATEMENT READING AS FOLLOWS: "I CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO REGULATIONS ISSUED UNDER AUTHORITY OF _____"

THIS LETTER OF CREDIT IS ISSUED IN ACCORDANCE WITH REGULATIONS ISSUED UNDER THE AUTHORITY OF THE U.S. NUCLEAR REGULATORY COMMISSION ("NRC"), AN AGENCY OF THE U.S. GOVERNMENT, PURSUANT TO THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, AND THE ENERGY REORGANIZATION ACT OF 1974. THE NRC HAS PROMULGATED REGULATIONS IN TITLE 10, CHAPTER 1 OF THE CODE OF FEDERAL REGULATIONS, PART (30, 40, 70 OR 72), WHICH REQUIRE THAT A HOLDER OF, OR AN APPLICANT FOR, A LICENSE ISSUED UNDER 10 CFR PARTS (30, 40, 70 OR 72) PROVIDE ASSURANCE THAT FUNDS WILL BE AVAILABLE WHEN NEEDED FOR DECOMMISSIONING.

THIS LETTER OF CREDIT IS EFFECTIVE AS OF MARCH 22, 1991 AND SHALL EXPIRE ON MARCH 22, 1992, BUT SUCH EXPIRATION DATE SHALL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF ONE YEAR ON MARCH 22, 1992 AND ON EACH SUCCESSIVE EXPIRATION DATE, UNLESS, AT LEAST 90 DAYS BEFORE THE THEN CURRENT EXPIRATION DATE, WE NOTIFY BOTH YOU AND GENERAL ELECTRIC CO., BY CERTIFIED MAIL, AS SHOWN ON THE SIGNED RETURN RECEIPTS. IF GENERAL ELECTRIC CO. IS UNABLE TO SECURE

CONTINUED



Manufacturers Hanover Trust Company
Geoserve Trade Services
4 New York Plaza
New York, NY 10004

DATE: MARCH 19, 1991
PAGE NO.: 2

ALTERNATIVE FINANCIAL ASSURANCE TO REPLACE THIS LETTER OF CREDIT WITHIN 30 DAYS OF NOTIFICATION OF CANCELLATION THE NRC MAY DRAW UPON THE FULL VALUE OF THIS LETTER OF CREDIT PRIOR TO CANCELLATION. THE BANK SHALL GIVE IMMEDIATE NOTICE TO THE APPLICANT AND THE NRC OF ANY NOTICE RECEIVED OR ACTION FILED ALLEGING (1) THE INSOLVENCY OR BANKRUPTCY OF THE FINANCIAL INSTITUTION OR (2) ANY VIOLATIONS OF REGULATORY REQUIREMENTS THAT COULD RESULT IN SUSPENSION OR REVOCATION OF THE BANK'S CHARTER OR LICENSE TO DO BUSINESS. THE FINANCIAL INSTITUTION ALSO SHALL GIVE IMMEDIATE NOTICE IF THE BANK, FOR ANY REASON, BECOMES UNABLE TO FULFILL ITS OBLIGATION UNDER THE LETTER OF CREDIT.

WHENEVER THIS LETTER OF CREDIT IS DRAWN ON UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS LETTER OF CREDIT, WE SHALL ONLY HONOR SUCH DRAFT UPON ITS PRESENTATION TO US WITHIN 30 DAYS, AND WE SHALL DEPOSIT THE AMOUNT OF THE DRAFT DIRECTLY INTO THE STANDBY TRUST FUND OF GENERAL ELECTRIC CO. IN ACCORDANCE WITH YOUR INSTRUCTIONS.

EACH DRAFT MUST BEAR ON ITS FACE THE CLAUSE: "DRAWN UNDER LETTER OF CREDIT NO. (b)(4) DATED MARCH 19, 1991, AND THE TOTAL OF THIS DRAFT AND ALL OTHER DRAFTS PREVIOUSLY DRAWN UNDER THIS LETTER OF CREDIT DOES NOT EXCEED U.S. DOLLARS 35,600,000.00."

VERY TRULY YOURS,

KRISTINE SIEBEL
ASSISTANT VICE PRESIDENT
MARCH 19, 1991

THIS CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS (1983 REVISION) INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 400.



Manufacturers Hanover Trust Company
 Geoserve Trade Services
 4 New York Plaza
 New York, NY 10004

AMENDMENT TO IRREVOCABLE STANDBY LETTER OF CREDIT	NUMBER (b)(4)
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DATE OF AMENDMENT
 MARCH 21, 1991

APPLICANT:
 GENERAL ELECTRIC CO.
 570 LEXINGTON AVE.
 NEW YORK, N.Y. 10022
 ATTN: R.A. LATERNER

BENEFICIARY:
 U.S. NUCLEAR REGULATORY
 COMMISSION,
 WASHINGTON, D.C. 20555

ADVISING BANK:

AMENDMENT SEQUENCE NUMBER
 501

THIS AMENDMENT IS TO BE
 CONSIDERED AS PART OF THE
 ABOVE MENTIONED CREDIT AND MUST
 BE ATTACHED THERE TO:

WE HEREBY AMEND THIS CREDIT AS FOLLOWS:

IN THE PARAGRAPH BEGINNING QUOTE THIS LETTER OF CREDIT IS ISSUED
 UNQUOTE THAT PART READING QUOTE PART (30, 40, 70 OR 72), UNQUOTE
 IS HEREBY DELETED AND SUBSTITUTED BY QUOTE PART 30, 40, 50 OR
 70, UNQUOTE

ADDITIONALLY IN THE SAME PARAGRAPH, THAT PART READING QUOTE
 10 CFR PARTS (30, 40, 70 OR 72) UNQUOTE IS HEREBY DELETED AND
 SUBSTITUTED BY QUOTE 10 CFR PARTS 30, 40, 50, OR 70 UNQUOTE

ALL OTHER CONDITIONS REMAIN UNCHANGED.

AUTHORIZED SIGNATURE

KRISTINE SIEBEL
 ASSISTANT VICE PRESIDENT

ACKNOWLEDGEMENT

STATE OF New York
To Wit: _____
CITY OF New York

On this 20th day of March, 1991, before me, a notary public in and for the city and State aforesaid, personally appears John Sciacchitano, and she/he did depose and say that she/he is the vice Pres of Manufacturers Hanover Trust Company, a N.Y. banking corporation Trustee, which executed the above instrument, that she/he knows the seal of said association; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the association; and that she/he signed her/his name thereto by like order.

ROBERT J. STANIELARO
Notary Public, State of New York
No. 43-408867
Qualified in Richmond County
Certificate filed in New York County
Commission Expires July 2, 1992

Robert J. Staniero
[Signature of notary public]

My Commission Expires:

7/2/92
[Date]

SIGNATURE RESOLUTION



MANUFACTURERS HANOVER TRUST COMPANY

NEW YORK, NY 10017

It Is Hereby Certified that the following resolution has been duly adopted by the Board of Directors of Manufacturers Hanover Trust Company and is in full force and effect at the date hereof:

Resolved That:

1. Whenever in this resolution used (a) the term "officer" shall mean any of the following: the Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President or Vice President, the Controller, the Secretary, a Deputy General Counsel, a Deputy Controller, an Assistant Vice President, Assistant Controller, Associate Counsel, Assistant Secretary, Trust Officer, Assistant Counsel, Accounting Officer, Manager or Assistant Manager of the Company; and (b) the term "holder of per procurator authority" shall mean an employee of the Company to whom a special signing authority has been granted pursuant to this resolution.
2. The Personnel Policy Committee be and it hereby is granted continuing authority to appoint employees of the Company as holders of per procurator authority in such manner, with such signature authority and designations, and subject to such limitations as it may determine.
3. The following shall bear the signature of one officer:
 - A. CHECKS or DRAFTS drawn on or ORDERS issued to domestic correspondents or depositaries of the Company involving the withdrawal, payment or transfer of funds: EXCEPT that CHECKS or DRAFTS drawn on or ORDERS issued to domestic depositaries of the Company involving the withdrawal, payment or transfer of funds with respect to accounts in the name of the Company in any fiduciary capacity, shall be signed by any one of the officers so designated to each such domestic depositary, such designation to be in writing signed by an officer above the rank of Assistant Vice President and bearing the corporate seal of the Company duly attested.
 - B. with respect to transactions payable or to be consummated within the United States of America, ORDERS for the exchange, transfer or delivery of securities, documents, merchandise or other property, ADVICES involving orders for the withdrawal, payment or transfer of funds and all correspondence relating thereto except that ADVICES with respect to transactions on the Security Movement and Control System of the Operations Division of the Company shall not require any signature provided that the RELEASE FORM for any such transaction shall bear the signature of one officer or one holder of Per Procurator authority so authorized.
 - C. CERTIFICATES OF DEPOSIT, except that INCOME CERTIFICATES OF DEPOSIT shall be signed by two officers or by one officer and a holder of per procurator authority so authorized.
 - D. CERTIFICATIONS of requests for payment, or witnessing of assignments on United States Treasury securities.
 - E. GUARANTEES with respect to missing or irregular shipping documents.
 - F. CONFIRMATIONS of contracts entered into by the Company for the purchase or sale of foreign exchange for future delivery.
 - G. TRAVELERS LETTERS OF CREDIT.
 - H. BEARER DEPOSITORY RECEIPTS for BANKERS ACCEPTANCES.
4. The following shall bear the signature of one officer or one holder of per procurator authority so authorized:
 - A. CHECKS, DRAFTS, MONEY ORDERS or other ORDERS for the payment of funds drawn on the Company.
 - B. RECEIPTS for money, securities or other property, other than routine receipts signed by employees whose usual duties involve the signing thereof.
 - C. CERTIFICATIONS of checks, drafts and other orders for the payment of funds drawn on the Company.
 - D. ENDORSEMENTS of checks, drafts, bills of exchange, notes, bankers acceptances, trade acceptances, stocks, bonds, debentures, warehouse receipts, bills of lading, insurance certificates or policies, title documents covering merchandise and all other documents or instruments requiring signed endorsements of the Company.
 - E. GUARANTEES OF ENDORSEMENTS OR ASSIGNMENTS of checks, drafts, bills of exchange, notes, bankers acceptances, trade acceptances, stocks, bonds, debentures, warehouse receipts, bills of lading, insurance certificates or policies, title documents covering merchandise and all OTHER DOCUMENTS or instruments requiring signed guarantees of endorsements or guarantees by the Company of other signatures.
 - F. AUTHENTICATIONS and OTHER CERTIFICATES to be signed by the Company as trustee, fiscal agent or otherwise under any mortgage, deed of trust or other instrument pursuant to which bonds, debentures, notes or other obligations of any corporate or other obligor, or of any country, state, public agency or political subdivision are issued; stock certificates, voting trust certificates, warrants, scrip certificates, receipts, advices or other documents and instruments to be executed or countersigned by the Company as registrar, transfer agent or in any other representative or agency capacity; interim receipts or trust certificates issued by the Company in its individual or in any representative or fiduciary capacity; affidavits, statements, letters of transmittal or assent, petitions and other documents and instruments relating to probate or administration of estates or trusts and OTHER DOCUMENTS, instruments or correspondence to be executed by the Company as executor, trustee or in any other representative or fiduciary capacity.
 - G. DRAFTS drawn on or ORDERS issued to foreign correspondents or depositaries of the Company involving the withdrawal, payment or transfer of funds, and ADVICES thereof.
 - H. With respect to transactions payable or to be consummated outside the United States of America, ORDERS for the exchange, transfer or delivery of securities, documents, merchandise or other property, ADVICES involving orders for the withdrawal, payment or transfer of funds, and all correspondence relating thereto.
 - I. COMMERCIAL LETTERS OF CREDIT AND ACCEPTANCES.
 - J. CHECKS or DRAFTS drawn on or ORDERS or INSTRUCTIONS issued to the Federal Reserve Bank of New York with respect to work performed by the Brokers and Dealers Clearance section of the Company's Operations Division involving the withdrawal, payment or transfer of funds or securities.
5. CERTIFICATES, STATEMENTS and VERIFICATIONS advising the status of customers' accounts and correspondence relating thereto shall bear the signature of one officer or the signature of the General Auditor, Deputy General Auditor or a Deputy Auditor, Assistant Auditor, Regional Auditor or Audit Officer, or a holder of per procurator authority so authorized.
6. RECONCILEMENTS OF ACCOUNTS of the Company with others shall bear the signature of the General Auditor, Deputy General Auditor or a Deputy Auditor, Assistant Auditor, Regional Auditor or Audit Officer.
7. DOCUMENTS issued by or executed on behalf of the Company at an overseas branch shall be signed in the following manner:
 - A. The following shall bear the signature of any of the following: the Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President, Manager and Vice President, the Controller, the Secretary, a Deputy Controller, and Assistant Vice President, an Assistant Secretary, a Manager, Manager and Representative, Deputy Manager, Assistant Manager, Sub-Manager or Regional Controller.
 1. CHECKS or DRAFTS drawn on or ORDERS issued to foreign correspondents or depositaries of the Company involving the withdrawal, payment or transfer of funds.
 2. ORDERS for the exchange, transfer or delivery of securities, documents, merchandise or other property.
 3. GUARANTEES with respect to missing or irregular shipping documents.
 4. CONFIRMATIONS of contracts entered into by the Company for the purchase or sale of foreign exchange for future delivery.
 5. TRAVELERS LETTERS OF CREDIT.
 6. CERTIFICATES OF DEPOSIT.
 - B. The following shall bear the signature of any of the officers or persons holding other titles mentioned in subparagraph A hereof or a holder of per procurator authority so authorized:
 1. CHECKS, DRAFTS or other ORDERS for the payment of funds drawn on the Company and checks and bankers payment orders drawn by any of the Company's overseas branches on depositary banks in the country in which such overseas branch is located.

2. **COMMERCIAL LETTERS CREDIT and ACCEPTANCES.**

3. **ENDORSEMENTS** of checks, notes, drafts, acceptances, warehouses receipts, bills of lading, insurance policies or certificates and other instruments requiring the signed endorsement of the Company (other than assignments of certificates of stock, bonds or other securities).

4. **GUARANTEES** of endorsements and other signatures.

5. **ADVICES** of checks or drafts; **RECEIPTS; RELEASES; ASSIGNMENTS** (other than assignments of certificates of stock, bonds or other securities) and **PROXIES**.

6. **AUTHENTICATIONS and OTHER CERTIFICATES** to be signed by the Company as trustee, fiscal agent or otherwise under any mortgage, deed of trust or other instrument pursuant to which bonds, debentures, notes or other obligations of any corporate or other obligor, or of any country, state, public agency or political subdivision are issued; stock certificates, voting trust certificates, warrants, scrip certificates, receipts, advices or other documents and instruments to be executed or countersigned by the Company as registrar, transfer agent or in any other representative or agency capacity; interim receipts or trust certificates issued by the Company in its individual or in any representative or fiduciary capacity; affidavits, statements, letters of transmittal or assent, petitions and other documents and instruments relating to probate or administration of estates or trusts and **OTHER DOCUMENTS**, instruments or correspondence to be executed by the Company as executor, trustee or in any other representative or fiduciary capacity.

C. The following shall bear the signature of the Auditor-Europe, Regional Auditor or any of the officers or persons holding other titles mentioned in subparagraph A hereof or a holder of per procuracion authority so authorized:
Certificates or statements advising the status of customers' accounts at an overseas branch, verifications of customers' accounts and correspondence relating thereto.

D. The following shall bear the signature of the Auditor-Europe, Regional Auditor or a holder of per procuracion authority so authorized or an officer so authorized by the Personnel Policy Committee:
Reconcilements of an overseas branch's accounts with others.

8. The Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President or Vice President, the Controller, the Secretary, a Deputy General Counsel or an Assistant Vice President or Associate Counsel be and each of them hereby is authorized for and on behalf of the Company, acting in its individual or in any representative or fiduciary capacity, to **SELL**, assign, transfer or exercise any rights with respect to any **STOCK, BONDS OR OTHER SECURITIES**, choses in action or personal property now or hereafter generally standing in the name of the Company and held by it for itself or in any representative, fiduciary or other capacity whatsoever and, in connection therewith, to execute and deliver any and all transfers, conveyances, endorsements, assignments, powers of attorney, revocations, substitutions, releases, agreements, proxies and consents and, when required, may affix the seal of the Company thereto and may make, execute and deliver under the seal of the Company any and all instruments in writing necessary or proper for such purposes.

9. The Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President, the Controller, the Secretary, a Deputy General Counsel be and each of them hereby is, or any Vice President, Assistant Vice President or Associate Counsel together with any other officer, be and they hereby are, authorized for and on behalf of the Company to **PLEDGE**, hypothecate or deposit any securities owned by the Company as security for any statutory liability or obligation of the Company, and to execute and deliver orders for the withdrawal, delivery or substitution of securities owned by the Company and held as security or otherwise by any public official, governmental authority or instrumentality or secured depositor, or by any depository (including divisions or departments of the Company) for any public official, governmental authority or instrumentality or secured depositor.

10. The Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President or Vice President, the Controller, the Secretary, a Deputy General Counsel or an Assistant Vice President, Associate Counsel or Trust Officer be and each of them hereby is authorized for and on behalf of the Company to **EXECUTE** and deliver any and all **INDENTURES**, deeds of trust, corporate mortgages, agency agreements, custodial agreements, depository agreements, assignments, affidavits, certificates, releases, satisfactions, applications, petitions and any **OTHER DOCUMENTS** or instruments in connection with the operations of the Company in any trust, agency, representative or other fiduciary capacity, and, when required, may affix the seal of the Company thereto.

11. The Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President or Vice President, the Controller, the Secretary, a Deputy General Counsel or an Assistant Vice President, assigned to the Personal Trust Sector of the Private Banking and Securities Industry Division, the Real Estate and Mortgage Department or the Branch Real Estate/Property Management Department be and each of them hereby is authorized for and on behalf of the Company acting in its individual or in any representative or fiduciary capacity, to **EXECUTE**, acknowledge and deliver any and all **CONTRACTS OF SALE** or exchange, **DEEDS**, releases, assignments, extension agreements, modification agreements, participation agreements and certificates, building loan agreements, escrow agreements, mortgage certificates, instruments of acceptance, ratification or satisfaction, instruments required by or intended for any governmental or other public body with respect to real estate mortgage transactions, proxies to vote stock in corporations whose principal business consists of owning or dealing in real property, or other **DOCUMENTS**, of any description **RELATING TO REAL PROPERTY**, and also bills of sale or other instruments relating to personal property so far as the same are incidental to real estate or real estate mortgage transactions.

12. The Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President, Vice President, or an Assistant Vice President, other than Assistant Vice President assigned to the Institutional Trust and Agency Division or the Personal Trust Sector of the Private Banking and Securities Industry, or an Associate Counsel be and each of them hereby is authorized for and on behalf of the Company to execute **LOAN COMMITMENTS AND LOAN AGREEMENTS** and other documents or instruments relating to loan and discount transactions entered into by the Company.

13. Any and **ALL DOCUMENTS** or instruments not mentioned in this resolution which may be necessary or appropriate to the conduct of the lawful business of the Company, either in its individual or in any representative, fiduciary or other capacity whatsoever, may be executed for and on behalf of the Company by the Chairman of the Board, the President, an Executive Vice Chairman of the Board, a Vice Chairman of the Board, an Executive Vice President, Senior Vice President or Vice President, a Deputy General Counsel, the Controller or the Secretary, and, when required, any such officer may affix the seal of the Company thereto.

14. Any of the foregoing documents or instruments may bear the **FACSIMILE SIGNATURE** of an officer or holder of per procuracion authority when authorized by the Personnel Policy Committee.

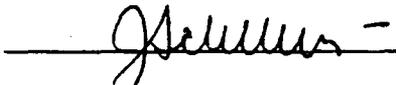
15. The Secretary, an Assistant Secretary or Trust Officer or an Associate Counsel or Assistant Counsel, or a Vice President or Assistant Vice President assigned to the Corporate Trust Sector of the Institutional Trust and Agency Division or, at an overseas branch, a Vice President, Manager and Vice President, Manager and Representative, Manager, Assistant Secretary, Deputy Manager, Assistant Manager or Sub-Manager and each of them hereby is authorized, when necessary or appropriate, to affix or cause to be affixed, either manually or by facsimile, the **CORPORATE SEAL** of the company to any document or instrument executed pursuant to this resolution and to attest to the corporate seal so affixed thereto; provided, however, that no such officer shall attest to the corporate seal of the Company affixed to any document or installment signed by him.

16. Any and all general resolutions authorizing the signing of documents or instruments for or on behalf of the Company heretofore adopted by the Board of Directors of the Company which are inconsistent or in conflict with this resolution be and they hereby are rescinded.

John Sciacchitano

Vice President

In Witness Whereof, I have hereunto subscribed my name as _____ of
MANUFACTURERS HANOVER TRUST COMPANY, New York, NY 10017 and affixed the seal of said Company, this 20th
day of March, 1991



ACKNOWLEDGEMENT

STATE OF New York

To Wit: _____

CITY OF New York

On this 20th day of March, 1991, before me, a notary public in and for the city and State aforesaid, personally appears John Sciacchitano, and she/he did depose and say that she/he is the Vice Pres of Manufacturers Hanover Trust Company, a N.Y. banking corporation Trustee, which executed the above instrument, that she/he knows the seal of said association; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the association; and that she/he signed her/his name thereto by like order.

ROBERT J. STANISLARD
Notary Public, State of New York
No. 43-4833597
Qualified in Richmond County
Certificate filed in New York County
Commission Expires July 2, 1992

Robert J. Stanislard
[Signature of notary public]

My Commission Expires: 7/2/92
[Date]



Matthew J. Trachtenberg
Vice President and Corporate Secretary

Manufacturers Hanover Trust Company

270 Park Avenue
New York, NY 10017

This is to certify that KRISTINE V. SIEBEL is a duly elected Assistant Vice President of Manufacturers Hanover Trust Company and is presently acting in such capacity.


Assistant Secretary

March 19, 1991

State of New York,
Banking Department

I, DONALD J. KAVANAGH, Deputy Superintendent of Banks of the State of New York, DO HEREBY CERTIFY:

THAT, MANUFACTURERS HANOVER TRUST COMPANY is a corporation organized and existing under the laws of the State of New York and has its principal office and place of business at 270 Park Avenue, Borough of Manhattan, City of New York, New York; and

THAT, MANUFACTURERS HANOVER TRUST COMPANY is validly existing as a banking organization under the laws of the State of New York, and has all the powers of a trust company as specified under Article III of the Banking Law of the State of New York, and is authorized to transact a trust and banking business in the State of New York.

Witness, my hand and official seal of the Banking Department at the City of New York,

this 4th day of September in the Year of our Lord
one thousand nine hundred and ninety


Deputy Superintendent of Banks.



Enclosure to GE letter
March 22, 1991
Financial Assurance for
Decommissioning Nuclear
Facilities

GENERAL ELECTRIC COMPANY
Certificate of Incorporation and By-laws

APB-9G(5/88)

Certificate of Incorporation and By-laws

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CERTIFICATE OF INCORPORATION

OF

GENERAL ELECTRIC COMPANY *

Section 1. *NAME*

The name of the corporation is General Electric Company.

Section 2. *PURPOSES*

The purposes of the corporation are as follows:

A. To manufacture, process, construct, develop, assemble, and produce in any way, to sell, lease, supply, and distribute in any way, to purchase, lease, mine, extract, and acquire in any way, to own, operate, experiment with, deal in, service, finance, and use in any way, equipment, apparatus, appliances, devices, structures, materials, processes, information, tangible and intangible property, services and systems of every kind, nature and description:

- (1) for any electrical, or energy-conversion, application or purpose, including but not limited to the production, transmission, distribution, storage, regulation, control and use in any manner of electricity, or in any way connected with or deriving from any electrical, or energy-conversion, application or purpose, and,
- (2) for any other application or purpose, whatsoever, including but not limited to industrial, utility, consumer, defense, governmental, scientific, educational, cultural, financial, recreational, agricultural, transportation, construction, mining, and communication applications or purposes.

B. To conduct studies and research and development, and to engage in any other activity relating to the development, application, and dissemination of information concerning science, technology, and other fields of endeavor.

C. To acquire by purchase, subscription or otherwise all or part of any interest in the property, assets, business, or good will of any

* Text of Certificate of Incorporation as set forth in Restated Certificate of Incorporation filed by the Department of State of New York on April 30, 1965. Section 3.A. was subsequently amended on April 29, 1971, to change the authorized number of common shares from 105,000,000 shares with a par value of \$5 to 210,000,000 shares with a par value of \$2.50, on December 20, 1976, to change the authorized number of common shares, par value \$2.50, from 210,000,000 shares to 251,500,000 shares, on April 27, 1983, to change the authorized number of common shares, par value \$1.25, from 251,500,000 shares to 550,000,000 shares and on April 25, 1987, to change the authorized number of common shares, par value \$0.63, from 550,000,000 shares to 1,100,000,000 shares; and to change the authorized number of preferred shares, par value \$1, from 2,000,000 to 50,000,000 shares. Section 3.C. relating to preemptive rights was added by amendment effective May 2, 1975. Section 6 relating to Directors was amended effective April 28, 1988, to limit their personal liability to the corporation and its shareholders. General Electric Company was created by a Special Act of the New York Legislature, Chapter 523, Laws of 1892, effective April 15, 1892.

corporation, association, firm, or individual, and to dispose of, or otherwise deal with, such property, assets, business or good will.

D. To engage in any activity which may promote the interests of the corporation, or enhance the value of its property, to the fullest extent permitted by law, and in furtherance of the foregoing purposes to exercise all powers now or hereafter granted or permitted by law, including the powers specified in the New York Business Corporation Law.

Section 3. *AUTHORIZED SHARES*

A. General Authorization

The aggregate number of shares which the corporation is authorized to issue is 1,150,000,000 shares, consisting of:

- (1) 1,100,000,000 shares of common stock having a par value of \$0.63 per share; and
- (2) 50,000,000 shares of preferred stock having a par value of \$1 per share.

B. Preferred Stock

- (1) The Board of Directors is authorized, subject to limitations prescribed by law and the provisions of this subsection B, to provide for the issuance of the preferred shares in series, and by filing a certificate pursuant to the Business Corporation Law, to establish the number of shares to be included in each such series, and to fix the designation, relative rights, preferences and limitations of the shares of each such series. The authority of the Board with respect to each series shall include, but not be limited to, determination of the following:
 - (a) The number of shares constituting that series and the distinctive designation of that series;
 - (b) The dividend rate on the shares of that series, whether dividends shall be cumulative and, if so, from which date or dates;
 - (c) Whether that series shall have voting rights, in addition to the voting rights provided by law and, if so, the terms of such voting rights;
 - (d) Whether that series shall have conversion privileges and, if so, the terms and conditions of such conversion, including provision for adjustment of the conversion rate in such events as the Board of Directors shall determine;
 - (e) Whether or not the shares of that series shall be redeemable, and, if so, the terms and conditions of such redemption, including the date or dates upon or after which they shall be redeemable, and the amount per share payable in case of redemption, which amount may vary under different conditions and at different redemption dates;

(f) The rights of the shares of that series in the event of voluntary or involuntary liquidation, dissolution or winding up of the corporation;

(g) Any other relative rights, preferences and limitations of that series.

(2) Dividends on outstanding preferred shares shall be declared and paid, or set apart for payment, before any dividends shall be declared and paid, or set apart for payment, on the common shares with respect to the same dividend period.

C. Preemptive Rights

No present or future holder of any shares of the corporation of any class or series, whether heretofore or hereafter issued, shall have any preemptive rights with respect to (1) any shares of the corporation of any class or series, or (2) any other security of the corporation (including bonds and debentures) convertible into or carrying rights or options to purchase such shares.

Section 4. OFFICE

The office of the corporation is located in the City of Schenectady, County of Schenectady, State of New York.

Section 5. BY-LAWS

The by-laws may be amended or repealed, and new by-laws may be adopted, by the shareholders or the Board of Directors, except that the Board of Directors shall have no authority to amend or repeal any by-law which is adopted by the shareholders after April 20, 1948, unless such authority is granted to the Board by the specific provisions of a by-law adopted by the shareholders.

Section 6. DIRECTORS

The Board of Directors of the corporation shall consist of not less than fifteen nor more than twenty-one directors, the number to be determined, within these limits, as prescribed by the by-laws.

A person who is or was a director of the corporation shall have no personal liability to the corporation or its shareholders for damages for any breach of duty in such capacity except that the foregoing shall not eliminate or limit liability where such liability is imposed under the Business Corporation Law of the State of New York.

Section 7. AGENT FOR PROCESS

The Secretary of State of the State of New York is designated as the agent of the corporation upon whom process against it may be served, and the post office address to which the Secretary of State shall mail a copy of such process served upon him is Corporate Legal Operation, 1 River Road, Schenectady, New York 12305.

BY-LAWS
OF
GENERAL ELECTRIC COMPANY *

ARTICLE I

OFFICE

The office of this Company shall be in the City of Schenectady, County of Schenectady, State of New York.

ARTICLE II

DIRECTORS

A. The stock, property and affairs of this Company shall be managed by a Board of Directors consisting of not less than fifteen nor more than twenty-one members. The number of Directors shall be such number, within the aforesaid minimum and maximum limits, as shall be determined by vote of a majority of the entire Board of Directors, except as the number of Directors for any year shall be fixed by the shareholders at any annual statutory meeting by a majority vote of the outstanding shares entitled to vote thereon. The Directors shall be elected each year, at the annual statutory meeting of the shareholders, to hold office until the next annual statutory meeting, and until their successors have been elected and have qualified. One-third of the number of Directors constituting the entire Board, as that number shall be determined from time to time, shall be a quorum for the transaction of business.

B. Meetings of Directors

1. The Board of Directors may fix the time or times and the place or places of regular and special meetings of the Board. Special meetings of the Directors also may be held at any time by order of the Chairman of the Board, or in the absence of the Chairman of the Board, by order of the President, if then a separate officer, or upon the written direction of two of the Directors.
2. Notice of each special meeting shall be mailed or telegraphed to each Director at his residence or place of business at least two days before the meeting, and notice shall be deemed to be given at the time of mailing or delivery to a telegraph office for transmission, but the said two days' notice need not be given to any Director who submits a signed waiver of notice, whether before or after the meeting, or who attends the meeting without

* As last amended and restated by Board of Directors on September 10, 1976, except for Article XI which was amended by shareholders on April 22, 1987.

protesting prior thereto or at its commencement, the lack of notice to him. If the time and place of a regular meeting have not been fixed by the Board, notice of such meeting shall be given as in the case of a special meeting.

3. The Board of Directors may prescribe an order of business for its meetings.
4. Any action required or permitted to be taken by the Board of Directors or any committee thereof may be taken without a meeting if all members of the Board or the committee consent in writing to the adoption of a resolution authorizing the action. The resolution and the written consent thereto by the members of the Board or committee shall be filed with the minutes of the proceedings of the Board or committee.
5. Any one or more members of the Board of Directors or of any committee of the Board of Directors may participate in a meeting of such Board or committee by means of a conference telephone or similar communications equipment allowing all persons participating in the meeting to hear each other at the same time. Participation by such means shall constitute presence in person at any such meeting.

C. In respect to things not herein specially provided for, the Board of Directors may exercise the powers conferred on them by law.

ARTICLE III

COMMITTEES OF DIRECTORS

The Board of Directors, by resolution adopted by a majority of the entire Board, may designate from among its members, a Management Development and Compensation Committee, an Audit Committee, a Finance Committee, an Operations Committee, a Public Responsibilities Committee, a Technology and Science Committee, and other committees, each consisting of three or more directors, and each of which, to the extent provided in the applicable resolution, shall have all the authority of the Board to the fullest extent permitted by law. The Board may designate one or more directors as ex officio members of any such committee who may replace any absent member or members at any meeting of such committee.

ARTICLE IV

OFFICERS

A. As determined by the Board of Directors, the officers of this Company shall include:

1. A Chairman of the Board, who shall be chosen by the Directors from their own number. The Chairman of the Board shall be the Chief Executive Officer of the Company and in that capacity shall have general management, subject to the control of the Board of Directors, of the business of the Company, including

the appointment of all officers and employees of the Company for whose election or appointment no other provisions is made in these By-laws; he shall also have the power, at any time, to discharge or remove any officer or employee of the Company, subject to the action thereon of the Board of Directors, and shall perform all other duties appropriate to this office. The Chairman of the Board shall preside at all meetings of Directors, and he may at any time call any meeting of the Board of Directors; he may also at his discretion call or attend any meeting of any committee of the Board, whether or not a member of such committee.

2. One or more Vice Chairmen of the Board, who shall also be chosen by the Directors from their own number. The Board may designate one or more of the Vice Chairmen to be Executive Officers of the Company accountable to the Chief Executive Officer.
3. A President of the Company, who shall be chosen by the Directors from their own number. The office of President will normally be vested in the Chairman of the Board, provided, however, that in the discretion of the Board, the position of President may be established independent of, but accountable to, the Chairman during transition periods.
4. Two or more Vice Presidents, one or more of whom may also be designated Executive Vice Presidents or Senior Vice Presidents accountable to the Chief Executive Officer.
5. A Vice President — Finance, who shall be the principal financial officer of the Company, and who shall have such duties as the Board, by resolution, shall determine. In the absence or disability of the Vice President — Finance, the Chairman of the Board may designate a person to exercise the powers of such office.
6. A Comptroller and a Treasurer who shall be officers of the Company. The Treasurer and Comptroller shall perform such duties as may be assigned by the Vice President — Finance. In the absence or disability of the Comptroller or Treasurer, the Chairman of the Board may designate a person to execute the powers of such office.
7. A Secretary, who shall record in proper books to be kept for that purpose and have custody of the minutes of the meetings of the shareholders of the Company and of meetings of the Board of Directors and of committees of the Board (other than the Compensation Committee) and who shall be responsible for the custody and care of the seal of the Company. He shall attend to the giving and serving of all notices of the Company and perform such other duties as may be imposed upon him by the Board of Directors.

The Secretary may appoint an Associate Secretary and Attesting Secretaries, each of whom shall have the power to affix and attest the corporate seal of the Company, and to attest the execution of documents on behalf of the Company and who shall perform such other duties as may be assigned by the Secretary; and in the absence or disability of the Secretary, the Associate Secretary may be designated by the Chairman to exercise the powers of the Secretary.

8. Such other officers as the Board may from time to time appoint.

B. One person may hold two or more offices, except that no person shall simultaneously hold the offices of President and Secretary.

C. All officers shall be elected by the Board of Directors for an initial term which shall continue until the first Board meeting following the next annual statutory meeting of shareholders, and thereafter all officers shall be elected for one-year terms; provided, however, that all officers shall serve at the pleasure of the Board. Officers shall exercise such powers and perform such duties as the Chief Executive Officer may from time to time direct, provided that these powers and duties are not inconsistent with any outstanding Board resolutions.

D. In the event of the absence, incapacity, illness or the death of the Chairman of the Board, the President, if then a separate officer, shall assume the duties of the Chairman of the Board pending action by the Board of Directors; provided, however, that if there is not a separate President in office, the duties of the Chairman of the Board, pending action by the Board of Directors, shall be assumed by that Vice Chairman who is senior to the others in length of General Electric Company service.

ARTICLE V

REMOVAL OF OFFICERS AND EMPLOYEES

A. Any officer or employee of the Company may be at any time removed by the affirmative vote of at least a majority of the Board of Directors. In case of such removal the officer so removed shall forthwith deliver all the property of the Company in his possession, or under his control, to some person to be designated by the Board. Nothing herein contained shall limit the power of any officer to discharge any subordinate.

B. The Board may at any time, in the transaction of business, temporarily delegate any of the duties of any officer to any other officer or person selected by it.

ARTICLE VI

VACANCIES

Any vacancy occurring in the Board of Directors, or in any office, may be filled for the unexpired term by the Board of Directors.

ARTICLE VII

MEETINGS OF SHAREHOLDERS

Meetings of shareholders may be held at such time and in such place within or without the State of New York as the Board of Directors may determine, and the annual statutory meeting required by Section 602(b) of the New York Business Corporation Law shall be held on the fourth Wednesday in April of each year, or as the Board of Directors may from time to time otherwise determine.

Special meetings of the shareholders may be called by the Board, or upon the written request therefor of shareholders holding forty percent of the then issued stock of the Company, filed with the Secretary.

The Board of Directors may prescribe an order of business for meetings of shareholders. The Chairman of the Board, or in his absence, the President, if then a separate officer, shall preside at meetings of the shareholders; provided, however, that the Board of Directors may for any meeting of shareholders designate another officer or officers to preside.

ARTICLE VIII

STOCK AND TRANSFER

A. Certificates of stock, signed by the Chairman of the Board, or a Vice Chairman, or the President, if then a separate officer, or a Vice President and the Secretary or Treasurer, shall be issued to the shareholders. Such signatures may be facsimiles, engraved or printed, and in case any such officer who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such before such certificate is issued, such certificate may be issued by the Company with the same effect as if that officer had not ceased to be such at the date of its issue.

B. The stock shall be transferable only upon the books of the Company, by the holder thereof, in person, or by properly authenticated power of attorney.

C. The Board of Directors or Executive Committee may appoint suitable agents in the City of New York and elsewhere, to facilitate transfers by shareholders under such regulations as the Board may from time to time prescribe. The transfer books may be closed by the Board for such periods as may be deemed advisable for dividend or other purposes.

D. The Board of Directors or Executive Committee may appoint any Bank or Trust Company in the City of New York or elsewhere, to act as registrar of transfers of stock until otherwise ordered by the Board of Directors. After the appointment of any such registrar of transfers, no certificate thereafter issued for stock shall be binding upon the Company, or have any validity, unless countersigned by any such registrar of transfers, or by a successor of any such registrar appointed by the Board of Directors.

E. The Board of Directors may make such other and further regulations, with reference to the stock and its transfer, as to them may seem advisable from time to time.

F. The Board of Directors may call a meeting or meetings of shareholders for the purpose of authorizing an increase of the stock of this Company, at such time or times as to the Board may seem advisable.

ARTICLE IX

EXAMINATION OF BOOKS

The Board of Directors may, by resolution, make regulations respecting the examination of the books of the Company by shareholders.

ARTICLE X

ENGINEERING DECISIONS AND ACTIVITIES

All engineering decisions made in a particular state pertaining to any project or engineering activities conducted by the Company in such state where so required by law, or where the Chief Executive Officer so directs, shall be made (a) by the employee of the Company who holds a certificate of registration as an engineer in such state and who has been specified by the Chief Executive Officer or the person designated by the Chief Executive Officer to make such specification, as the engineer in responsible charge of such project or engineering activities, or (b) by other responsible engineers under his direction or supervision.

ARTICLE XI

INDEMNIFICATION

A. The Company shall, to the fullest extent permitted by applicable law as the same exists or may hereafter be in effect, indemnify any person who is or was or has agreed to become a director or officer of the Company and who is or was made or threatened to be made a party to or is involved in any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, including an action by or in the right of the Company to procure a judgment in its favor and an action by or in the right of any other corporation of any type or kind, domestic or foreign, or any partnership, joint venture, trust, employee benefit plan or other enterprise, which such person is serving, has served or has agreed to serve in any capacity at the request of the Company, by reason of the fact that he or she is or was or has agreed to become a director or officer of the Company, or is or was serving or has agreed to serve such other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise in any capacity, against judgments, fines, amounts paid or to be paid in settlement, taxes or penalties, and costs, charges and expenses, including attorney's fees, incurred in connection with such action or proceeding or any appeal therein; provided, however, that no

indemnification shall be provided to any such person if a judgment or other final adjudication adverse to the director or officer establishes that (i) his or her acts were committed in bad faith or were the result of active and deliberate dishonesty and, in either case, were material to the cause of action so adjudicated, or (ii) he or she personally gained in fact a financial profit or other advantage to which he or she was not legally entitled. The benefits of this Paragraph A shall extend to the heirs and legal representatives of any person entitled to indemnification under this paragraph.

B. The Company may, to the extent authorized from time to time by the Board of Directors, or by a committee comprised of members of the Board or members of management as the Board may designate for such purpose, provide indemnification to employees or agents of the Company who are not officers or directors of the Company with such scope and effect as determined by the Board, or such committee.

C. The Company may indemnify any person to whom the Company is permitted by applicable law to provide indemnification or the advancement of expenses, whether pursuant to rights granted pursuant to, or provided by, the New York Business Corporation Law or other rights created by (i) a resolution of shareholders, (ii) a resolution of directors, or (iii) an agreement providing for such indemnification, it being expressly intended that these By-laws authorize the creation of other rights in any such manner. The right to be indemnified and to the reimbursement or advancement of expenses incurred in defending a proceeding in advance of its final disposition authorized by this Paragraph C shall not be exclusive of any other right which any person may have or hereafter acquire under any statute, provision of the Certificate of Incorporation, By-laws, agreement, vote of shareholders or disinterested directors or otherwise.

D. The right to indemnification conferred by Paragraph A shall, and any indemnification extended under Paragraph B or Paragraph C may, be retroactive to events occurring prior to the adoption of this Article XI, to the fullest extent permitted by applicable law.

E. This Article XI may be amended, modified or repealed either by action of the Board of Directors of the Company or by the vote of the shareholders.

ARTICLE XII

AMENDMENTS OF BY-LAWS

These By-laws may be altered, amended or repealed, at any time, in the manner provided in the Certificate of Incorporation of this Company.

ARTICLE XIII

EMERGENCY BY-LAW

A. This Emergency By-law shall become effective if the Defense

Council of New York, as constituted under the New York State Defense Emergency Act now in effect or as it may hereafter be amended from time to time, shall order the effectiveness of emergency By-laws of New York Corporations and shall cease to be effective when the Council shall so declare. This Emergency By-law may also become effective in the manner outlined in Section E of this Article.

B. In the event this Emergency By-law shall become effective, the business of the Company shall continue to be managed by those members of the Board of Directors in office at the time the emergency arises who are available to act during the emergency. If less than three such Directors are available to act, additional Directors, in whatever number is necessary to constitute a Board of three Directors, shall be selected automatically from the first available officers or employees in the order provided in the emergency succession list established by the Board of Directors and in effect at the time an emergency arises.

C. For the purposes of Sections B and D(3) of this Article, a Director shall be deemed unavailable to act if he shall fail to attend a Directors meeting called in the manner provided in Section D(1) of this Article. This section, however, shall not affect in any way the right of a Director in office at the time an emergency arises to continue as a Director.

D. The Board of Directors shall be governed by the following basic procedures and shall have the following specific powers in addition to all other powers which it would otherwise have.

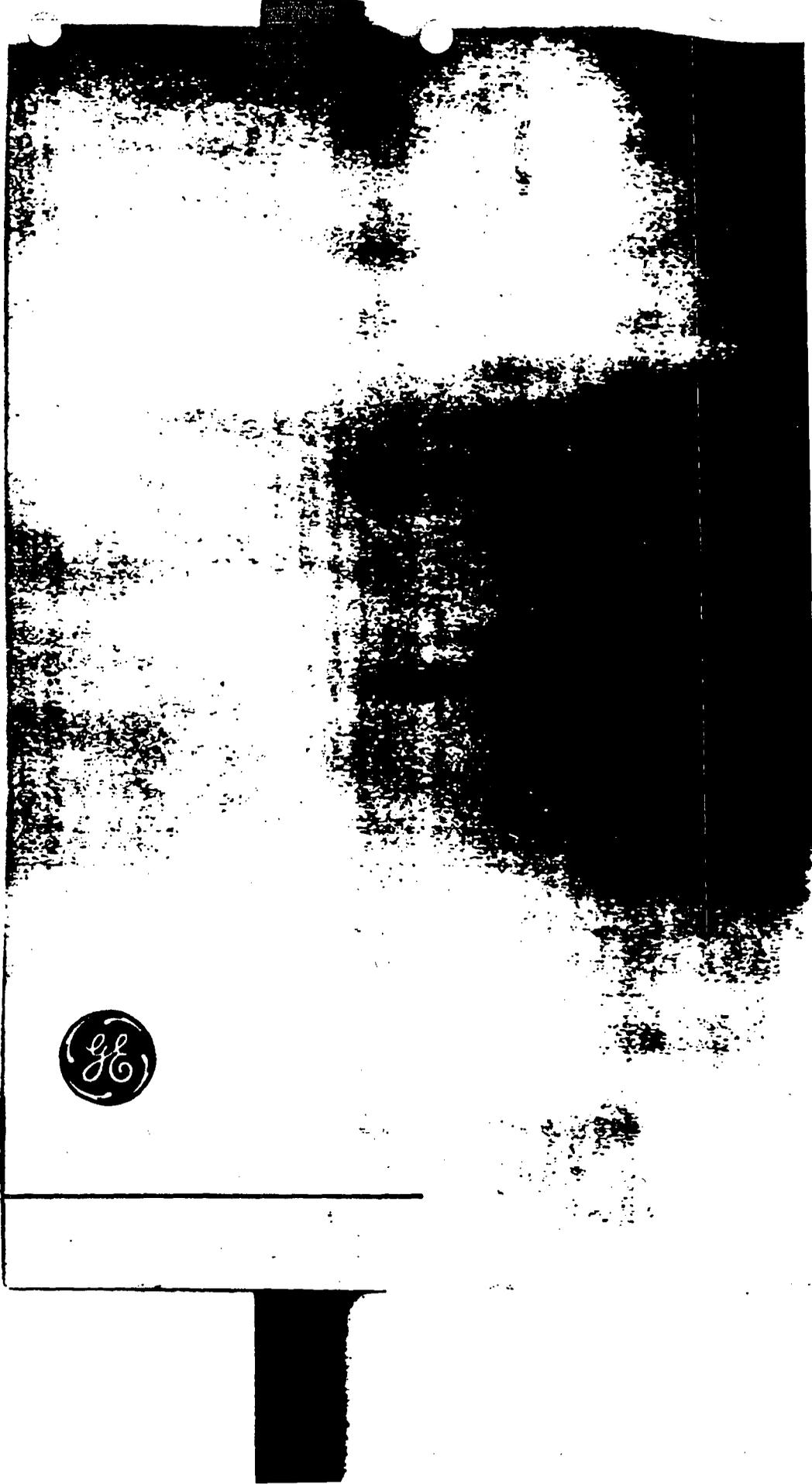
1. Meetings of the Board of Directors may be called by any Director, or by the first available officer or employee in the order provided in the emergency succession list referred to in Section B of this Article, by mailing to all Directors written notice thereof at their residence or place of business at least two days before the meeting and by using other reasonably available means of communication in an effort to contact each Director.
2. Three Directors shall constitute a quorum which may in all cases act by majority vote.
3. If the number of Directors who are available to act shall drop below three, additional Directors, in whatever number is necessary to constitute a Board of three Directors, shall be selected automatically from the first available officers or employees in the order provided in the emergency succession list referred to in Section B of this Article.
4. Additional Directors, beyond the minimum number of three Directors, but not more than three additional Directors, may be elected from any officers or employees on the emergency succession list referred to in Section B of this Article.
5. Any Director, other than a Director in office at the time an emergency arises, may be removed by a majority vote.
6. The Board of Directors may establish any additional procedures and may amend any of the provisions of this Article concerning the interim management of the affairs of the Com-

pany in an emergency if it considers it to be in the best interests of the Company to do so, except that it may not change Sections C or D(5) of this Article in any manner which excludes from participation any person who was a Director in office at the time an emergency arises.

7. To the extent that it considers it practical to do so, the Board of Directors shall manage the business of the Company during an emergency in a manner which is consistent with the Certificate of Incorporation and By-laws. It is recognized, however, that in an emergency it may not always be practical to act in this manner and this Emergency By-law is intended to and hereby empowers the Board of Directors with the maximum authority possible under the New York State Defense Emergency Act, and all other applicable law, to conduct the interim management of the affairs of the Company in an emergency in what it considers to be in the best interests of the Company.

E. If an obvious defense emergency exists because of an enemy attack and, if by reason of the emergency, the Defense Council of New York is itself unable to order the effectiveness of emergency by-laws as contemplated by Section A of this Article, then:

1. A quorum of the Board of Directors pursuant to Article II of these By-laws may order the effectiveness of this Emergency By-law or
2. If a quorum of the Board of Directors pursuant to Article II of these By-laws is not present at the first Board of Directors meeting called, in the manner provided in Section D(1) of this Article, after an emergency arises, then the provisions of this Emergency By-law shall automatically become effective and shall remain in effect until it is practical for a normally constituted Board of Directors to resume management of the business of the Company.





Bartram Wolfe
Vice President and General Manager

General Electric Company
175 Curtner Avenue San Jose, CA 95125
408 925-6920

CERTIFICATION OF FINANCIAL ASSURANCE

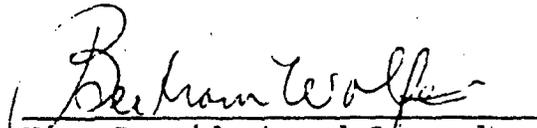
Principal: General Electric Company
175 Curtner Avenue
San Jose, CA 95125

Licenses and Facilities Covered by Certification of Financial Assurance

- | | | |
|----|--|-------------------|
| 1. | License No. SNM-960
GE Nuclear Energy
Vallecitos Nuclear Center
Pleasanton, CA 94566 | Amount: \$750,000 |
| 2. | License No. 3400054-04
GE Lighting
1975 Noble Road
Cleveland, Ohio 44112 | Amount: \$750,000 |
| 3. | License No. 3400054-05
GE Lighting
1975 Noble Road
Cleveland, Ohio 44112 | Amount: \$750,000 |
| 4. | License No. SMB-191
GE Lighting
1975 Noble Road
Cleveland, Ohio 44112 | Amount: \$750,000 |
| 5. | License No. STB-53
GE Aircraft Engine
1 Jimson Road
Cincinnati, Ohio 45215 | Amount: \$750,000 |
| 6. | License No. SNM-1097
GE Nuclear Energy
Wilmington Nuclear Fuel
& Component Manufacturing
Castle Hayne Road
Wilmington, North Carolina 28401 | Amount: \$750,000 |

Issued to U.S. Nuclear Regulatory Commission

This is to certify that the General Electric Company is licensed to possess certain amounts of special nuclear material as specified in the above-listed NRC licenses, and that financial assurance in the amounts prescribed under the applicable parts of 10 CFR, Chapter I, totaling \$4,500,000, has been obtained for the purpose of decommissioning the facilities subject to those materials licenses.


Vice President and General
Manager - GE Nuclear Energy

March 22, 1991



March 21, 1991

Charles J. Haughney, Chief
Fuel Cycle Safety Branch
Office of Nuclear Material Safety & Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Haughney:

In accordance with Nuclear Regulatory Commission (NRC) technical and financial regulations for decommissioning licensed nuclear facilities published in 53FR24018; June 27, 1988, certification of financial assurance for \$750,000 has been arranged for the Special Nuclear Materials License SNM-960. The license is held by the General Electric Company (GE) for the facilities located at Vallecitos Nuclear Center, P.O. Box 460, Pleasanton, CA 94566.

On August 20, 1990, General Electric (GE) submitted a Petition for Reconsideration to the Nuclear Regulatory Commission (NRC) requesting the NRC reconsider and reverse the denial of specific exemptions from the financial assurance mechanism requirements in 10 CFR Parts 50 and 70 by allowing GE to act as a self-guarantor to satisfy the requirements. GE also requested a time extension to the filing deadline until 15 days after GE is notified of the Commission's ruling on the Petition. This request for a time extension to the filing deadline was granted on August 27, 1990, in a letter to Dr. Bertram Wolfe from Mr. Robert M. Bernero. The decision denying GE's request for reconsideration was received by GE on March 11, 1991.

Financial Assurance for Decommissioning under 10 CFR Parts 30, 40, 50 and 70 in the amount of \$35,600,000 has been arranged through an Irrevocable Standby Letter of Credit with Manufacturers Hanover Trust Company for the following NRC licenses held by the General Electric Company (GE).

Table 1
GE Nuclear Energy Licenses

<u>Location</u>	<u>License No.</u>	<u>Type</u>	<u>Funding Requirement</u>
Vallecitos Nuclear Center P.O. Box 460 Pleasanton, CA 94566	R-33	Part 50	Cost estimate based on PNL studies. \$810,000
"	TR-1	Part 50	Cost estimate based on PNL studies. \$12,816,000
"	DR-10	Part 50	Cost estimate based on PNL studies. \$9,984,000
"	DPR-1	Part 50	Cost estimate based on PNL studies. \$6,652,000
"	SNM-960	Part 70	Certification \$750,000
Wilmington Nuclear Fuel Manufacturing P.O. Box 780 Wilmington, NC 28402	SNM-1097	Part 70	Certification \$750,000
		TOTAL	<u>\$31,762,000</u>

Table 2
Other GE Facilities

<u>Location</u>	<u>License No.</u>	<u>Type</u>	<u>Funding Requirement</u>
GE Lighting 1975 Noble Road Cleveland, OH 44112	3400054-04	Part 30	Certification \$750,000
GE Lighting 1975 Noble Road Cleveland, OH 44112	3400054-05	Part 30	Certification \$750,000
GE Lighting 1975 Noble Road Cleveland, OH 44112	SMB-191	Part 40	Certification \$750,000
GE Aircraft Engine 1 Jimson Road Cincinnati, OH 45215	STB-53	Part 40	Certification \$750,000
GE Aerospace 3198 Chestnut Street, 401 E. Hunting Pak Ave. Philadelphia, PA 230 Goddard Blvd. 970 Pulaski Road 720 Vandeburt Road King of Prussia, PA & at temporary job sites of the licenses anywhere in the U.S.	SUB-831	Part 40	Cost Estimate* \$266,000
GE Aerospace 780 Third Avenue King of Prussia, PA	37-02006-09	Part 30	Cost Estimate* \$267,000
General Electric Company Space Systems Division Valley Forge Space Center Valley Forge, PA	37-02006-05	Part 30	Cost Estimate* \$267,000
		TOTAL	<u>\$3,800,000</u>

*An estimated cost, \$800,000 was provided for the three facilities.

C. J. Haughney (USNRC)

-4-

March 21, 1991

If there are any questions regarding this submittal, please contact
G. E. Cunningham on (415) 862-4330.

Very truly yours,



R. W. Darmitzel, Manager
Environmental Programs

/ca

STANDBY TRUST AGREEMENT

TRUST AGREEMENT, the Agreement entered into as of March 22, 1991 by and between GENERAL ELECTRIC COMPANY, a New York corporation, herein referred to as the "Grantor," and Manufacturers Hanover Trust Company, Corporate Trust & Agency Services, 450 West 33rd Street, New York, New York 10001 a New York State Chartered Bank, the "Trustee."

WHEREAS, the U.S. Nuclear Regulatory Commission (NRC), an agency of the U.S. Government, pursuant to the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, has promulgated regulations in Title 10, chapter I of the Code of Federal Regulations, Parts 30, 40, 50, 70, and 72. These regulations, applicable to the Grantor, require that a holder of, or an applicant for the licenses shown in Schedule A to this Agreement provide assurance that funds will be available when needed for required decommissioning activities.

WHEREAS, the Grantor has posted a \$35.6 million dollar standby Letter of Credit to provide all of such financial assurance for the facilities identified herein; and

WHEREAS, when payment is made under the standby Letter of Credit this standby trust shall be used for the receipt of such payment; and

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee,

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

- (a) The term "Grantor" means the NRC licensee who enters into this Agreement and any successors or assigns of the Grantor.
- (b) The term "Trustee" means the trustee who enters into this Agreement and any successor Trustee.

Section 2. Costs of Decommissioning. This Agreement pertains to the costs of decommissioning the materials and activities identified in the licenses issued by the NRC as shown in Schedule A to this Agreement.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a standby trust fund (the Fund) for the benefit of the NRC. The Grantor and the Trustee intend that no third party have access to the Fund except as provided herein.

Section 4. Payments Constituting the Fund. The Fund is established as initially unfunded and as consisting of a total of \$-0-. Payments made to the Trustee for the Fund shall consist of payments made by the issuer of the Irrevocable Letter of Credit pursuant to its terms (which is acceptable to the Trustee and described in Schedule B). All property

and any other property subsequently transferred to the Trustee are referred to as the "Fund," together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount of, or adequacy of the Fund, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the NRC.

Section 5. Payment for Required Activities Specified in the Plan. The Trustee shall make payments from the Fund to the Grantor upon presentation to the Trustee of the following:

- a. A certificate duly executed by the Grantor attesting to the occurrence of the events, and in the form set forth in the attached Specimen Certificate, and
- b. A certificate attesting to the following conditions;
 - (1) that decommissioning is proceeding pursuant to an NRC-approved plan.
 - (2) that the funds withdrawn will be expended for activities undertaken pursuant to that Plan, and
 - (3) that the NRC has been given 30 days' prior notice of General Electric's intent to withdraw funds from the escrow fund.

No withdrawal from the fund can exceed 100 percent of the outstanding balance of the Fund or \$35.6 million dollars, whichever is greater, unless NRC approval is attached.

In the event of the Grantor's default or inability to direct decommissioning activities, the Trustee shall make payments from the Fund as the NRC shall direct, in writing, to provide for the payment of the costs of required activities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the NRC, or State agency, from the Fund for expenditures for required activities in such amounts as the NRC, or State agency, shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the NRC specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 6. Trust Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this section. In investing, reinvesting,

exchanging, selling, and managing the Fund, the Trustee shall discharge its duties with respect to the Fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

- (a) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended (15 U.S.C. 80a-2(a)), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;
- (b) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal Government, and in obligations of the Federal Government such as GNMA, FNMA, and FHLM bonds and certificates or State and Municipal bonds rated BBB or higher by Standard and Poors or Baa or higher by Moody's Investment Services; and
- (c) For a reasonable time, not to exceed 60 days, the Trustee is authorized to hold uninvested cash, awaiting investment or distribution, without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

- (a) To transfer from time to time any or all of the assets of the fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and
- (b) To purchase shares in any investment company registered under the Investment Company Act of 1940 (15 U.S.C. 80a-1 et seq.), including one that may be created, managed, underwritten, or to which investment advice is rendered, or the shares of which are sold by the Trustee.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretion conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

- (a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale, as necessary to allow duly authorized withdrawals at the joint request of the Grantor and the NRC or to reinvest in securities at the direction of the Grantor;

- (b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;
- (c) To register any securities held in the Fund in its own name, or in the name of a nominee, and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, to reinvest interest payments and funds from matured and redeemed instruments, to file proper forms concerning securities held in the Fund in a timely fashion with appropriate government agencies, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee or such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the U.S. Government, or any agency or instrumentality thereof with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;
- (d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal government; and
- (e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. After payment has been made into this standby trust fund, the Trustee shall annually, at least 30 days before the anniversary date of receipt of payment into the standby trust fund, furnish to the Grantor and to the NRC a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days before the anniversary date of the establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the NRC, or State agency, shall constitute a conclusively binding assent by the Grantor, barring the grantor from asserting any claim or liability against the Trustee with respect to the matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting on the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing with the Grantor as shown in Schedule C to this Agreement.

Section 13. Successor Trustee. Upon 90 days notice to the NRC, the Trustee may resign; upon 90 days notice to the NRC and the Trustee, the Grantor may replace the Trustee; but such resignation or replacement shall not be effective until the Grantor has appointed a successor Trustee and this successor accepts the appointment. The successor Trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor Trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor Trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee or for instructions. The successor Trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the NRC or State agency, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are signatories to this agreement or such other designees as the Grantor may designate in writing. The Trustee shall be fully protected in acting without inquiry in accordance with the grantor's orders, requests, and instructions. If the NRC or State agency issues orders, requests, or instructions to the Trustee these shall be in writing, signed by the NRC, or State agency, or their designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor, the NRC, or State agency, hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instruction from the Grantor and/or the NRC, or State agency, except as provided for herein.

Section 15. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee and the NRC, or State agency, or by the Trustee and the NRC or State agency, if the Grantor ceases to exist.

Section 16. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 15, this trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the NRC or State agency, or by the Trustee and the NRC or State agency, if the Grantor ceases to exist. Upon termination of the trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor or its successor.

Section 17. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this trust, or in carrying out any directions by the Grantor, the NRC, or State agency, issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the trust fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 18. Applicable Law. This Agreement shall be administered, construed, and enforced according to the laws of the State of New York.

Section 19. Interpretation and Severability. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement. If any part of this agreement is invalid, it shall not affect the remaining provisions which will remain valid and enforceable.

Section 20. Notifications. All notices and communications hereunder shall be in writing and shall be deemed to be duly given if sent by registered mail, return receipt requested, as follows:

Manufacturers Hanover Trust Company
Corporate Trust & Agency Services
450 West 33rd Street
New York, NY 10001
Attention: Escrow Administration, 15th Floor

General Electric Company
175 Curtner Avenue
San Jose, California 95125
Attention: Manager Government Finance

U.S. Nuclear Regulatory Commission
Washington, DC 20555
Attention: Decommissioning Funding

or at such other address as any of the above may have furnished to the other parties in writing by registered mail, return receipt requested and any such notice or communication given in the manner specified in

this Section 20 shall be deemed to have been given as of the date so mailed except with respect to the Trustee as to which data shall be deemed to have been given on the date received by the Trustee.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed by the respective officers duly authorized and the incorporate seals to be hereunto affixed and attested as of the date first written above.

ATTEST:

GENERAL ELECTRIC COMPANY

Dr. B. Wolfe
Vice President and General
Manager
[Title]
[Seal]

Manufacturers Hanover Trust Company
[Signature of representative
of Trustee]
[Title] *John Sciaschitano*
Vice President

ATTEST:
[Title]
[Seal]

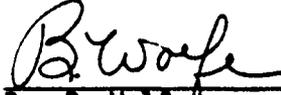
David J. Guidali
TRUST OFFICER

this Section 20 shall be deemed to have been given as of the date so mailed except with respect to the Trustee as to which data shall be deemed to have been given on the date received by the Trustee.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed by the respective officers duly authorized and the incorporate seals to be hereunto affixed and attested as of the date first written above.

ATTEST:

GENERAL ELECTRIC COMPANY



Dr. B. Wolfe
Vice President and General
Manager
[Title]
[Seal]

Manufacturers Hanover Trust Company
[Signature of representative
of Trustee]
[Title]

ATTEST:
[Title]
[Seal]

GENERAL ELECTRIC COMPANY
TRUST AGREEMENT SCHEDULE

(\$ IN THOUSANDS)

U.S. NUCLEAR REGULATORY
COMMISSION
LICENSE NUMBER
DPR-1

NAME AND ADDRESS
OF LICENSEE

GENERAL ELECTRIC CO;
GE NUCLEAR ENERGY;
175 CURTNER AVENUE;
SAN JOSE, CALIFORNIA
95125

ADDRESS OF LICENSED
ACTIVITY

GE NUCLEAR ENERGY;
VALLECITOS NUCLEAR
CENTER; 6705
VALLECITOS ROAD
PLEASANTON, CALIFORNIA
94566

COST ESTIMATES FOR
REGULATORY ASSURANCE
DEMONSTRATED BY THIS
AGREEMENT

\$ 6 672

R-33	▪	▪	▪	▪	810
TR-1	▪	▪	▪	▪	12 816
DR-10	▪	▪	▪	▪	9 984
SNM-960	▪	▪	▪	▪	750
SNM-1097	▪	▪	▪	▪	750
			GE NUCLEAR ENERGY CASTLE HAYNE ROAD WILMINGTON, NORTH CAROLINA 28401		750
3400054-04		GE LIGHTING 1975 NOBLE ROAD CLEVELAND, OH 44112	GE LIGHTING 1975 NOBLE ROAD CLEVELAND, OH 44112		750
	▪	▪	▪	▪	
3400054-05	▪	▪	▪	▪	750
SMB-191					750
STB-53		GE AIRCRAFT ENGINE 1 JIMSON ROAD CINCINNATI, OH 45215	GE AIRCRAFT ENGINE 1 JIMSON ROAD CINCINNATI, OH 45215		750

GENERAL ELECTRIC COMPANY
TRUST AGREEMENT SCHEDULE

(\$ IN THOUSANDS)

U.S. NUCLEAR REGULATORY
COMMISSION
LICENSE NUMBER
SUB-831

COST ESTIMATES FOR
REGULATORY ASSURANCE
DEMONSTRATED BY THIS
AGREEMENT

U.S. NUCLEAR REGULATORY COMMISSION <u>LICENSE NUMBER</u> SUB-831	NAME AND ADDRESS OF LICENSEE GENERAL ELECTRIC GE AEROSPACE P.O. BOX 8553 PHILADELPHIA, PA 19101	ADDRESS OF LICENSED ACTIVITY <u>GE AEROSPACE</u> 3198 CHESTNUT STREET 401 E. HUNTING PARK AVE. PHILADELPHIA, PA 130 GODDARD BLVD, 970 PULASKI ROAD, 780 VANDENBURT ROAD, KING OF PRUSSIA, PA & AT TEMPORARY JOB SITES OF THE LICENSES ANYWHERE IN THE US	COST ESTIMATES FOR REGULATORY ASSURANCE DEMONSTRATED BY THIS <u>AGREEMENT</u>
37-02006-09	GE AEROSPACE P.O. BOX 8555 PHILADELPHIA, PA 19101	GE AEROSPACE 780 THIRD AVENUE KING OF PRUSSIA, PA	267
37-02006-05	SPACE SYSTEMS DIVISION P.O. BOX 8555 PHILADELPHIA, PA 19101	GE SPACE SYSTEMS DIVISION VALLEY FORGE SPACE CENTER VALLEY FORGE, PA	267
TOTAL			<u>\$35 582</u>

**GENERAL ELECTRIC COMPANY
DECOMMISSIONING FUNDING PLAN**

STANDBY LETTER OF CREDIT IN THE AMOUNT OF \$35,600,000

**MANUFACTURERS HANOVER TRUST COMPANY
CORPORATE TRUST & AGENCY SERVICES
450 WEST 33RD STREET
NEW YORK, NEW YORK 10001**

SCHEDULE B

GENERAL ELECTRIC COMPANY

FIVE THOUSAND DOLLARS (\$5,000) PER ANNUM OR ANY PART THEREOF WITHOUT PRORATION FOR PARTIAL YEARS. EFFECTIVE AND PAYABLE UPON THE ESTABLISHING OF THE STANDBY TRUST FUND WITH AN ADDITIONAL \$5,000 PER ANNUM OR ANY PART THEREOF WITHOUT PRORATION PAYABLE UPON THE FIRST PAYMENT FOR THE FUND.

SCHEDULE C

Specimen Certificate of Events
Manufacturers Hanover Trust Company
Corporate Trust & Agency Services
450 West 33rd Street
New York, New York 10001

Attention: Escrow Administration
Gentlemen:

In accordance with the terms of the Agreement with you dated March 22, 1991, I, _____, General Manager of [insert name of licensee], hereby certify that the following events have occurred:

1. General Electric Company is required to commence the decommissioning of its facility located at [insert location of facility] (hereinafter called the decommissioning).
2. The plans and procedures for the commencement and conduct of the decommissioning have been approved by the United States Nuclear Regulatory Commission, or its successor, on _____ (copy of approval attached).
3. The Board of Directors of General Electric Company has adopted the attached resolution authorizing the commencement of the decommissioning.

General Manager, GE _____

Date

Attesting Secretary - General Electric Company
[SEAL]

Certificate of Resolution

I, _____, do hereby certify that I am an Attesting Secretary of General Electric Company, a New York Corporation, and that the resolution listed below was duly adopted at a meeting of this Corporation's Board of Directors on _____, 19__.

IN WITNESS WHEREOF, I have hereunto signed my name and affixed the seal of this Corporation this _____ day of _____, 19__.

Secretary

RESOLVED, that this Board of Directors hereby authorizes the President, or such other employee of the Company as he may designate, to commence decommissioning activities at [insert name of facility] in accordance with the terms and conditions described to this Board of Directors at this meeting and with such other terms and conditions as the President shall approve with and upon the advice of Counsel.

MAR 1 1994

License Nos. 37-02006-05
SUB-831
Docket Nos. 030-06046
040-07344
Control No. 113059
113058

Martin Marietta Corporation
ATTN: S. J. Mucha, M.D., Chairman
Ionizing Radiation Advisory Group
P. O. Box 8555
Philadelphia, Pennsylvania 19101

Dear Dr. Mucha:

SUBJECT: FINANCIAL ASSURANCE FOR DECOMMISSIONING

Our records show that as of April 29, 1993, a change of ownership from General Electric Company to Martin Marietta Corporation was finalized. This change of ownership resulted in Martin Marietta acquiring operations, facilities and radioactive materials authorized by the above listed licenses. At this time, you are required to comply with 10 CFR 30.35. This regulation requires licensees who are authorized to possess amounts of licensed material listed in the above referenced licenses to submit a decommissioning funding plan or a certification of financial assurance for decommissioning. Upon review of the above referenced licenses, we request the following information:

1. **Submit a Decommissioning Funding Plan (DFP) or a Certification of Financial Assurance.**

10 CFR 30.35(c)(2) requires licensees to submit either a certification statement or a decommissioning funding plan including an actual cost estimate.

Based upon the possession limits authorized on License Nos. 37-02006-05 and SUB-831, a certification of financial assurance for \$750,000 is required at this time. The statement of certification, in addition to providing information that would allow the NRC to verify the certification amount (e.g., the names and locations of the facilities for which financial assurance is provided, and the amount and types of material handled), officially certifies that the licensee is in compliance with the decommissioning rules.

S:\PENDING\MMCORP.FA

OFFICIAL RECORD COPY

January 11, 1994

Please submit certification of financial assurance or a decommissioning funding plan including an actual cost estimate along with financial assurance for the specified amount. You may refer to Regulatory Guide 3.66 "Standard Format and Content of Financial Assurance Mechanisms Required for Decommissioning Under 10 CFR Parts 30, 40, 70 and 72" (June 1990), (copy enclosed).

Please note that if you decide to submit certification for \$750,000 rather than a Decommissioning Funding Plan at this time, you must include a DFP and actual cost estimate with your application for license renewal due on or before the expiration date listed in Item 4 of each respective license. The enclosed NUREG/CR-1754, Addendum 1, may be helpful in preparing your cost estimate.

2. **Use of Standby Trust Funds**

Under the decommissioning regulations, 10 CFR 30.35(f)(ii), certain financial instruments must be payable to a "trust established for decommissioning costs." This is because funds paid directly to the NRC must be deposited in the U.S. Treasury and are not available for decommissioning costs. To avoid this possibility, standby trust funds must be established if the following instruments are used: Letter of Credit, Line of Credit, Surety Bond. Please refer to Regulatory Guide 3.66 and adhere as close as possible to the recommended wording.

Satisfactory financial assurance is required for your licenses. Therefore, we request that you respond within 30 calendar days of the date of this letter. Please reply in duplicate to my attention at the Region I office and when submitting financial documents, be sure they are completely executed, and originally signed with all appropriate seals. You may refer to Mail Control Nos. 113059/113058.

If you have any questions regarding this letter, please contact Anthony Dimitriadis of my staff at (215) 337-6953.

Sincerely,
Signed By:
Mohamed M. Shanbaky

Mohamed M. Shanbaky, Chief
Research and Development Section
Division of Radiation Safety
and Safeguards

Martin Marietta Corporation

3

Enclosures:

1. Regulatory Guide 3.66
2. NUREG/CR-1754/Addendum 1

bcc:

M. Shanbaky, RI
A. Dimitriadis, RI

DRSS:RI
Dimitriadis/GMP

01/11/94

DRSS:RI
Shanbaky

01/24/94

S:\PENDING\MMCORP.FA

OFFICIAL RECORD COPY

January 11, 1994

10



GE Astro Space

Astro-Space Division
General Electric Company
P.O. Box 3855, Philadelphia, PA 19107
215 353-7000

Mr. Robert Bernero, Director
Office of Regulatory Materials Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington DC 20555

January 10, 1992

**Subject: Financial Assurance: General Electric Company Submittal
of March 22, 1991**

**RE: Decommissioning Funding Plan Cost Estimate Substantiation
GE Aerospace - King of Prussia, PA**

**Licenses: 37-02006-05
37-02006-09
SUB-831**

A decommissioning funding plan cost estimate for GE Aerospace operations was prepared in July 1990. The cost estimate at that time considered the above three licenses which covered two facilities (Philadelphia, PA and King of Prussia, PA) where radioactive materials were being actively utilized or stored in radioactive material vaults. The plan was based upon the premise that the major problem for Aerospace operations is not the decontamination of facilities but rather the disposal of (primarily) sealed sources of radioactive materials. The cost estimate for decommissioning the licensed Aerospace facilities in July of 1990 was \$476,000.00. A surety bond for \$500,000.00 was subsequently provided through Chubb Group of Insurance Companies on August 6, 1990.

Since the initial cost estimate was developed, GE Aerospace has accomplished the disposition of all sources at our Philadelphia facility and has submitted the final radiation survey of the vault to the NRC for review. At King of Prussia over 90% of the radioactive material inventory has been disposed to land burial at the Hanford site in Washington state. Our inventory of approximately 200 radioactive sources has been reduced to 13 items.

Of the two radioactive material use areas which in the original estimate were referenced as possibly requiring decontamination activity, one area has been cleared for unrestricted use.

The current cost estimate for GE Aerospace under NRC licenses 37-02006-05, 37-02006-09 and SUB-831 is \$370,000.00.

The following information provides a itemized breakdown of the cost estimate.

<u>License</u>	<u>ISOTOPE</u>	<u>ACTIVITY</u>	<u>COST</u>
37-02006-05	Am-241	1.0 Ci	\$ 160,000

This source will have to be disposed of as Class C radioactive material (long half life). The source will need to be placed in a mass weighing at least 22,000 pounds to be below the 100nCi/g limit. The final volume is estimated to be 216 cubic feet. US Ecology in Richland WA was contacted in July 1990 and quoted a disposal price of \$80,000.00. Considering the anticipated increases in disposal costs over the next 5 years, this price is doubled for this cost estimate.

37-02006-05	Sr-90	10.0 Ci	\$ 3,700
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This source will have to be disposed of as Class B radioactive material in a 55 gallon drum (7.4 cft). For this estimate the basic burial cost for Class B material is \$500/cft.

37-02006-05	Sr-90	0.1 Ci	\$ 1,500
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This source will have to be disposed of as Class A radioactive material in one 55 gallon drum. For this estimate the basic burial cost for Class A material is \$200/cft.

37-02006-05	Pu-239	0.000005 Ci	\$ 5,000
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37-02006-05	Pu-238	0.09 Ci	\$ 15,000
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These sources are special nuclear material and therefore a limit of 100nCi/g applies. These sources can be placed in individual 55 gallon drums filled with concrete (approx. 1000 lbs). Pu-239 - Class A. Pu-238 - Class C. The basic burial cost for Class C material is \$1000.00/cft.

37-02006-05	Co-60	0.081 Ci	\$ 1,500
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37-02006-05	Density gauge & assorted check sources	<0.001Ci	
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Class A radioactive material in one 55 gallon drum.

37-02006-05

Kr-85

21.0 Ci

\$ 5,000

The Kr-85 gas is contained in eleven Type K compressed gas cylinders totaling 15,800 psi. Our options for disposition at this point include land burial, venting or recycling.

1. Land burial restrictions would require that the gas be dispensed into 720 type A bottles at 1.5 atmospheres. The total volume would approach 3800 cft. at a disposal cost (Class A) of \$775,000.00.

2. GE has conducted an Environmental Impact Assessment addressing the release of Kr-85 gas from the King of Prussia facility. As a result of this study, a request for an amendment to license 37-02006-05 was submitted to the Region I NRC offices on May 31, 1991. The amendment incorporates release limits of:

0.5 Ci/week

2.0 Ci/quarter

7.5 Ci/year

1.2 x10 uCi/ml point of discharge limit

With these limits in place, venting the Kr-85 gas could be accomplished over a four year period at minimal cost (<\$1000).

3. Due to the national shortage in supplies of Kr-85 gas, Amersham Corporation has expressed interest in acquiring the Kr-85 gas for recycling. GE is currently pursuing this preferred course of action. Costs may include packaging and transportation at a cost of \$5000.00.

37-02006-05

contaminated
satellite (Cs-137)

0.001uCi

\$100,000

This item is a satellite midbody assembly which was contaminated during underground nuclear testing. The structure was decontaminated at the test site in 1985. A survey conducted in April 1991 indicated external radiation levels of about 1.5 to 3.0 microR/hr above background. Removable radiation levels (beta) did exceed 1000 dpm for one location on the structure. Volume reduction would definitely be appropriate for this item which is now housed in 512 cft box. This estimate, however, covers the cost of disposal as a Class A waste without volume reduction.

37-02006-09

Co-60

(b)(4)

\$ 25,000

(b)(2)High

This item consists of two irradiators containing (b)(4) and (nominal) of Co-60 in Certified Special Form. Nordion (formerly AECL) has agreed to remove the sources from the GE facility for \$18,600.00. The current cost estimate has been adjusted for an inflation rate of 10%/year over 5 years.

Based on the available information, the comprehensive cost estimate for decommissioning facilities under the cited NRC licenses is \$370,000.00. This estimate has been corrected for inflation in that the disposal costs are based on the 1996 anticipated cost for the Pennsylvania Low Level Radioactive Waste Repository. However, it should be noted that since the costs for radioactive waste contractors and disposal costs have significantly exceeded the national inflation rate, projections of this nature are difficult at best. It is the intention of GE Aerospace to revise these estimates as necessary to ensure that sufficient financial assurance is maintained in compliance with NRC regulations.

If there are any questions concerning this report, feel free to contact the undersigned at phone (215) 354-1085.



John F. McLaverty
Senior Industrial Hygienist
Environmental, Health &
Safety Department

cc: Mr Bertram Wolfe
Vice President & General Manager
GE Company, San Jose, CA

Mr. Melvin B. Schweiger
Manager, Environmental Programs
GE Aerospace, King of Prussia, PA

Mr. Paul Vincent
Manager, EHS Department
GE Astro Space Division, King of Prussia, PA

DATE 12/12/91
TIME 11:00 A.M. P.M.

TELEPHONE OR VERBAL CONVERSATION RECORD

INCOMING CALL

OUTGOING CALL

VISIT

PERSON CALLING

Eric H. Reber

OFFICE/ADDRESS

Region I

PHONE NUMBER

(215) 337-5276

EXTENSION

PERSON CALLED

Melvin Schweiger

OFFICE/ADDRESS

Quality & Environmental Programs

PHONE NUMBER

354-3382

EXTENSION

CONVERSATION Programs

SUBJECT

GE's letter dated October 31, 1991 in response

SUMMARY

to our letter of Aug. '91 RE: financial assurance for decommissioning

He stated that he was not informed of the NRC's request for a more detailed decommissioning funding plan. I said I would fax both letters. (see: subject) He stated that he would call back

REFERRED TO:

ADVISE ME OF ACTION TAKEN.

ACTION REQUESTED

Call Lou Byrnes at HQ

INITIALS

DATE

ACTION TAKEN

INITIALS

DATE



Rec 11/20/91

GE Nuclear Energy

Bertram Wolfe
Vice President and General Manager

General Electric Company
175 Currier Avenue, San Jose, CA 95125
408 925-6300

October 31, 1991

Mr. Robert M. Bernero, Director
Office of Nuclear Materials Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: **FINANCIAL ASSURANCE; GENERAL ELECTRIC SUBMITTAL
OF MARCH 22, 1991**

Reference: Letter dated August 1991, R. Bernero, NRC Addressed to
Dr. Wolfe, GE; Subject - Response to Financial
Assurance Submittal of March 22, 1991

Dear Mr. Bernero:

General Electric has reviewed the NRC's request to modify the March 22, 1991 submission and offers the following:

NRC's Item Number 1

"The three cost estimates (Sub-831, 37-020006-09, and 37-020006-05) totaling \$800K are unsubstantiated. General Electric Company (GE) should document the cost estimates using the cost estimate tables in Appendix F, Regulatory Guide 3.66."

GE Aerospace will provide the support to their cost estimate for Decommissioning in the near future.

NRC's Item Number 2

"Decommissioning cost estimates for R-33 (NTR), TR-1 (GETR), DR-10 (EVESR), DPR-1 (VBWR):"

"GE maintains that adjustments for inflation will be made every 5 years or when significant changes such as burial costs or changes in facility conditions occur. Regulatory Guide 1.159, page 7, states that for non-electrical utility licensees who prepare a decommissioning cost estimate, adjustments to the cost estimate should be prepared annually, but need not be submitted to the Nuclear Regulatory Commission (NRC) Staff. GE should state that they will prepare an annual adjustment to the decommissioning cost estimate for inspection by NRC Staff."

GE will comply with NRC's request and update the cost estimate annually.

NRC's Item Number 3

"Irrevocable Standby Letter of Credit:"

The blank space in subparagraph 2 should state ". . . . under authority of the U.S. Nuclear Regulatory Commission."

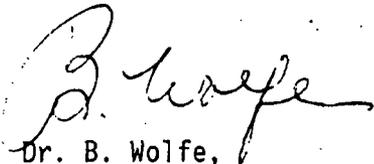
Enclosed is the revision to the Standby Letter of Credit as requested.

NRC's Item Number 4

"Standby Trust Agreement:

(Section 5) - The statement that 'no withdrawal can exceed 100 percent of the outstanding balance' must be amended to '10 percent of the outstanding balance'."

Enclosed is the revision to the Standby Trust Agreement that you requested. The modification has been approved by GE. Manufacturers Hanover Trust Company requires that the NRC approve the change and forward the document to the bank. Upon receipt of the requested modification Manufacturers Hanover Trust Company will approve the document and return such to GE and the NRC. Please approve the enclosed modification request and return it to GE for transmittal to the bank.



Dr. B. Wolfe,
Vice President and General Manager

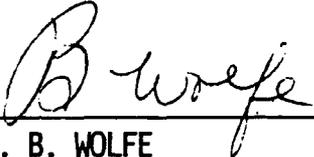
Enclosures

AMENDMENT NUMBER ONE TO
TRUST AGREEMENT, ENTERED INTO AS OF MARCH 22, 1991
BY AND BETWEEN GENERAL ELECTRIC COMPANY,
A NEW YORK CORPORATION AND MANUFACTURERS HANOVER
TRUST COMPANY, THE TRUSTEE

THE NUCLEAR REGULATORY COMMISSION (NRC) AND GE NUCLEAR ENERGY DESIRE TO MODIFY THE DOCUMENT AS FOLLOWS:

(SECTION 5) - THE STATEMENT THAT "NO WITHDRAWAL CAN EXCEED 100 PERCENT OF THE OUTSTANDING BALANCE" IS AMENDED TO "10 PERCENT OF THE OUTSTANDING BALANCE".

APPROVED:



DR. B. WOLFE
VICE PRESIDENT AND GENERAL MANAGER
GE NUCLEAR ENERGY

ROBERT M. BERNERO, DIRECTOR
OFFICE OF NUCLEAR MATERIAL SAFETY
AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION

MANUFACTURERS HANOVER TRUST COMPANY
(SIGNATURE OF REPRESENTATIVE OF TRUSTEE)



Manufacturers Hanover Trust Company
 Geoserve Trade Services
 4 New York Plaza
 New York, NY 10004

AMENDMENT TO DOCUMENTARY CREDIT	NUMBER (b)(4)
---------------------------------------	------------------

DATE OF AMENDMENT
 SEPTEMBER 19, 1991

APPLICANT:
 GENERAL ELECTRIC CO.
 570 LEXINGTON AVE.
 NEW YORK, N.Y. 10022
 ATTN: R.A. LATTERNER

BENEFICIARY:
 U.S. NUCLEAR REGULATORY
 COMMISSION,
 WASHINGTON, D.C. 20555

ADVISING BANK:

AMENDMENT SEQUENCE NUMBER
 502

THIS AMENDMENT IS TO BE
 CONSIDERED AS PART OF THE
 ABOVE MENTIONED CREDIT AND MUST
 BE ATTACHED THERE TO:

WE HEREBY AMEND THIS CREDIT AS FOLLOWS:

IN THE PARAGRAPH BEGINNING "WE HEREBY ESTABLISH" IN SUB-PARAGRAPH
 (2) THAT PART READING "ISSUED UNDER AUTHORITY OF _____"
 IS HEREBY DELETED IN ITS ENTIRETY AND SUBSTITUTED BY: "ISSUED
 UNDER AUTHORITY OF THE U.S. NUCLEAR REGULATORY COMMISSION."

ALL OTHER CONDITIONS REMAIN UNCHANGED.


 AUTHORIZED SIGNATURE



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

August 1991

Mr. Bertram Wolfe
Vice President and General Manager
General Electric Company
175 Curtner Avenue
San Jose, California 95125

Dear Mr. Wolfe:

SUBJECT: RESPONSE TO FINANCIAL ASSURANCE SUBMITTAL OF MARCH 22, 1991

The U.S. Nuclear Regulatory Commission (NRC) has reviewed the March 22, 1991, General Electric Company (GE) financial assurance documents submitted to satisfy its compliance with the financial assurance requirements of the decommissioning rule. The submission is intended to assure decommissioning costs for licenses DPR-1; R-33; TR-1; DR-10; SNM-960; SNM-1097; 3400054-04; 3400054-05; SMB-191; STB-53; SUB-831; 37-02006-09; and 37-02006-05. The NRC staff requests GE to modify the submission to address the specific matters identified in the enclosure to this letter.

Should you have any questions, please contact Timothy Johnson on (301) 492-2055, Louis Bykoski on (301) 492-0572, or Michael Finkelstein, Office of the General Counsel, on 301-492-1623.

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

REVIEW OF GENERAL ELECTRIC COMPANY FINANCIAL ASSURANCE
PACKAGE SUBMITTED MARCH 22, 1991

1. The three cost estimates (SUB-831), 37-020006-09, and 37-020006-05) totaling \$800k is unsubstantiated. General Electric Company (GE) should document the cost estimates using the cost estimate tables in Appendix F, Regulatory Guide 3.66.
2. Decommissioning Cost Estimates for R-33 (NTR), TR-1 (GETR), DR-10 (EVESR), DPR-1 (VBWR):

GE maintains that adjustments for inflation will be made every 5 years or when significant changes such as burial costs or changes in facility conditions occur. Regulatory Guide 1.159, page 7, states that for non-electric utility licensees who prepare a decommissioning cost estimate, adjustments to the cost estimate should be prepared annually, but need not be submitted to the Nuclear Regulatory Commission (NRC) staff. GE should prepare an annual adjustment to the decommissioning cost estimate for inspection by NRC staff.

3. Irrevocable Standby Letter of Credit:

The blank space in subparagraph 2 should state "...under authority of the U.S. Nuclear Regulatory Commission."

4. Standby Trust Agreement:

(Section 5) - The statement that "no withdrawal can exceed 100 percent of the outstanding balance" must be amended to "10 percent of the outstanding balance", pursuant to instructions issued to other material licensees.

Enclosure



030-06046

GE Aerospace

Aerospace Operations Division
General Electric Company
Curtis Center, Suite 615 6th and Walnut Streets
Philadelphia, PA 19106
215 238

July 27, 1990

NRC Region DNE
475 Allendale Road
King of Prussia, PA 19406

Re: License # SUB831
License # 37-02006-05 ✓

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Transmitted herewith is "Cost Estimates for General Electric Aerospace Decommissioning Funding Plan". GE hereby requests a 30-day extension while we pursue submitting a performance bond in support thereof. Please also be aware that we are petitioning the Commission to waive the requirement for a third-party financial expenditure.

Very truly yours,

Melvin B. Schweiger
Manager-Quality and
Environmental Programs
(215) 238-8365

/mm

Enclosure
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Log	Aug-13-I
Remitter	
Check No.	Check with amount
Amount	
Fee Category	D32
Type of Fee	amt
Date Check Rec'd.	
Date Completed	10/25/90
By:	AK

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JUL 27 1990

PHONE, 215 - 896-5353

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*Radiological Protection and
Environmental Services*

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PCI-TR-332

Cost Estimates for General Electric Aerospace

Decommissioning Funding Plan

Prepared:

July 13, 1990

Prepared by:

John Sykes III
Consultant Health Physicist

Reviewed by:

Sydney W. Porter, Jr.
Certified Health Physicist
President

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1.0 EXECUTIVE SUMMARY

- 1.1 In June, 1988, the US Nuclear Regulatory Commission (NRC) published regulations [Ref. 4.3] which will require all licensees and applicants for licenses to provide funds for the eventual decommissioning of sites at which radioactive materials are or would be used. The requirements were limited to licensees who possessed radioactive material in excess of certain amounts listed in specified sections of the NRC regulations [Ref. 4.1]. At lower levels of possession, licensees are only required to post bonds or similar forms of financial assurance, in specified amounts, for the eventual decommissioning of the site. In the case of larger licensees (such as GE Aerospace), it is necessary to prepare a plan to detail the cost of decommissioning the facility as well as to describe the financial instruments to be used to fund the decommissioning. These plans and the attendant financial assurance mechanisms were required to be in place by July 28, 1990. This report was commissioned to determine the financial assurance required to be posted by GE Aerospace under these regulations.
- 1.2 As we proceeded into this project it became apparent that, in the case of GE Aerospace, the major problem is not the decontamination and decommissioning of facilities (e.g., contaminated laboratories, manufacturing facilities, etc.), but rather the disposal of (primarily) sealed sources of radioactive material. This can present a problem since the limits for disposal of radioactive material are not based on the absolute quantity of radioactive material to be disposed of, but rather on the concentration of the radioactive material (either by volume or by weight) in the waste. However, in most cases it should be possible to dispose of higher activity sources in a drum packed with many of the low-level items, such as the low-level contaminated/activated printed circuit boards.
- 1.3 Based on the available information, the comprehensive cost estimate for the decommissioning of both the Philadelphia and Valley Forge facilities is about \$500,000 (see Attachment 5.1). This estimate has been corrected for inflation, in that the disposal costs are based on the 1996 anticipated cost for the Pennsylvania Low Level Radioactive Waste Repository. However, it should be noted that since the cost for radioactive waste contractors and disposal costs have significantly exceeded the national inflation rate, projections of this nature are difficult at best. Therefore, these estimates will be revised as necessary, and sufficient financial assurance maintained for any contingencies.

2.0 TECHNICAL DISCUSSION

2.1 DESCRIPTION OF FACILITIES

Although the overall GE Aerospace facilities are quite extensive, the specific locations where radioactive material is stored or used are limited to a few areas at each of the two GE Aerospace facilities.

2.1.1 PHILADELPHIA FACILITY

At the Philadelphia facility, most of the radioactive material is presently stored in a single vault. Only 5 or 6 sealed sources are used or stored in other locations (Rooms 5177, 1647 and T-110). There is currently no use of unsealed radioactive sources at the Philadelphia facility. Therefore, the decontamination effort would be limited to a thorough survey (with wipe tests, etc.) of the storage vault. However, we have included an estimate for decontaminating the exhaust ventilation system of the vault,

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In the remote case that it is found to be contaminated (this cost may be eliminated when a comprehensive survey is accomplished after the radioactive material contained in the vault is removed).

NOTE: The disposal of items stored in the Philadelphia facility vault are not included in the current price estimates as the subject material is already scheduled for disposal (after certain items are declassified) and the disposal cost has already been funded (\$91,000).

2.1.2 VALLEY FORGE FACILITY - Storage Locations

The location of radioactive material at the Valley Forge facility is more extensive. There are four storage locations for radioactive material. They are:

- 2.1.3.1 Kr-85 gas storage vault outside of Building 100.
- 2.1.3.2 IS&H radioactive materials storage vault in Building 100 (inventory enclosed as Attachment 5.3).
- 2.1.3.3 Satellite storage location in Building B.
- 2.1.3.4 Magnesium-Thorium alloy plate storage in Building 21.

The above facilities are used for storage only, radioactive material is not utilized at these locations.

2.1.3 VALLEY FORGE FACILITY - Locations of Use (and storage).

- 2.1.3.1 IS&H laboratory: calibration of instruments utilizing sealed sources (largest source - 100 mCi Cs-137).
- 2.1.3.2 Plating, Building 100, Room M-4239: plating thickness gauges - sealed beta sources (μ Cl amounts).
- 2.1.3.3 Building 100, Tunnel Level, Room T-9878: experimental density gauges - sealed Co-60 sources (80, 100 & 150 mCi).
- 2.1.3.4 Building 100, Room U-8618: storage? thorium oxide, uranyl nitrate, uranyl acetate - closed area could not inspect.
- 2.1.3.5 Building 100, Room U-8604: worked with unsealed sources in past, room needs survey and, maybe, decontamination - closed area, could not inspect.
- 2.1.3.6 Building 100, Room U-8614: same as above, room needs survey and, maybe, decontamination - closed area, could not inspect.
- 2.1.3.7 Building 8, Room ^{(b)(4)} stored irradiated components in cabinet, both Gammacell 220s located here ^{(b)(4)} total sealed Co-60 sources.
- 2.1.3.8 Building 100, U-8301: Kr-85 leak detector (0.5 Ci), in storage only, should be decommissioned.

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2.1.3.9 Additionally, a few Ni-63 plated sources are used in gas chromatographs at the Valley Forge facility.

2.2 FACILITY DECOMMISSIONING EFFORT REQUIRED

2.2.1 As stated above, it is expected that the decommissioning effort for the Philadelphia facility will be limited to preparing and shipping sources for disposal. As a precaution, we recommend a thorough survey be performed of the storage vault after the sources are removed. The cost of decontaminating and disposing of components of the vault exhaust ventilation system have been included in this estimate as a precaution. This line item will be re-evaluated upon completion of the disposal project.

2.2.2 At the Valley Forge facility, decommissioning would be restricted to the RESD laboratories, where radioactive material (thoriated alloys) is machined. We have included cost estimates to decontaminate/decommission laboratories located in Rooms U-8604 & 8614. These estimates are based on the cost estimates contained in NUREG/CR-1754 [Ref. 4.7] for similar facilities, which we believe to be conservative for the subject labs. It is important to note that both laboratories have recently been surveyed and radiation/contamination levels were found to be below the levels for unrestricted use. However, the labs may be used in the future for machining of radioactive material, and are, therefore, funded for decontamination/decommissioning.

2.2.3 The major problem at Valley Forge is not the decommissioning of facilities, but the disposal of radioactive sources. As some of the source activities are quite high, their disposal may require careful planning. The major problems would appear to be: the Am-241 sources, the two Co-60 irradiators (Gammacell 220s), the Pu-238 & Pu-239 sources, the Kr-85 gas and the satellite mid-body (due to its volume). A letter of agreement has been received which would allow GE to return the Co-60 to the vendor (Attachment 5.2), the Kr-85 and satellite mid-body would be returned to the USAF (who owns these items), and many of the other smaller (millicurie) sources could be combined with Low-Specific-Activity (LSA) waste to stay below Class A limits. The "problem sources" are discussed further in Section 2.3, below.

2.3 DISPOSAL OF SOURCES

2.3.1 As stated above, some of the larger sources (and sources of transuranic elements) present a special problem for disposal. The main criteria for disposal, in the proposed Pennsylvania regulations [Ref. 4.2], is the specific activity (concentration) and half-life of the sources. As the half-life decreases, additionally concentrated activity is permitted at the disposal sites. On the other hand, for long half-life transuranics or source material, only very small concentrations are permitted. Also, there are specific prohibitions for liquid and gaseous materials (liquids must be solidified and gases can only be shipped in DOT containers at no more than 1.5 atmospheres pressure). Therefore, the following solutions are proposed:

2.3.1.1 GAMMACELL 220 IRRADIATORS

The two irradiators contain (b)(4) and (b)(4) (nominal) of Co-60, in Certified Special Form. NORDION (formerly AECL) has agreed to remove the sources from the GE facility for \$18,600.00 (see Attachment

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5.2). This quotation has been adjusted for future inflation (10% per year for 5 years) in the current cost estimate (\$27,900).

2.3.1.2 Kr-85 GAS

The Kr-85 gas is currently located mainly in 12 gas cylinders. Due to the restrictions on disposal, the gas will be returned to the contracting agency (USAF), or be disposed of at the agency's expense.

2.3.1.3 1 Ci & 12 mCi Am-241 SOURCES

These sources will have to be disposed of as Class C radioactive material (long half-life). The larger source will need to be placed in a mass weighing at least 22,000 lbs. to be below the 100 nCi/g limit. We estimate the final volume to be approximately 216 ft³ at a cost of approximately \$80,000.00. The smaller source can probably be disposed of in a 55 gal. drum, filled with concrete at a cost of approximately \$7,500.00.

2.3.1.4 100 mCi Cs-137 IRRADIATOR

This source could be disposed of as-is if the shield qualifies as a Type B overpack. If not, a Type B would have to be factored into the cost. There are no major restrictions on disposal of Cs-137 (except for concentration limits).

2.3.1.5 Pu-238 & Pu-239 SOURCES

These sources are special nuclear material and therefore a limit of 100 nCi/g applies. The sources could be placed in individual 55 gal drums and the drums filled with concrete (approximately 1,000 lbs). This would keep the concentration below 100 nCi/g. A Type B overpack would be required for shipment. Disposal costs for the Pu-238 sources is estimated to be \$20,000.00 in 1996 dollars. As the source activities of the Pu-239 sources are relatively low (μ Ci amounts) they can most likely be disposed of as Class A, in standard 55 gal. drums.

2.3.1.6 Numerous printed circuit boards have been neutron activated. Since many of these activities took place many years ago, probably many of these have decayed to below limits for release for unrestricted use. We presently do not have even an estimate of either the radioisotope or the amount involved. We assume that all of these materials will fit into twenty 55 gallon drums, and are Class A (LSA) levels.

2.3.1.7 Finally, the last major problem is the satellite mid-body stored at Valley Forge. This item is in a 12' x 12' x 12' storage box. Disposal of the items as is could cost as much as \$345,000.00, unless the volume is reduced. However, as this satellite belongs to the Defense Nuclear Agency (DNA), disposal would be their responsibility.

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2.5 SOURCE OF COST ESTIMATES

- 2.5.1 Cost estimates for decommissioning facilities were developed using the guidelines of NUREG/CR-1754. Based on the survey data for the GE labs and the nature of their previous and planned use, it is believed that the cost estimates in the subject guide are extremely conservative. These labs are used primarily for machining magnesium-thorium alloy metals, and, therefore, the contamination generated is of large particle size, insoluble and relatively inert. Secondly, even in its pure form, the specific activity of the alloys are low, and any contamination generated would also be low (unlike the several orders of magnitude reductions required in the test labs upon which the NUREG is based). Decontamination efforts for these labs would primarily be limited to vacuuming and wiping surfaces, and removal and disposal of hood, glovebox and other ventilation system filters.
- 2.5.2 Costs for preparing sources for shipment, shipping expenses, etc. have been factored into the cost estimates by doubling the burial costs. The burial costs were provided by Mr. William Dornsife, who is the chief technical expert for the Appalachian Compact at PA DER. The basic burial cost of \$100/ft³ for Class A waste, \$250/ft³ for Class B waste and \$500/ft³ for Class C waste was doubled for the current estimate. The practice of doubling the burial cost to estimate the total disposal cost including packing, shipping, etc. is common practice in the radioactive waste business (for LLRW). Since the repository would be located in PA, the shipping costs will be considerably less than current costs. Therefore, the estimates should be very conservative. Additional labor to analyze the unknown sources, prepare the proper documentation, and perform necessary surveys, has been estimated to be equal to the effort proposed for the Philadelphia facility, has been adjusted for inflation and included as a separate line item.
- 2.5.3 Estimated costs for disposal of certain high-level sources (e.g., Am-241 and Pu) were obtained from representatives of US Ecology, the operators of the Hanford, WA and Beatty, NV repositories, based on previous experience. In most cases, these estimated prices include encapsulating the sources in sufficient material (concrete) to meet the specific activity limits for special nuclear material and transuranics. Some of the low-activity Pu calibration sources may be disposed of as LSA waste depending on the concentration limits.
- 2.5.4 Kr-85 gas could present a special disposal problem. However, as the possession of this gas is a requirement to fulfill a USAF contract, GE is pursuing the disposition of these sources through government channels.
- 2.5.5 NORDION (formerly AECL) has provided a quotation and is willing to remove the two high-activity Co-60 sources located in the Gammacell 220 irradiators. Their quote has been adjusted for inflation in this report (a conservative 10% per year inflation rate was assumed).
- 2.5.6 Finally, a satellite "mid-body" is located at the Valley Forge facility. The satellite was contaminated/activated in experiments and may have to be disposed of. This satellite is the property of DNA, however, and therefore the federal government would be responsible for its disposal. Based on the volume of this satellite, these disposal costs could run over \$300,000 (or with volume reduction \$100,000). This amount would have to be provided by DNA, and is not funded by GE.

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4.0 REFERENCES

- 4.1 Code of Federal Regulations, Title 10. *Energy*. Current edition. US Government Printing Office, Washington, DC.
- 4.2 Commonwealth of Pennsylvania, Environmental Quality Board. Proposed Rulemaking: Low-Level Radioactive Waste Management and Disposal. 25 PA Code Ch 236. Pennsylvania Bulletin, 18[29]:3167-3195; July 16, 1988.
- 4.3 *General Requirements for Decommissioning Nuclear Facilities*. 53 FR 123. 24018-24056. Available from: US Government Printing Office, Washington, DC; 1988.
- 4.4 *Standard Format and Content of Decommissioning Plans for Licensees under 10 CFR Parts 30, 40 and 70*. Regulatory Guide 3.65. US NRC. Washington, DC; 1989.
- 4.5 *Standard Format and Content of Financial Assurance Mechanisms Required for Decommissioning under 10 CFR Parts 30, 40, 70 and 72*. Draft Regulatory Guide DG-3002. US NRC. Washington, DC; 1990.
- 4.6 *Standard Review Plan for the Review of Financial Assurance Mechanisms for Decommissioning Under 10 CFR Parts 30, 40, 70 and 72*. NUREG-1337, Rev. 1. US NRC. Washington, DC; 1989.
- 4.7 *Technology, Safety and Costs of Decommissioning Reference Non-Fuel-Cycle Nuclear Facilities*. NUREG/CR-1754. US NRC. Washington, DC; 1981.

5.0 ATTACHMENTS

- 5.1 Decommissioning Funding Plan Cost Estimate Spreadsheet
- 5.2 Quotation from NORDION for removal of Gammacell 220 Irradiators
- 5.3 Inventory of Valley Forge Facility Radioactive Materials Storage Vault and Industrial Health & Safety Laboratory (supplied by GE)

Attachment 5.1

Activity	Isotope	Half-life	Large Sources (Description)	Waste Class	Disposition	Estimated Cost
1 Ci	Am-241	432 y	Need more information on this source	Class C	Special disposal (see text)	\$88,000.00
12 uCi	Am-241	432 y	Need more information on this source	Class C	Special disposal (see text)	\$7,500.00
10 uCi	Cd-109	464 d	Current activity approx. 10 uCi	Class A	Can be placed with other Low-Level waste	
311 uCi	Co-57	271 d	Need assay date (may have decayed away)	Class A	May now be Low-Level	
10 uCi	Co-57	271 d	Need assay date (may have decayed away)	Class A	May now be Low-Level	
3 uCi	Co-57	271 d	Less than 100 uCi as of 1996	Class A	Can be placed with Low-Level waste	
30, 100 &	Co-60	5.27 y	AKCL (R000100) Gamacell 220 Irradiator	Class B	Return to vendor	\$27,000.00
	Co-60	5.27 y	AKCL (R000100) Gamacell 220 Irradiator	Class B		
130 uCi	Co-60	5.27 y	"Experimental Density Gauge"	Class A	Estimated \$200/lb (1 drum)	\$1,500.00
111 uCi	Co-60	5.27 y	Current activity approx. 7 uCi	Class A		
10 uCi	Co-60	5.27 y	Current activity approx. 625 uCi	Class A		
10 uCi	Co-60	5.27 y	Current activity approx. 625 uCi	Class A		
10 uCi	Co-60	5.27 y	Current activity approx. 625 uCi	Class A	Combine several sources into	
10 uCi	Co-60	5.27 y	Current activity approx. 625 uCi	Class A	1 drum @ \$1,500.00/drum	\$1,500.00
10 uCi	Co-60	5.27 y	Current activity approx. 5 uCi	Class A		
7 uCi	Co-60	5.27 y	Need assay date	Class A		
1 uCi	Co-60	5.27 y	Current activity approx. 63 uCi	Class A		
100 uCi	Cs-137	30.2 y	Irradiator/Calibrator	Class B	Estimated \$200/lb (1 drum)	\$1,500.00
30 uCi	Cs-137	30.2 y	Source in lead pig	Class A		
10 uCi	Cs-137	30.2 y	Source in lead pig	Class A		
1 uCi	Cs-137	30.2 y	Source in lead pig	Class A	Combine several sources into	
200 uCi	Cd-153	262 d	Current activity approx. 6 uCi	Class B	1 drum @ \$1,500.00/drum	\$1,500.00
200 uCi	H-3	12.3 y	3n Static Meters	Class A		
100 uCi	H-3	12.3 y	3n Static Meters	Class A		
100 uCi	H-3	12.3 y	3n Static Meters	Class A		
100 uCi	Ir-192	74 d	Source should be decayed to background by now	N/A		
36 Ci	Kr-85	10.7 y	High-Pressure gas cylinders.	Class A	See text (disposal by USAP?)	
300 uCi	Kr-85	10.7 y	Need to know form, etc.	Class A	Special disposal	
100 uCi	Kr-85	10.7 y	Need to know form, etc.	Class A	Special disposal	
12 uCi	Kr-85	10.7 y	Need to know form, etc.	Class A	Special disposal	
4.9 uCi	Kr-85	10.7 y	Gas in 250 psi cylinder	Class A	Special disposal	
2 uCi	Kr-85	10.7 y	Need to know form, etc.	Class A	Special disposal	
8 uCi	Rn-54	313 d	Need assay date	Class A		
130 &						
15 uCi	Ni-63	100 y	Gas Chromatograph source?	Class A		
8 uCi	Ni-63	100 y	Gas Chromatograph source?	Class A	Combine several sources into	
50 uCi	Pu-147	2.62 y	Need assay date	Class A	1 drum @ \$1,500.00/drum	\$1,500.00
50 uCi	Pu-147	2.62 y	Need assay date	Class A		
30 uCi	Pu-238	87.4 y	3 sources (Calibrator?)	Class C	Special disposal (see text)	\$15,000.00
10 uCi	Pu-238	87.4 y	Source in collar (need more information)	Class C	Special disposal (see text)	\$5,000.00
53 pCi	Pu-238	87.4 y		Class A	See text	
6 uCi	Pu-239	24100 y	Need source activities	Class A		
5 uCi	Pu-239	24100 y	Need source activities	Class A	Small activity Pu-239 sources should be	
4 uCi	Pu-239	24100 y	Need source activities	Class A	disposable as Class A waste rather than Class C	
825 uCi	Pu-239	24100 y		Class A		
4891 uCi	Se-75	120 d	If info. correct, source should be decayed to background	N/A		
152 uCi	Se-75	120 d	If info. correct, source should be decayed to background	N/A		
10 Ci	Sr-90	28.6 y	Beta Calibrator	Class B	Estimated \$500/lb (1 drum)	\$3,500.00
100 uCi	Sr-90	28.6 y	Beta Calibrator	Class A	Combine both sources into	
10 uCi	Sr-90	28.6 y	Beta Calibrator	Class A	1 drum @ \$1,500.00/drum	\$1,500.00
15 uCi	Ta-182	115 d	If info. correct, source should be decayed to background	N/A		
5 uCi	Ta-182	115 d	If info. correct, source should be decayed to background	N/A		

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GE Aerospace: Decommissioning Funding Plan

5 mCi	Ta-182	115 d	Need assay date (may have decayed away)	N/A		
29 kg	Pb-212	1.41E+10 y	Hg-Th alloy plates (IZ plates, approx. 300 lbs ea. @ 4% Th)	Class C	Estimated \$1000/ft ³ (12 drums)	= \$30,000.00
10 kg	Pb-212	1.41E+10 y	Total for all other thorium sources (approx.)	Class C	Estimated \$1000/ft ³ (1 drum)	= \$7,500.00
140 mCi	Tl-204	3.78 y		Class A	Combine with LLBN	
50 mCi	Tl-204	3.78 y		Class A	Combine with LLBN	
1600 mg	U-235	7.04E+08 y	Fissionable material may be returnable to DOE	N/A		
< 2 kg	U-238	4.47E+09 y	Total U-238 on hand (mostly natural uranium in chemicals)	Class C	Estimated \$1000/ft ³ (2 ft ³)	= \$2,000.00
Unknown	Mixed Pu/Am		Satellite "Mid-Body" (12' x 12' x 12" container)	Class A	See text (property N/A)	
						<hr/>
Total estimated price for all sources (rounded up)						= \$26,000.00

Disposal of all sub-millicurie sources at Valley Forge facility. Includes contaminated/activated PC boards, etc. Estimated \$200/ft³ (15 - 20 drums) = \$30,000.00

Building	Room	Facilities which may require decontamination/decommissioning*		
VF Bldg. 100	80604	Lab: 2 hoods & glove box, HEPA filters, etc.	Latest survey shows < unrestricted limits	= \$35,000.00
VF Bldg. 100	80614	Lab: Hood, glove box, storage cabinets, HEPA filters, etc.	Latest survey shows < unrestricted limits	= \$27,000.00
Philadelphia	Vault	HVAC system (disassemble & decon or dispose)	Should not be contaminated (survey first)	= \$9,000.00
VF Bldg. 100	Vault	Analyze & remove LLBN & excess sources at VF for disposal**	Price based on contract for ES Vault	= \$125,000.00
Total estimated price for decon/decon				= \$196,000.00
				<hr/>
Total estimated price for all work***				= \$476,000.00

* Cost estimates based on worst-case situation (labs currently are "clean"). Prices are based on HHS/CR-1754 estimates and are considered to be conservative.

** \$91,000 contract has already been awarded for similar work at Be-Entry Systems (Philadelphia) facility.

*** Cost estimates based on assumptions contained in text of report. Does not include sources otherwise noted or sources not inventoried.

JUL 20 1993

PRO-FORMA INVOICE

FROM: **NORDION INTERNATIONAL INC.**

TO: Mr. Don Cheater, Safety Officer
 General Electric Co.
 Astro Space Division
 P.O. Box 8555, Philadelphia, PA
 U.S.A. 19101

DATE: 1990 June 11

OUR REFERENCE: 90-IPQ-288

YOUR REFERENCE:

(215) 354-3917

ITEM	DESCRIPTION	AMOUNT
1.	Disposal of Gammacell 220 #157 and 186R	
	OPTION 1	
	Service work provided by one Nordion technician to pack and crate Gammacell-220, #157, for removal and disposal.	\$13,915.00
	OPTION 2	
	Service work provided by one Nordion technician to pack and crate Gammacell-220, #186R, for removal and disposal.	\$11,560.00
	OPTION 3	
	Service work provided by one Nordion technician to pack and crate Gammacell-220 units, #157 and #186R.	\$18,585.00
2.	Provision of packing and crating material required to put unit into shipping mode.	Included
3.	Shipping charges to be arranged for and paid for by Nordion.	Included
4.	Disposal of Cobalt-60.	Included
5.	NOTES: a) Customer is responsible for rigging. b) Customer must supply service of one technician to assist the Nordion technician.	
TOTAL		As selected

UNLESS OTHERWISE STATED, PRICES DO NOT INCLUDE ANY TAXES OR DUTY

SHIPPING SCHEDULE:

To be determined as mutually agreed

DELIVERY POINT: F.O.B. Destination

CURRENCY: UNITED STATES

TERMS: Net 30 days

QUOTATION VALID UNTIL: 1990 August 31



447 March Road,
 P.O. Box 13500,
 Kanata, Ontario
 Canada,
 K2K 1X8

447 Chemin March,
 C.P. 13500,
 Kanata, Ontario,
 Canada,
 K2K 1X8

ISSUED ON BEHALF OF NORDION:

Terry Kenoe / Terry Kenoe

THIS QUOTATION IS SUBJECT TO TERMS ON FACE AND REVERSE HEREOF.

#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF001	CO60 PIG 10MC (SOURCE)	5X5X6	0.090	15000	4.00	Co60	Nuclear Product-3M, St Paul, MN	PO 037 - 103, 04-N 10/2/86
VF002	MAILING CONTAINER O-D CAN	7.5X7.5X9	0.300	50	0.05		Giannini Controls Corp	Reusable Container Empty
VF003	SR 90 SOURCE 100 MC	3.5X3.5X5	0.030	2500	0.80	Sr 90	3M, St. Paul, MN	lead pig 6/11/78
VF004	CS137	SOURCE 10MC	0.020	80000	11.00	CS137	3M, St. Paul, MN	lead pig 9/3/68
VF005	SE75 152 MC	2.5 X 2.5 X 3.5	0.010	250	0.03	Se75	Radiation Materials Corp, MA	lead pig 10/70
VF006	CO57 SOURCE 311 MC	2.5 X 2.5 X 3.5	0.010	11000	0.03	CO57		lead pig 3/21/74
VF007	SR 90 SOURCE 10 MC	2.5 X 2.5 X 3.5	0.010	11000	1.70	SR 90	3M, St. Paul, MN	lead pig 9/23/68
VF008	KR 85 100 MC	2.5 X 2.5 X 3.5	0.010	12000	1.30	KR 85	3M, St. Paul, MN	lead pig 12/68
VF010	CO 57 3MC	2.5 X 2.5 X 3.0	0.010	80	0.04	CO 57	New England Nuclear	pig 8/7/76
VF011	BA113	4 X 4 X 6.5	0.060	100	0.04	BA 113	New England Nuclear	pig
VF012	GD 153 200 MC	2 X 2 X 4.5	0.010	150	0.04	GD 53		lead pig 12/1/73
VF013	TR 192 100 MC	2 X 2 X 4	0.010	110	0.07	TR 192		lead pig A-71
VF014	CO 109 10 MC	3 X 3 X 6	0.030	150	0.05	CO 109	Radiation Materials Corp., MA	pig inside board container 7/31/70
VF009	CD 137 1.0 MC	4 X 4 X 7	0.060	10000	1.60	cs 137	Applied Physics Inc.	lead pig 12/68
VF015	CO 60 111 MC1	1.5 X 1.5 X 3.5	0.004	15000	1.90	CO 60	Radiation Materials Corp., MA	Lead pig 1/27/69
VF016	U235 5 GALLON CONTAINER <0.01 C	12 X 12 X 14	1.170	22000	1.80	U 235	Ken McGee Nuclear Corp., OK	GE Bldg D - Shephard Lane - Evandale, OH
VF017	CO 57 10 MC	1.5 X 1.5 X 3.5	0.004	120	0.02	CO 57	Radiation Materials Corp., MA	lead pig
VF018	GAMMA SPECTROMETRY STANDARDS MODEL	3 X 6 X 1	0.010	150	0.05	CO60,MM54	Chen Troc	Wooden box; Additional Isotopes: CO 60, MM54,
VF019	SOURCE #38 STANDARDS	3 X 6 X 1	0.010	1500	0.30	Na22,MM54	Baird Atomic	Wooden Box; Additional Isotopes: Co57, Cs137,
VF020	CO 60	3 X 3 X 1	0.005	9000	1.50	Co60	National Bureau of Standards	Cardboard box April 15, 1969
VF021	BA237 CS137	3 X 3 X 1	0.005	14000	0.80	Ba137,Cs137	National Bureau of Standards	12/2/68 Cardboard Box
VF022	SR90	3 X 3 X 1	0.005	90	0.04	SR 90	Radiation Materials Corporation	in plastic box
VF023		1 X 1 X 0.5	0.000	8000	1.20	Al26,Ba133		4 standards in containers 12/17/65; Additional

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#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF024	CL36	3 X 3 X 1	0.005	50	0.03	CL36	Radiation Materials Corp	0.0354uc 12/6/68 8-002
VF025	SE-1176-001 4891NCI	3 X 3 X 5.5	0.030	120	0.02	Se75	No Name	Lead Pig 11/15/76
VF026	CO60 7NCI	9 X 9 X 11	0.520	4000	0.02	Co60	No Name	Lead ig
VF027	TALLIUM-182 0.2HR NOSE CAP	7 X 7 X 10 BOX	0.300	150	0.06	Tallium 182	GE	Taken from RSD (Joe Andrea UB600, 12/21/87)
VF28	T1204 <50NCI	10.5 X 8 X 4	0.200	100	0.08	Tl 204	Twin City Testing Corp	Wooden Box
VF029 29	TA 182 5HC	1575 GRAMS		16000	6.00		Montsano Research Corp., OH	12/12/74 Metal Can
VF030	TA 182 5 NC	4 X 4 X 7	0.070	400	0.14	TA 182		Jack McFadden 4/15/91 LI Pig
VF031	TH282 232	6 X 6 X 9	0.190	2000	0.70	Th282	Montsano Research Corp., OH	Reusable can <1NCI
VF032	TA182 15NCI	4 X 4 X 7	0.070	100	0.06	Ta182	None	ORR-1 6/15/81
VF033	CS137 <30NCI PM147 <50 NCI	6 X 10 X 3	0.100	5000	3.00	Cs137	Twin City	Box 2 Sources
VF034	Kr85 300NCI 2 IN SLEEVE	12 X 8 X 5	0.280	10000	40.00	Kr85	None	Box
VF035	CO57 >0.3NCI CO60 > 1.0 NCI	3 X 3 X 6	0.030	15000	6.00	Co57 Co60	None	1/7/69 Serial #1121.1
VF036	URANYL ACETATE 1 LB BOTTLE POWDER	3 X 3 X 6	0.030	1500	0.40	Uranium	J. T. Baker	
VF037	THORIUM NITRATE 4 OZ BOTTLE	2 X 2 X 4	0.010	7000	0.60	thorium	Fisher Scientific	
VF038	GLASS BOTTLE CAT # 410	2X2X4	0.010	1000	0.10	Uranium	Fisher Scientific	
VF039	PRESSURE GAUGE	17X7X8	0.550	50	0.02	H3	Matheson	Compressed cylinder regula
VF040	118 URANYL ACETATE	3X3X6	0.030	3000	0.12	Uranium	Baker	
VF041	CO60 10NCI (1268) 4SOURCES 1"X.25"	4X4X6.5	0.060	4500	1.40	Co60	none	Lead pig
VF042	THORIATED MAGNESIUM 2X BLBS.	6X4X14	0.190	7000	0.70	Thorium	none	
VF043	53GMS URAN.ACET. 13-URAN. NITR.	4X3X8	0.050	1500	0.13	U & thorium	Fisher, Baker, Ventron, Polysci.	6 glass bottles addition description - 25gms. Thor

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#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF044	4CS137, 22MICRO CI; CO60-1MICROCI	1X.25	0.000	1500	1.40	Cs137	none	Lead pig, 2-Mn54, 1-Co57
VF045	MGTH 3BAGS	12X8X2	0.100	400	0.04			.65 lbs scrap from preassembly 11-14-88
VF046	TA 182 <1MICRO CI	2X2X6	0.014	40	0.04	ta182	Calibration	3-29-80 taken from Joe D'Andrea
VF047	CYLINDER TANK STRAP	2X3X6	0.021	40	0.04		Fisher	
VF048	NATIONAL LEAD CO., URANIUM .6 LBS	4 X 4 X 5	0.050	50000	0.30	Uranium	National Lead Co., Albany, NY	Tin Can Given to us by Dr. S Heiman
VF049	BOX OF SCREENS	7 X 5 X 2	0.040	0	0.03		Isotope Prod. Lab., Burbank, CA	Model X Kit Wooden x-ray box generator
VF050	TL204 <100UCI	1 X 3 X 7	0.010	150	0.04	Tl203	None	Model HH4 S-M 1698 10/12/77 Schoogen
VF051	THORIA <1MCI	9 X 1/160)AMETER	0.004	60000	4.00	Thoria	None	Wooden sticks 2 tubes Additional Description: 17
VF052	TA182	1.5 X 3 X 3	0.008	100	0.03	ta182	9E	(Irradiated c-c Taken from Joe D'Andrea 2/25/88
VF053	SR90 10CI STEEL PIPE	9 X 9 X 12	0.560	150000	120.00	Sr90	None	4/8/66 Steel Pipe
VF054	IONIZATION CELL 15 MC MODEL	2.5 X 2.5 X 5	0.020	100	0.03	Nickel 63	Tracor Inc., Austin TX	Serial # 4021 9/8/78
VF055	TOOLS PLYERS AND SCISSORS	8 X 5 X 11	0.020	40	0.04		None	
VF056	RING CLAMPS	11 X 4 X 2	0.050	40	0.01			
VF057	ELECTRONIC TUBES - BOX	1 X 4 X 1	0.002	40	0.04		Elect Prod Div, EG&G-Salem, MA	
VF058	SMALL WOODEN BOX	1 X 4 X 3	0.010	50	0.05	P1239 stnds	Eberline, Santa FE, NM	Add Isotopes: Plutonium P239 - P238(8.25x10 ⁻⁴ uci)
VF059	BETA REFERENCE 5 SOURCES	1 X 6 X 3	0.010	50	0.03	Pa234.011uCi	New England (MA) Nuclear Corp	Cat #1225 Addl Isos: 14c-12uCi 5/60;
VF060	SWITCH BOX	7 X 2 X 5	0.040	40	0.04			
VF061	PH147 THICKNESS<75UCI	7.5 X 7 X 1	0.030	50000	0.06		None	Model HH4 Serial #5800
VF062	PA234-.05UCI;BI210-. 1UCI;C14-.15UCI	1.5 X 3 X 1.5	0.004	1500	0.04	Pa234, Bi210	Atomic Access Inc., VillyStrmNY	All Beta emitters Additional Isotopes: C14

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#	DESCRIPTION	DIMENSIONS	F13	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF063	FE55 - 10UCI 12/17/68			50	0.05	Fe	Rad Materials Corp., Waltham MA	
VF064	THORIUM FILINGS HM2A-18 >25 LBS	13 X 2.5 X 2	0.040	1000	0.02	Thorium		
VF065	THORIUM 6/24/88 20MG TH .25LBS	13 X 2.5 X 2	0.040	1000	0.02	thorium(bag)		
VF066	HACKSONS CLAMP	16 X 6 X 4	0.200	40	0.04			
VF067	CARBON DISC	6 X 1	0.003	40	0.04			
VF068	MGTH CUTTINGS	10 X 13 X 1	0.080	100	0.04	MgTH		
VF069	NITRIC ACID 32ML	1.5 X 1.5 X 4 (1:4)	0.005	80	0.04			
VF070	NITRIC ACID	1.5 X 1.5 X 4	0.005	80	0.01			
VF071	S S DONUT	2 X 2 X .75	0.004	40	0.03			
VF072	DISC	3 X 3 X .25	0.004	40	0.03			
VF073	DISC SOURCES ENVELOPE	3 X 5 X .125	0.001	80	0.03	14C Sample		
VF074	FILTER PAPER	1.5 X .5 X .5	0.000	40	0.06			
VF075	MGTH .85LBS 4/1/88	14 X 13 X 13	0.040					
VF076	CONTROL BOX	2 X 8 X 6	0.050	40	0.20	mixed-175uCi	HRAM	Exposure box
VF077				150	0.20	Am, 241		Am241, #154 Sn1097 10uCi
VF078	Sr90 .0UCI	1 X 1 X 2	0.001	40000	0.20	Sr90		#69
VF079	SOURCE IN BOLT AM241 2UCI	.75 X .25 X .25	0.000	250000	0.01	Am241		
VF080	AM241 .11UCI	.25 X .25 X 1.5	0.000	40	0.13	Am241		
VF081	AM 241 1/1/60 1UCI	1 X 1 X .25	0.000	40	0.30	Am241 1/60	Isotope Prod Lab, LA CA	0.09% Mc 8/6/70
VF082	Sr90	1 X 1 X .50	0.000	30000	0.14	Sr90	Isotope Prod Lab, LA CA	0.09% Mc 8/6/70
VF083	AM241	1 X 1 X .5	0.000	1000	0.03	Am241	E. M. C.	2/3/65
VF084	AM241	1 X 1 X .25	0.000	3000	0.05	Am241	Isotope Prod Lab, LA CA	4124-1 1/1/69'
VF085	Sr90 .1UCI	1 X 1 X .25	0.000	3000	0.16	Sr90	Isotope Prod Lab, LA CA	

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#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF086	14C (X2) .174UCI; .13UCI	(2) 1 X 1 X .5	0.000	18000	0.13	14C	New England Nuclear	(.13uCi = Gamma: .17 and Hfg: Isotope Prod Lab)
VF087	Am241 1.1UCI	1 X 1 X .5	0.000	2500	0.30	Am241	Isotope Prod Lab	
VF088	Co60	1 X 1 X .5	0.000	10000	1.70	Co60 10.5uCi	Isotope Prod Lab, LA CA	1/1/69
VF089	Am241	1 X 1 X .5	0.000	10000	0.30	Am241 1uCi	Isotope Prod Lab, LA CA	
VF090	Co60 .0515UC 5/6/60	.75 X .75 X .5	0.000	2500	0.30	Am21 1uCi	Isotope Prod Lab, LA CA	
VF091	TL204 .1UCI	.75 X .75 X .5	0.000	200	0.20	TL204		
VF091	U238	.5 X .5 X .25	0.000	150	0.20	U238	Isotope Prod Lab, LA CA	
VF093	U235 500 MG 10/1/70	.75 X .75 X .5	0.000	1000	0.30	U235		
VF094	URANYL NITRATE SOLUTION 100ML	3 X 3 X 8	0.042	150	0.20	Uranium		
VF095	URANYL NITRATE SOLUTION 100ML	5 X 2 X 2	0.010	200	0.10	Uranium		
VF096	(12) S>S>WIEGHING DISHES PLANCHET	2 X .0625	0.000	40	0.10			Additional Description: +2'0" rings, cap
VF097	MgTH RAW	6 X 8 X .25	0.007	8000	0.20	MgTH		
VF098	(A)URANIUM (B)THORIUM NITRATE	12 X 12 X 12	1.000	100000	3.00	U, Po210	(A) Inorganic Inc; (B) Fisher	4/71 (A)100 grams (B)100grams-5uCi in reusable
VF099	MEW METAL FIXTURES	3.5 X 3.5 X 3.5	0.018	50	0.20	?		
VF100	2 DETECTORS	5 X 2.5 X 2.5	0.020	25000	0.30	Amonium	Pyrotronics, Inc. 11/65	Addl Beat: 40000 Addl MR/HR: .3 Addl Iso: 50uCi 241 Addl
VF101	CERAMIC ROUND DISCS 1 BOX	4X4X6 .25 ROUND	0.060	0	0.15			
VF102	FUNNEL	6 X 5 X 2	0.035	0	0.00			
VF103	CONICLE HARD-DISC WARE	5 X 5 X 2	0.029	40	0.08	Pu23 90uCi		
VF104	CD 109 LIQUID	5 X 5 X 5	0.000	40	0.12	Cd 109		
VF105	6 GLASS SLIDES	3 X 2 X .25	0.001	40	0.03			
VF106	PIPE AND VALVE	13 X 1 X 2	0.020	40	0.10			

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#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF107	BAG OF (100) 1 INCH SCREWS	2 X 1 X .5	0.000					
VF108	PO210	1 X 1 X 1.5	0.000			Po210		Beta and Gamma = "Background"
VF109	AM 241 1CI	2.5 X 3 X 2	0.010	2000	0.70	Am241		in stainless cylinder
VF110	PU239 CAP PIPE	2 X 2 X 4	0.010			Pu239		Beta and Gamma = "Background"
VF111	RDDS RA, TH, PM, C	1 X 1 X 5	0.003	300	0.07			
VF112	(2) AM241 .10CI AND 12NCI	1 X 1 X 1.5	0.001	4500				Additional info on (1): 9/4/67 Beta="Background" and
VF113	PU238 10NCI IN COLLAR	2 X 4 X .5	0.002	700	0.60	Pu238		
VF114	PLASTIC	3 X 3 X .5	0.003	40	0.03			
VF115	BETWEEN TWO WOODEN BLANKS	5.5 X 38 X 2	0.260	5000	1.40	Depleted U	Variaoid Chem Co, Elizabeth, NJ	
VF116	2 SOURCES KRYPTON 523-68 10UCI &	.5 X .25 X 1/21	0.000	110000	0.20	Krypton	(-Lite	in box Addtl info on (2): Dim: 10x7x4; FT3:.16;
VF117	HYDROGEN IODIDE ANHYDROUS IN GAS	15 X 3 X 3	0.080	250	0.10	HI	Resrch Org-Inorg Chem Corp, CA	982
VF118	TLDS	2 X 4 X 2	0.009	40	0.10		Teledyne Westwood Labs, NJ	
VF119	B SOURCE	.25" STANDARD	0.000	500000	1.00	B Source	?	Lead Pig 3 x 3 x 5
VF120	THORIUM OXIDE 20MR/HR			20000	0.70	Thorium		100 grams 4/11/80
VF120	THORIUM OXIDE 1-.5"DIAM (COM'T IN	4 X 4 X 6	0.050	3500	0.40	Thorium		100 grams (Additional Description: 3 Metal Discs
VF120	THORIUM OXIDE		0.000			Thorium		
VF121	URANIUM OXIDE	3 X 2 X 3	0.010	1000	0.20	uranium	K & K Labs, Hollywood, CA	50 grams
VF122	PU239 5UCI	1 X .5 X .5	0.000	100	0.04	Pu	Isotope Prod Lab, LA CA	
VF123	KR85 2 X 10 ⁻³ CI	4 X 24 X 4	0.222	30000	0.60	Krypton	McDonnell Douglas Astronautics	Hunting Beach, CA 5lbs
VF124	1 BOX ELECTRONIC PARTS	12 X 12 X 8	0.666	100	0.10			Engineering parts for destructive testing
VF125	KR85 12 X 10 ⁻³ CI	4 X 24 X 4	0.222	8000	1.50	Krypton	McDonnell Douglas, HB, CA	

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#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF126	CO63 3.6UCI 12/61	1 X 1 X .25		1000	0.50	Co60	Chemtrac Corp	
VF127	THORIUM 232	6 X 12 X 12	0.500	2000	0.80	Thorium		Wooden block 6 x 12 x 2
V128	THORIUM OXIDE	3 X 3 X 6	0.031	1500	0.50	Thorium		3 bottles .25 lb
VF129	THORIUM ROD 30 GRAMS	3 X 3 X 10	0.052	3000	1.50	Thorium	Alpha Inorganics, Beverly, MA	
VF130	ELECTRONIC PARTS	6 X 4 X 1	0.074	100	0.05			1 bag circuit board
VF131	DEUTERIUM OXIDE 99% 100 GRAMS	(IN BOX OF 8X8X16)	0.592	100	0.07	Deuterium	K & K Labs, Hollywood, CA	Brown glass bottles
VF131	URANIUM OXIDE	(IN BOX OF 8X8X16)		1500	0.35		K & K Labs, Hollywood, CA	100 grams
VF131	HAFNIUM TETRAFLUORIDE	(IN BOX 8X8X16)		100	0.07	Hafnium	Pennmault	Lot R-10-25-C 25 grams
VF131	URANIUM TETRAFLUORIDE	(IN BOX 8X8X16)		7000	0.50	Uranium	Research Org-Inorg Chem Corp	100 grams
VF131	BI106	(IN BOX 8X8X16)		100	0.07	Bismuth	Research Org-Inorg Chem Corp	100 grams
VF132	BAG PARTS, RING CLAMP, TOWEL,	12 X 15 X 3	0.312	3500	0.90		Fan Steel Inc.	9.5 lbs 2% thorium 10/26/87
VF133	TALLIUM STRAPS 12MR	12 X 12 X 5	0.416	100	0.09	Tallium	Metals Division, Baltimore, MD	12/21/87 Joe D'Andrea
VF135	4 ALPHATRONS MODEL 520 RA226 GAMMA	4 X 12 X 4	0.111	200000	90.00	Ra226		400 ugm
VF136	2 KR85 250UCI	(2) 18 X 2 X 2	0.083			Kr85	MuPRO and NOKE	Whiley 300 cc
VF137	2 ELECTRO STATIC CLASSIFIER MODEL						Thermo-Systems, Inc.	No radioactivity
VF138	4 GRAPHITE SPHERS	5 X 5 X 12	0.173	100	0.20			Reusable container
VF139	2 SPHERS GRAPHITE CASING	2 X 2 X 5	0.016	40000	15.00			10/24/86 - 50 10/24/86-51
VF140	9 ROLLS THORIUM OXIDE SPHERS 1"	2 X 2 X 8	0.018	60000	25.00	Thorium		1" spheres
VF141	CASE PROBE SET 1UCI SR + Y90	12 X 12 X 14	1.167	100	0.20	Srty90	UPA Inc. Woodside, NY	From: Ted Ferlein; Control #416831; 6/21/83
VF142	CERAMIC SPHERE 2"	4 X 4 X 6	0.055	100	0.30			10/24/86 86 10/24/86 87
VF143	BOX HARDWARE RING STAND IMPACT SPHERS	12 X 12 X 14	1.167	17000	4.00			

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#	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
VF144	2 THORIUM OXIDE SPHERES 753GRAMS	4 X 8 X 4	0.074	8000	2.00	Thorium		
VF145	THORIUM OXIDE (BOX) SPHERES 264 GRAMS	6 X 10 X 15	0.520	35000	20.00	Thorium		1.5" spheres 40 spheres 10/26/86
VF146	BOX OF THORIUM OXIDE SPHERE	6 X 10 X 15	0.520	32000	9.00			11 packets Weight = 2.0 grams
VF147	BOX METAL PARTS THORIUM OXIDE	2 X 6 X 4	0.027	48000	16.00	Mo, Thorium		Mo, IR
VF148	BOX OF BOTTLES (5)	4 X 7 X 7	0.113	20000	2.00	Thorium	Fisher Scientific	Thorium Nitrate .5 lb
VF148	URANYL ACETATE			2000	0.30	Uranyl	Baker Chemical, Phila, PA	.25 lb
VF148	THORIUM NITRATE			46000	1.50	Thorium	Atomergic Chems, Long Island NY	1 lb C8169
VF148	URANYL NITRATE	IN BOX		1500	0.30		Fisher Scientific	1 oz
VF148	UNKNOWN	IN BOX		1000	0.20	?	?	#136 1 oz
			14.795	2328950.00	421.18			

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NUMBER	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA MR/HR	ISOTOPE	MANUFACTURER	COMMENTS
ISH01	GAMMA CALIBRATOR	14 X 6 X 6	0.292	2000.00	7.00	Cs137	EDW Corp, Brooklyn, NY	Model 64-764
ISH02	WASTE FROM SIGE DISKS	5 X 5 X 3	0.043	60.00	0.05			Internal disks (GE)
ISH03	SILICON GERMANIUM DISKS	4 X 4 X 2	0.018	150.00	0.03			.5" plachets in three petri dishes
ISH04	C14 WAFER SOURCE	3 X 3 X 1.5 BOX	0.000	100.00	0.04	C14	Eberline	3500 CPM
ISH05	TRITIUM CHROMATOGRAPHIC TAPE	2 X 3 X .75	0.000	100.00	0.03	Tritium		
ISH06	STATIOMASTER BRUSH	(3) 2.5 X 2 X 0.5	1.447	100.00	0.03	Polonium	Nuclear Products Company	El Monte, CA
ISH07	GD203 0.5%; 2.5%; 4%	3 X 2 X 1	0.000	15000.00	0.20	GD203	Unit Process Assemblies	7/24/78 2.5 MR at surface
ISH08	RA-D <100UCI	2 X 2 X 0.5 (BOX)	0.000	7500.00	0.20	RD		S/N 18028; Mod 10; ICA 2-75 ROK 4071 3/79
ISH09	TL-204 <100MCI	2 X 2 X 0.5	0.000	375.00	0.07	TL204	CH	S/N 16384; M/X 4072 3/2/76
ISH10	PM147 <50MCI	2 X 2 X .05	0.000	150.00	0.03	PM 146	CH	S/N 14315
ISH11	URANIUM ACETATE BOTTLE 100 GRAMS	1.5 X 1.5 X 5	0.000	1500.00	0.40	Uranium		Powder
ISH12	URANYL NITRATE CRYSTAL	2 X 2 X 4	0.000	250.00	0.07	Uranium	Baker Chemical Company	20 grams
ISH13	TH METAL POWDER	2 X 2 X 2	0.000	1000.00	0.20	Thalium		325 Mesh
ISH14	THORIUM ROD	0.1 X 0.1 X 9	0.000	100.00	0.03	Thalium		11.45 grams
ISH15	THORIUM MAGNESIUM FILINGS	9 X 12 X 1 BAG	0.063	100.00	0.07	Thalium		100 grams
ISH16	6 SOURCES (PLEASE SEE COMMENTS) (IN BOX)	4 X 6 X 2 (OF BOX)	0.028	50000.00	1.20		Isotope Product Lab	Co60, Na22, Pa55, Cs137 Lead 238
ISH17	7 SOURCES (SEE COMMENTS)	2 X 7 X 1	0.000	4000.00	0.15		Chemtrac	Na22-CT2006, Cd109-CT2001 Cs137-CT2004, Co60-CT2007 Mn54-CT2005, Na133-CT2006
ISH18A	U238 AND CO60	2 X 7 X 1	0.000	1000.00	0.05		Baird	(1) 3 uCi (2) .0058 uCi
ISH18B	CL36 AND U238	2 X 7 X 1	0.000	1000.00	0.05		Baird	(3) .022 uCi (4) 3 uCi
ISH18C	SR90 AND C14	2 X 7 X 1	0.000	1000.00	0.05		Baird	(5) .0292 uCi and (6) .0192 uCi

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NUMBER	DESCRIPTION	DIMENSIONS	FT3	BETA CPM	GAMMA NR/HR	ISOTOPE	MANUFACTURER	COMMENTS
ISH19	CS137 BUCI	3 X 6 X 1.5	0.016	30000.00	4.00	Cs137	Isotopes Products Lab	
ISH20	STATIC METER 3M - 703	9 X 7 X 2	0.073	100.00	0.05		3M Company-Nuclear Products	Tridium H3 200 mCi
ISH21	SOURCE SET MODEL S94-4 <u>PLUTONIUM 60</u> Lr	15 X 12 X 2	0.210	250.00	0.05	<u>Plut 60</u> Lr		Additional Beta CPM: (2) 1000 (3) 9000 (4) 100000
ISH22	2 SOURCES IN BOX - UNKNOWN IN LEAD PIGS	13 X 10 X 5	0.376	10000.00			TRW Systems Group	Beta above is for series 5 Series 6 Beta is 15000 407656-3
ISH23	TRANSISTOR (16)	9 X 6 X 4	0.125	100.00	0.05		E G & G, Salem, MA	
ISH24	21 BOXES TRANSISTOR	8 X 8 X 8	0.296	100.00	0.05		E G & G, Salem, MA	
ISH25	MMS4 (MCI) CAN - 1 LITER	12 X 12 X 12	1.000	37000.00	14.00	MMS4		
ISH26	TRANSISTORS - 7 BOXES	4 X 3 X 5	0.035	100.00	0.05			
ISH27	M163 (MCI) 02-1972-00	8 X 3 X 7	0.097	100.00	0.00	M163	Barian Instruments Division,	12/77 A568
ISH28	WASTE GLOVES	2 X 4 X 4	0.019	100.00	0.05			
ISH29	HARDWARE	3 X 6 X 1	0.011	100.00	0.05			2790 52 MED-2
ISH30	MG CHIPS BAG	8 X 3 X 1	0.014	100.00	0.05			
ISH31	KR85 4.9MCI	18 X 5 X 5	0.260	2000.00	0.05			250 psi Cylinder 5/18/89
ISH32	STATIC METER 3M-MODEL 703 M03115	9 X 7 X 2	0.073	100.00	0.65		3M Co., Nuclear Products	H3 Tridium (box) Box dimensions: 14 x 12 x 4 100 mCi
ISH33	2 SOURCES RED CONTAINERS	.375"Ø 1.5 X 3 X 1.5	0.000	100.00	0.05			
ISH34	CONTAMINATED GLOVES	4 X 4 X 2	0.018	100.00	0.05			
ISH35	STATIC METER MODEL 703	BOX: 14 X 12 X 14	1.360	100.00	0.05		3M Co., Nuclear Products	H3 Tridium
ISH36	SIGE CHIPS RADIATION WASTE 1 BAG	12 X 12 X 12	1.000	200.00	0.05			
			=====	=====	=====			
			6.874	166135.00	29.25			

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