NUCLEAR METALS, INC.

31 January 1996

United States Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Attention: Ms. Marie Miller,
Senior Health Physicist
Site Decommissioning Section,
Division of Radiation Safety, and Safeguards.

Reference: License Nos. SMB-179, SUB-1452
Docket Nos. 040-00672, 040-08866

Attachments: Decommissioning Cost Estimate Update

Dear Ms. Miller:

Please find enclosed two copies of Nuclear Metals, Inc. (NMI) revised decommissioning cost estimate for the above referenced source material licenses.

We have directed our consultants, Applied Consultants, Inc. (ACI) to prepare this revision in accordance with the requirements of 10 CFR 40.36. The revision is the end result of ACI work involving the physical inspection of all licensed areas at NMI and compiling information in concert with our in house facilities department. Our previous estimate in 1994 was modified to reflect substantive changes to our operations under our NRC licenses, including the removal of both government and NMI owned machinery, process facilities and ancillary support equipment. We have also included an addition of a new government owned facility which was not present when the previous estimate was compiled.

As we have indicated previously the nature of our business involving the use of licensed materials requires us to continuously change the configuration of our facilities to support various government and commercial product lines. The attached cost estimate report includes up to date configuration of plant equipment and processes as well as the latest information available on government and commercial burial rates. We have also revised our estimate to incorporate new technology available to us now, which reduces our cost considerably to disposition obsolete or no longer needed process equipment and machine tools.

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Army activity on our PL 95-804 request continues in a positive manner. On 17 January 1996, the Army received a favorable audit report from the Defense Contractor Audit Agency (DCAA) regarding NMI's cost proposal (part of the PL 95-804 package) submitted to the Army in September 1995. We understand that this report was the last information the Army's procurement contracting officer (PCO) needed before making his recommendation to the Armanent Research Development and Engineering Center (ARDEC) Commanding General We have been promised a letter form the ARDEC general when he has forwarded their recommendation to higher headquarters for ultimate Army approval. We will of course provide a copy of this letter upon our receipt.

We again want to express our willingness to visit with you and Dr. Bellamy, to expand upon any of the information contained in this letter and enclosures.

NMI appreciates your assistance and consideration in this matter, if you have any questions or comments, please direct them to the undersigned.

Sincerely,

Frank J. Vumbaco

Frank J. Vumbaco
Vice President, Health and Safety

enclosures

DECOMMISSIONING COST ESTIMATE UPDATE

Prepared For:

NUCLEAR METALS, INC.

Concord, Massachusetts

January, 1996

Prepared By:

ACI | Applied Consultants, Inc.
1501 Main Street-Suite 40, Tewksbury, Massachusetts 01876

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NUCLEAR METALS, INC

CONCORD, MASSACHUSETTS

DECOMMISSIONING COST ESTIMATE UPDATE

PREPARED FOR:

Nuclear Metals, Inc.
Concord, Massachusetts

PREPARED BY:

Applied Consultants, Inc.
Tewksbury, Massachusetts

January, 1996
Project No. 1091

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TABLE OF CONTENTS

1.0 NARRATIVE 1-3

1.1 INTRODUCTION 1-3

1.2 SCOPE 1-3

1.3 SUMMARY OF ACTIVITIES CONDUCTED TO DATE 1-4

2.0 DECOMMISSIONING COST ESTIMATE 2-1

3.0 COST ESTIMATE ADJUSTMENT SCHEDULE 3-1

LIST OF TABLES

TABLE 2-1 COST ESTIMATE SUMMARY 2-2

TABLE 2-2 UNIT COST FOR WORKERS 2-3

TABLE 2-3 DIMENSIONS OF CONTAMINATED FACILITIES AND EQUIPMENT 2-4

TABLE 2-4 PLANNING, ADMINISTRATION, AND PROJECT MANAGEMENT 2-5

TABLE 2-5 HOURS AND COSTS FOR DECOMMISSIONING OF BUILDINGS A AND B 2-6

TABLE 2-6 HOURS AND COSTS FOR DECOMMISSIONING OF BUILDING C 2-7

TABLE 2-7 HOURS AND COSTS FOR DECOMMISSIONING OF BUILDING D 2-8

TABLE 2-8 HOURS AND COSTS FOR DECOMMISSIONING OF BUILDING E 2-9

TABLE 2-9 HOURS AND COSTS FOR DECOMMISSIONING ANCILLARY AREAS 2-10

TABLE 2-9A HOURS AND COSTS FOR DECOMMISSIONING HOLDING BASIN 2-11

TABLE 2-10 EQUIPMENT AND SUPPLIES 2-12

TABLE 2-11 WASTE DISPOSAL 2-13

TABLE 2-12 RESTORATION OF CONTAMINATED AREAS 2-14

1.0 NARRATIVE

1.1 Introduction

Nuclear Metals, Inc. previously submitted a Decommissioning Plan, Decommissioning Cost Estimate and Decommissioning Funding Plan in 1994 in accordance with the requirements of 10 CFR 40.36. Since that time, NMI has ceased operations of several DU process lines and has successfully dispositioned related process equipment which was included in the original cost estimate. In addition, one DU related piece of equipment has been added in support of a new production process. Lastly, NMI plans to utilize a greatly expanded metal melt capability of its subsidiary, Carolina Metals, Inc (CMI) of Barnwell South Carolina to achieve significant cost savings for waste disposal of DU contaminated process equipment throughout the NMI facility

The majority of equipment dispositioning activities were conducted in Building D The total amount of equipment dispositioned since the original cost estimate represents approximately 2 of all DU related equipment in Building D A smaller percentage of equipment disp ning was conducted in Buildings C and E. In total, approximately a half million pound comprising 364,000 pounds of contaminated process equipment and 150,000 pounds of support and ancillary utilities, have been removed from the NMI facility. More than 3400 laborer man hours were expended in the conduct of these efforts These activities, coupled with new metal melt capabilities at CMI have resulted in an appreciable impact on the original cost estimate as described herein.

1.2 Scope

This Decommissioning cost estimate update is provided in support of the Decommissioning Funding Plan submitted in accordance with 10 CFR 40.36. This Estimate was developed using the guidance set forth in Regulatory Guide 3 66 "Standard Format and Content of Financial Assurance Mechanisms Required for Decommissioning Under 10 CFR Parts 30, 40, 70, and 72". This Cost Estimate Update provides a summary of equipment disposition activities conducted to date as well as a new set of decommissioning cost estimate tables which are shown in section 2. Complete backup supporting the cost estimate and revised cost estimate is maintained on file in NMI's health and safety department.

1.3 Summary of Activities Conducted to Date

As stated in the original Decommissioning Plan and cost estmate, a significant portion of the contamination and contaminated equipment located at the NMI site is the direct result of Department of Defense (DOD) contracts using government furnished material (GFM) As manufacturing activities associated with certain process lines are no longer needed, it is the position of NMI that the responsible government agency will bear a significant portion of the costs associated with Decommissioning and Decontamination (D&D). One such example of this was the recent contract between NMI and the U S Army Armament, Munitions and Chemical Command (AMCCOM) in which AMCCOM provided the funds necessary to decontaminate and/or disposition a significant portion of contaminated process equipment related to NMI's prior manufacturing activities for AMCCOM The equipment dispositioned under this contract represented approximately 20% of all DU process equipment located in Building D at the NMI site, and a corresponding reduction in overall equipment related costs has been realized. In addition, NMI has succesfully dispositioned a smaller portion of NMI owned contaminated equipment located within the complex as part of internal housekeeping. The historical allocation of DU related contracts at NMI is 96% government and 4% commercial

NMI has added one DU related piece of equipment in its Hydromet Process This process accepts metallic uranium wastes, such as machine turnings and grinding swarf, and strips the waste of any residual grease or coolants with an aqueous degreaser A series of additional steps are taken with the resulting product being uranium tetraflouride, or dried green salt, which is further processed making it suitable for reduction to metal Costs to D&D this equipment have been estimated and added back to the revised cost estimate

Another significant change which has impacted the Decommissioning Cost Estimate is the expanded metal melt capability of CMI CMI has installed a remelt furnace capable of melting approximately 1 5 million pounds of contaminated steel per year with ready expansion capabilities to double that rate The furnace is capable of melting about 3500 pounds in a single pour and is operable on a multi-shift basis The amount of slag generated is about 5% of the initial melt weight and the cost to bury the slag is about 5 cents per pound o metal melted Factory costs for melting in-house materials is about $.50 per pound, or about half of the cost declared in the original cost estimate This change has resulted in a significant reduction in the cost of waste disposal for contaminated process equipment

2.0 DECOMMISSIONING COST ESTIMATE

The revised estimated cost for decommissioning is $11,605,167 00, which includes a 25% contingency factor. This estimate reduces the original estimate by approximately $2,000,000 The reduction has been realized primarily as a result of recent equipment disposition efforts conducted, in-house metal melt capability at NMI's subsidiary CMI, and establishment and allocation of contracted bulk waste disposal rates at Envirocare of Utah, Inc The following tables provide a detailed breakdown of this cost estimate formatted to provide the information as called for in Regulatory Guide 3.66.

Nuclear Metals, Inc.
Site Decommissioning

Table 1

Cost Estimate Summary

Task	Labor	Materials	Waste Disposal	Restoration	Total Cost
Planning, Administration, and Project Management	$224,055	NA	NA	NA	$224,055
Buildings A and B	$70,019	$9,000	$20,918	$5,000	$104,936
Building C	$1,055,993	$130,000	$330,775	$20,000	$1,536,768
Building D	$1,121,365	$130,000	$362,862	$20,000	$1,634,227
Building E	$1,110,470	$130,000	$359,279	$20,000	$1,619,749
Holding Basin	$1,134,516	$500,000	$2,036,822	$110,000	$3,781,338
Ancillary Facilities and Land Areas	$278,230	$30,000	$64,831	$10,000	$383,061
SUBTOTAL	$4,994,646	$929,000	$3,175,488	$185,000	$9,284,134
CONTINGENCY @25%	$1,248,662	$232,250	$793,872	$46,250	$2,321,033
TOTAL ESTIMATED COST	$6,243,308	$1,161,250	$3,969,359	$231,250	$11,605,167

NOTES:

1. All costs are in 1996 U.S. Dollars

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Site Decommissioning

Table 2

Unit Cost For Workers

Position	Basic Salary ($/yr)	Burden ($/yr)	Cost ($/yr)	Hourly Cost ($/hr)
Supervisor/Foreman	$55,765	$14,000	$69,765	$34
Engineer	$56,243	$14,000	$70,243	$34
Technician	$34,070	$14,000	$48,070	$23
Health Physicist	$63,502	$14,000	$77,302	$37
Laboror	$31,325	$14,000	$45,325	$22
Clerical	$25,147	$14,000	$39,147	$19
Other	$37,856	$14,000	$51,856	$25

NOTES:

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Site Decommissioning

Table 3

Dimensions of Contaminated Facilities and Equipment

Area	Dimensions	Units
Amount of Floor Space	13741	m2
Amount of Wall Space	16999	m2
Amount of Piping	17411	m
Amount of Ventilation Ductwork	9433	m
Amount of Contaminated Soil	100	m3
Amount of Contaminated Material (Holding Basin)	3523	m3
Amount of Contaminated Process Equipment	1718000	lbs.

NOTES:

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Table 4

Planning, Administration and Project Management

Task	Man Hours				Total Cost
	Supervisor	Health Physicist	Clerical	Other	
Planning and Preparation	500	500	500		$44,811
Administration and Project Management	2000	2000	2000		$179,244
TOTAL	2500	2500	2500		$224,055

NOTES:

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Site Decommissioning

Table 5

Hours and Costs for Decomissioning of Buildings A and B

Task	Man Hours				Total Cost
	Health Physicist	Foreman	Technician	Laboror	
Area Preparation and Mobilization		40	160		$5,049
Equipment Rental					
Remove/Dismantle Process Equipment				1500	$32,686
Remove/Dismantle/Clean Components		40		160	$4,837
Clean Walls/Ceilings		40		160	$4,837
Clean/Scarify Flooors		40		160	$4,837
Radiation Surveys			640		$14,791
Quality Assurance	80				$2,981
TOTAL	80	160	800	1980	$70,019

NOTES:
Assumes a duration of 4 weeks with a crew of 4 laborors, 4 technicians, and 1 foreman for facilities, following the disposition of process equipment.

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Site Decommissioning

Table 6

Hours and Costs for Decomissioning of Building C

Task	Man Hours				Total Cost
	Health Physicist	Foreman	Technician	Laboror	
Area Preparation and Mobilization		80	400	400	$20,662
Equipment Rental					$20,000
Remove/Dismantle Process Equipment				22000	$479,399
Remove/Dismantle/Clean Components		1040		5200	$148,434
Clean Walls/Ceilings		480		2400	$68,508
Clean/Scarify Flooors		480		2400	$68,508
Radiation Surveys			10000		$231,106
Quality Assurance	520				$19,376
TOTAL	520	2080	10400	32400	$1,055,993

NOTES:
Assumes a duration of 26 weeks with a crew of 10 laborors, 10 technicians, and 2 foreman for facilities, following the disposition of process equipment.

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Site Decommissioning

Table 7

Hours and Costs for Decomissioning of Building D

Task	Man Hours				Total Cost
	Health Physicist	Foreman	Technician	Laboror	
Area Preparation and Mobilization		80	400	400	$20,662
Equipment Rental					$20,000
Remove/Dismantle Process Equipment				25000	$544,772
Remove/Dismantle/Clean Components		1040		5200	$148,434
Clean Walls/Ceilings		480		2400	$68,508
Clean/Scarify Flooors		480		2400	$68,508
Radiation Surveys			10000		$231,106
Quality Assurance	520				$19,376
TOTAL	520	2080	10400	35400	$1,121,365

NOTES:
Assumes a duration of 26 weeks with a crew of 10 laborors, 10 technicians, and 2 foreman for facilities, following the disposition of process equipment.

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Site Decommissioning

Table 8

Hours and Costs for Decomissioning of Building E

Task	Man Hours				Total Cost
	Health Physicist	Foreman	Technician	Laboror	
Area Preparation and Mobilization		80	400	400	$20,682
Equipment Rental					$20,
Remove/Dismantle Process Equipment				24500	$533,876
Remove/Dismantle/Clean Components		1040		5200	$148,434
Clean Walls/Ceilings		480		2400	$68,508
Clean/Scarify Flooors		480		2400	$68,508
Radiation Surveys			10000		$231,106
Quality Assurance	520				$19,376
TOTAL	520	2080	10400	34900	$1,110,470

NOTES:
Assumes a duration of 26 weeks with a crew of 10 laborors, 10 technicians, and 2 foreman for facilities, following the disposition of process equipment.

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Site Decommissioning

Table 9

Hours and Costs for Decomissioning of Anciliary Facilities and Areas

Task	Man Hours				Total Cost
	Health Physicist	Foreman	Technician	Laboror	
Area Preparation and Mobilization		80	400	400	$20,662
Equipment Rental					$10,000
Remove/Dismantle/Clean Components		80		500	$13,597
Clean Walls/Ceilings		280		1300	$37,784
Clean/Scarify Flooors		280		1300	$37,784
Remove Underground Piping; Excavation		280		1300	$37,784
Radiation Surveys			4800		$110,931
Quality Assurance	260				$9,688
TOTAL	260	1000	5200	4800	$278,230

NOTES:
Assumes duration of 13 weeks with a crew of 10 laborors, 10 technicians, and 2 foremen.

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Site Decommissioning

Table 9a

Hours and Costs for Decomissioning of Holding Basin

Task	Man Hours				Total Cost
	Engineer	Supervisor	Technician	Laboror	
Engineering/Administration	2100		1040	1040	$124,945
Excavation Subcontract					$900,000
Waste Processing				1660	$36,173
Radiation Surveys			2080		$48,070
Quality Assurance		750			$25,328
TOTAL	2100	750	3120	2700	$1,134,516

NOTES:

Nuclear Metals, Inc.
Site Decommissioning

Table 10

Equipment and Supplies

Area or Building	Equipment and Supplies Needed	TOTAL ($)
Buildings A and B	$9,000	$9,000
Building C	$130,000	$130,000
Building D	$130,000	$130,000
Building E	$130,000	$130,000
Holding Basin	$500,000	$500,000
Ancillary Facilities and Land Areas	$30,000	$30,000
TOTAL	$929,000	$929,000

NOTES:

Costs are for equipment, tools and supplies necessary to complete the decommissioning. Holding basin cost includes cost of engineered enclosure.

Nuclear Metals, Inc.
Site Decommissioni)

Table 11

Waste Disposal

Waste Type	Volume (m3)	Disposal Containers					Unit Waste Burial Cost ($/m3)	Waste Disposal Cost	Transportation	Total Cost
		No. Boxes	No. Bags	Unit Cost Boxes	Unit Cost Bags	Total Cost Containers				
Contaminated Debris	510	94	300	$100	$18	$14,793	$386.02	$196,967	$90,097	$301,857
Contaminated Soil	100		118	$100	$18	$2,119	$386.02	$38,602	$17,657	$58,378
Holding Basin Material	3523		4148		$18	$74,656	$266.27	$938,166	$1,024,000	$2,036,822
Contaminated Process Equipment	1,718,000 lbs.						.55/lb. melt	$661,430	$117,000	$778,430
TOTAL	4134	94	4566			$91,567				$3,175,488

NOTES:
Volume of contaminated debris based on an approximate 1% dimension to waste ratio.
Unit waste burial costs for volumetric waste based on allocation of currently contracted government and commercial rates with Envirocare of Utah, Inc.
Costs for contaminated equipment based on metal melting 70% of process components at CMI factory rate of $.55/lb, which includes 0.05/lb for slag disposal.
Remainder is decontaminated with labor costs as shown in tables 5-8

Nuclear Metals, Inc.
Site Decommissioning

Table 12

Restoration of Contaminated Areas

Area or Building	Painting, Backfill, and Other Restoration	TOTAL ($)
Buildings A and B	$5,000	$5,000
Building C	$20,000	$20,000
Building D	$20,000	$20,000
Building E	$20,000	$20,000
Holding Basin	$110,000	$110,000
Ancillary Facilities and Land Areas	$10,000	$10,000
TOTAL	$185,000	$185,000

NOTES:

Costs are for painting, backfilling, patching, and other actions necessary for restoration of previously contaminated, decommissioned areas.

3.0 COST ESTIMATE ADJUSTMENT SCHEDULE

Nuclear Metals, Inc. will review the Cost Estimate associated with the Decommissioning of facilities at the NMI site concurrently with future NRC license renewals Factors which will be considered in the adjustment include Inflation rate during the previous ten (10) year period, changes to NRC regulations governing Decommissioning requirements, changes in NRC residual contamination limits, or other pertinent regulatory or corporate changes which may have a significant impact on the costs associated with any future decommissioning of the NMI site