



EXECUTIVE VICE PRESIDENT AND PROVOST  
THE UNIVERSITY OF TEXAS AT AUSTIN

Main Building 201 • Austin, Texas 78712 • (512) 471-4363

November 14, 1990

Mr. Charles J. Haughney, Chief  
Division of Industrial and Medical Safety  
Office of Nuclear Material Safety and Safeguards  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

REF: Docket 70-157, License SNM-180  
10CFR 70.25(a) Certification of Funds  
for Decommissioning

Dear Mr. Haughney:

The following information is being provided pursuant to 10CFR 70.25(c)2. The University of Texas at Austin has determined that the estimated cost of decommissioning SNM-180 license activities is \$20,000. This cost represents less than 0.01 percent of the annual operating budget. Certification is hereby provided that the necessary funds will be made available at the time of decommissioning. Furthermore, no provision for adjusting cost estimates during the facility life are considered necessary or practical, considering the total dollar cost and the amount of available operating funds (see 10CFR 70.25(e)).

Sincerely yours,

G. J. Fonken  
Executive Vice President  
and Provost

GJF/bp

cc: Dean Herbert H. Woodson  
Professor Kenneth Diller  
Professor Bernard Wehring

1/1

9011270192 901114  
PDR ADOCK 07000157  
C PDC

NFIR

SNM License #SNM-180  
Decommissioning Requirements

Materials on the license are PuBe neutron sources and a subcritical assembly of 20% uranium 235 enrichment. Three of the license materials are plutonium-beryllium sealed sources that are exempt from the regulation requirements. The disposal requirements for these sources will most likely require a return to the Department of Energy to allow recovery of the materials prior to ultimate disposal.

Only the uranium-235 and any byproduct material of the subcritical assembly's operation require consideration for decommissioning. The following calculation indicates that the material requires a fund of \$750,000! These decommissioning requirements of 10CFR part 70 represent unacceptable conditions for this SNM-180 license materials.

10CFR 70.25(a) decision limit	$10^5$ factor
10CFR 20 appendix C uranium 235	.01 $\mu$ curie

$$10^5 \times .01 \times 10^{-6} = .001 \text{ curie}$$

40CFR 173.434 item 20	$10^{-5}$ curie/gram
10CFR 70 license material	470 grams

$$470 \text{ grams} \times 10^{-5} \text{ curie/gram} = .0047 \text{ curie}$$

$$\frac{.0047 \text{ curie}}{.001 \text{ curie}} = 4.7 \text{ times decision level}$$

The physical form of the subcritical assembly material is uranium dioxide uniformly dispersed in a matrix of polyethylene. License conditions set by NMSS require that the assembly be examined for "leakage" of alpha activity by the same criterion as a sealed PuBe neutron source. Yet the assembly does not meet any other criteria for consideration as a sealed source. The result of this type of testing would also set a limit on the amount of potential byproduct material contamination. Any beta contamination that occurs during use of the assembly materials would be either taken care of subsequent to each use of the assembly or discovery by radiation program surveys. The only contamination will be the assembly, possibly materials that are in contact with the assembly, and experiment materials that are part of the assembly applications. The quantity of byproduct material is not considered a factor in the decommissioning since the cost of disposal will be set by the volume, waste classification and total curies.

The issue of byproduct material within the assembly has no effect on the conclusion. Direct disposal of this assembly would be the minimum charge for one barrel (55 gallon) with no surcharge for activity, and ignores the recovery value of the 470 grams of uranium 235 isotope for which the market is unknown. However, requirements for the recovery of uranium 235 as for plutonium 239 in sealed sources may also prevent direct disposal.

Total decommissioning costs for use of the subcritical assembly depend on the radioactive waste site disposal charges and transportation charges to the

disposal site. An additional cost will be the radiation survey for alpha, or beta, contamination in the immediate area of the materials use, an area of 84 m<sup>2</sup>. The cost of disposal, transport, and survey is then arbitrarily set at \$10,000. The cost is figured at \$20/m<sup>2</sup> area cleanup, disposal cost of 6200 \$/m<sup>3</sup> of waste, and a 20% allowance for transportation costs.

The estimated amount of a fund for decommissioning the SNM-180 license activities represents 0.002% of the annual operating budget of The University of Texas at Austin.

			<u>total</u>
Cleanup	84m <sup>2</sup>	\$20/m <sup>2</sup>	\$1680
Disposal charge		\$6200/m <sup>3</sup>	\$1280
	(1996 \$'s, 1 55 gal. barrel)		
Transportation			\$ 256
	(20% of disposal)		
Contingency (escalation)			<u>\$6784</u>
			\$10000

License SNM-180 Materials  
Decommissioning Requirements

	<u>material</u>	<u>grams</u>	<u>isotope</u>	<u>%</u>	<u>grams</u>	<u>comment</u>
1 curie PuBe source	plutonium	16	239		15	sealed(exempt)
2 curie PuBe source	plutonium	32	239		30	sealed(exempt)
5 curie PuBe source	plutonium	80	239		74	sealed(exempt)
Subcritical assembly	uranium	2375	235	20	470	unsealed