NRC FORM 7
(1-89)
10 CFR 110

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB
3150-0027
EXPIRES 12-31-90

DCS/DFO2

APPLICATION FOR LICENSE TO EXPORT NUCLEAR MATERIAL AND EQUIPMENT *(See Instructions on Reverse)*

1. APPLICANT'S USE →	a. DATE OF APPLICATION	b. APPLICANT'S REFERENCE	2. NRC USE →	c. DOCKET NO.	b. LICENSE NO.
	1/15/91	EAF A04026		11004328	XB001282

3. APPLICANT'S NAME AND ADDRESS	RIS	4. SUPPLIER'S NAME AND ADDRESS *(Complete if applicant is not supplier of material)*	RIS
a. NAME Los Alamos National Laboratory		Same as Applicant	
b. STREET ADDRESS P.O. Box 990, SM-30 Bikini Road		a. NAME	
c. CITY Los Alamos; STATE NM; ZIP CODE 87545		b. STREET ADDRESS	
d. TELEPHONE NUMBER *(Area Code – Number – Extension)* (505) 665-2194 (Sarah Heath)		c. CITY; STATE; ZIP CODE	

5. FIRST SHIPMENT SCHEDULED	6. FINAL SHIPMENT SCHEDULED	7. APPLICANT'S CONTRACTUAL DELIVERY DATE	8. PROPOSED LICENSE EXPIRATION DATE	9. U.S. DEPARTMENT OF ENERGY CONTRACT NO. *(If Known)*
when license is granted	only one shipment	n/a		unknown

10. ULTIMATE CONSIGNEE	RIS	11. ULTIMATE END USE *(Include plant or facility name)*	
a. NAME Dr. Gerald H. Lander, Institut Laue-Langevin		Research to understand the low temperature magnetic and electronic properties of the $AnBe_{13}$ series (An=U, Np and Pu) (see justification attached)	
b. STREET ADDRESS 156X, 38042 Grenoble Cedex			
c. CITY – STATE – COUNTRY France		11a. EST. DATE OF FIRST USE July, 1991	
12. INTERMEDIATE CONSIGNEE	RIS	13. INTERMEDIATE END USE	
a. NAME Dr. J. Rebizant, European Institute for Transuranium Elements		To prepare the material for the research described in box 11 above and in the attached justification.	
b. STREET ADDRESS Postfach 2340, D-7500 Karlsruhe			
c. CITY – STATE – COUNTRY West Germany		13a. EST. DATE OF FIRST USE when licensed to ship	
14. INTERMEDIATE CONSIGNEE	RIS	15. INTERMEDIATE END USE	
a. NAME n/a		n/a	
b. STREET ADDRESS			
c. CITY – STATE – COUNTRY		15a. EST. DATE OF FIRST USE	

16. NRC USE	17. DESCRIPTION *(Include chemical and physical form of nuclear material; give dollar value of nuclear equipment and components)*	18. MAX. ELEMENT WEIGHT	19. MAX. WT. %	20. MAX. ISOTOPE WEIGHT	21. UNIT
	11.29 g of $NpBe_{13}$ in 2 samples each containing 3.746 g Neptunium^{237} - total 7.492 g 1.899 g Beryllium - total 3.798 g	Total Np	-	-	

22. COUNTRY OF ORIGIN - SOURCE MATERIAL	23. COUNTRY OF ORIGIN - SNM WHERE ENRICHED OR PRODUCED	24. COUNTRIES WHICH ATTACH SAFEGUARDS *(If Known)*
U.S.A.	U.S.A.	unknown

25. ADDITIONAL INFORMATION *(Use separate sheet if necessary)*

See "Justification for Shipment of $NpBe_{13}$ Samples to Europe" attached.

This experiment will not contribute to weapons research.

26. The applicant certifies that this application is prepared in conformity with Title 10, Code of Federal Regulations, and that all information in this application is correct to the best of his/her knowledge.

27. AUTHORIZED OFFICIAL	a. SIGNATURE	b. TITLE
	Sarah Heath	Customs Office Program Manager

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XB001282
11004378

Justification for Shipment of $NpBe_{13}$ Samples to Europe

The investigation on samples of $NpBe_{13}$ represent a collaboration between basic research scientists at LANL, AT&T Bell Labs in New Jersey and the European Institute for Transuranium Elements (EITU) in Karlsruhe, West Germany.

The material, in the form of polycrystalline ingots of total weight ~11g (7.5g ^{237}Np), has been produced at LANL. An additional small portion of the same material is being held at LANL for measurements of the low-temperature resistivity and specific heat. The main part of the sample will be shipped to EITU Karlsruhe, West Germany. At that Institute, it will be prepared for major experiments at the unique High-Flux Reactor at the Institute Laue-Langeuim (ILL) in Grenoble, France. The experiments form part of an effort to understand the low-temperature magnetic and electronic properties of the $AnBe_{13}$ series (An=U, Np and Pu). Experiments on single crystals of UBe_{13} have already been performed at ILL.

The results of these investigations will be published in the open literature and hopefully will contribute to our understanding of the so-called "heavy-fermion" state that has been found in these materials at low temperature. The information obtained in these investigations is unclassified and has no commerical value.

The cost of transporting the sample from LANL to EITU in Karlsruhe will be paid by LANL. Further costs involving the preparation of the material for the experiments and shipments to France will be paid by EITU, Karlsruhe. It is anticipated that this research will be concluded within two (2) years. The material will be returned to LANL (expenses paid by EITU) unless a further agreement for future experiments is negotiated. The experiments are nondestructive. Small (mg) losses are to be anticipated in transferring the material between containers and preparation for the experiment, but otherwise the total material will be returned to LANL.

J. Smith, LANL
Z. Fisk, LANL
G.H. Lander, EITU, Karlsruhe