



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
2000 NAVY PENTAGON  
WASHINGTON, DC 20350-2000

5090  
N455/U132374  
April 10, 2015

Ms. Orysia Masnyk Bailey  
U.S. Nuclear Regulatory Commission  
Region I, DNMS  
2100 Renaissance Blvd, Suite 100  
King of Prussia, PA 19406-2713

*030-29462*

Subj: REQUEST FOR INFORMATION CONCERNING SPACE AND NAVAL  
WARFARE SYSTEMS CENTER PACIFIC

The Navy's radioactive materials program is licensed with the Nuclear Regulatory Commission (NRC) under Master Materials License (MML) No. 45-23645-01NA. The Navy is requesting both a delay in submitting a decommissioning plan and an alternate schedule for submittal of the decommissioning plan for Naval Radioactive Material Permit (NRMP) No. 04-66001-D1NP at Space and Naval Warfare Systems (SPAWAR) Center Pacific, San Diego, CA pursuant to 10 CFR 30.36(g)(2). A decommissioning plan will be required for the SPAWAR NRMP.

Pursuant to our request you submitted a request for additional information answered below and in the enclosures.

Item No. 1: List the Atomic Energy Commission (AEC) and NRC license numbers that were in place for SPAWAR before the Navy was issued a Master Materials License.

Response: See enclosure (1), the preliminary information from the contractor performing the Historical Radiological Assessment (HRA).

Item No. 2: List the types, amounts, and forms of radioactive material used at SPAWAR.

Response: See enclosure (1), the preliminary information from the contractor performing the HRA.

Item No. 3: List the authorized uses of radioactive material at SPAWAR.

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Response: See enclosure (1), the preliminary information from the contractor performing the HRA. The command possessed a broad scope license under the NRC from 1970. This license converted to a broad scope NRMP in 1987. All materials possessed under these licenses were utilized for research and development purposes.

Item No. 4: List the locations where radioactive material was used at SPAWAR.

Response: See enclosure (1), the preliminary information from the contractor performing the HRA. Radioactive material was used primarily at several locations in the State of California, predominantly in San Diego.

Item No. 5: Provide a current inventory of licensed material at SPAWAR.

Response: Enclosure (2) provides radioactive material inventory current as of 12 March 2015. Over 180 items were transferred as Low Level Radioactive Waste (LLRW) last year. Six items are scheduled to be transferred to the University of California, San Diego, pending an amendment to their state license. The remaining licensed items will be transferred as LLRW or returned to the Department of Energy. Other radioactive materials retained at SPAWAR are either exempt from licensing or generally licensed.

Item No. 6. Provide the date when you estimate decommissioning will be completed at SPAWAR. The NRC is granting an extension for completion of decommissioning and this is the date we will use for the extension.

Response: 30 March 2028

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April 10, 2015

If you have additional questions, please do not hesitate to contact me via telephone at (703) 695-5259 or through electronic mail at douglas.w.fletcher@navy.mil.

Sincerely,

FLETCHER.DOUGLAS.W  
INTHROP.1032081050

Digitally signed by  
FLETCHER.DOUGLAS.WINTHROP.1032081050  
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,  
ou=USN,  
cn=FLETCHER.DOUGLAS.WINTHROP.1032081050  
Date: 2015.04.13 10:53:41 -0400

D. W. FLETCHER  
CDR, Medical Service Corps,  
United States Navy  
Executive Secretary  
Naval Radiation Safety Committee

Enclosure: 1. Preliminary Information from the Contractor  
Performing the HRA  
2. SPAWAR Radioactive Material Inventory

Copy to: Naval Sea Systems Command (04N)  
Naval Sea Systems Command Detachment, Radiological  
Affairs Support Office (NAVSEA DET RASO)

License No. 04-05414-03

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	17-Jan-73		a. Co-60 b. Cs-137	a. sealed source b. sealed source	a. two sources of 100 millicuries, one source of 10 millicuries and one source of 1 millicurie b. 1 source of 100 millicuries	study of radiation effects on infrared detectors	NELC San Diego, CA 92152	
NRC	1	12-May-77	Licensee's name and address changed: Naval Electronics Laboratory Center (NELC), San Diego, CA to Naval Ocean System Center (NOSC), San Diego, CA					NOSC, San Diego	
NOSC ltr to NRC		29-Nov-77	request to renew					Supplement #3 lists Bldg A-35, an electronics laboratory, where materials will be stored and used.	
NRC	2	27-Jan-78	expiration date changed to 30-04-78					NOSC, San Diego	
NRC	3	19-Jun-78	amended in entirety	a. Co-60 b. Cs-137	a. sealed source b. sealed source	a. 1 source-100 microcuries, 1 source-1 millicurie, 1 source-10 millicuries, 1 source-100 millicuries b. 1 source-100 millicuries	study of radiation effects on infrared detectors	NOSC, San Diego	
NRC	4	26-Nov-79	conditions 12 and 14. amended					NOSC, San Diego	
NRC	5	18-Aug-80	added material; authorized use; conditions 12 and 14. amended	a. Co-60 b. Cs-137	a. sealed source b. sealed source	a. not to exceed 160 millicuries per source b. not to exceed 150 millicuries per source	study of radiation effects of materials and equipment	NOSC, San Diego	
NRC	6	14-Jan-81	condition 14 amended					NOSC, San Diego	
RASO ltr to NRC		3-Sep-86	endorsed request to terminate						materials formerly used and possessed under 04-05414-03 now covered by NRC Lic 04-13495-02

NOTE: If the block is blank within the column/row, there was no change. This applies to the following spreadsheets.

## License No. 04-05645-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	5-Aug-68		H-3	tritium source	250 millicuries	gas chromatograph	Naval Undersea Warfare Center 3202 East Foothill Blvd Pasadena, CA 91107  Bldg 03, Rm 3C2A (lab)	
AEC	1	30-Sept-??	amended in its entirety	H-3	Titanium Tritide Foil	250 millicuries	gas chromatograph	Naval Undersea Warfare Center 3202 East Foothill Blvd Pasadena, CA 91107	
NUC ltr to AEC	request to amend	27-Aug-73	renew	H-3	tritium source	250 millicuries	gas chromatograph		
AEC	2	5-Nov-73	amended in its entirety	H-3	Titanium Tritide Foil	250 millicuries	used in Varian Aerograph gas chromatograph	Naval Undersea Warfare Center 3202 East Foothill Blvd Pasadena, CA 91107	
NRC	3	1-Jun-77	licensee's name and address changed: Naval Undersea Warfare Center, Pasadena, CA to Naval Ocean Systems Center, San Diego, CA					NOSC, San Diego, CA	
NRC	4	24-Feb-78	condition 14 amended					NOSC, San Diego, CA	
NOSC ltr to NRC	request to amend	21-Mar-78	add material	Ni-63	foil	not to exceed 8 millicuries	gas chromatograph	NOSC, San Diego, CA	
NRC	5	9-Feb-79	amended in its entirety	A. H-3 B. Ni-63	A. titanium tritide foils B. foils	A. not to exceed 250 millicuries per foil B. not to exceed 8 millicuries per foil	used in Varian Aerograph gas chromatograph	NOSC, San Diego, CA	
NRC	6	26-Nov-79	conditons 12 and 18.					NOSC, San Diego, CA	
NRC	7	15-Apr-81	terminate					NOSC, San Diego, CA	

License No. 04-05645-03

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	22-Jan-70		All listed in 33.100, Schedule A, Column II	any	As specified in Section 33.11 (c), 10 CFR Part 33 (Type C Broad License)	physiological studies and clinical diagnosis of animal diseases	Naval Undersea Research and Development Center (NURDC) Marine Bioscience Facility Point Mugu, CA	
AEC	1	2-Mar-70	amended in its entirety	As specified in Section 33.100, Schedule A, 10 CFR Part 33	any	As specified in Section 33.11 (c), 10 CFR Part 33 (Type C Broad License)	physiological studies and clinical diagnosis of animal diseases	NURDC Marine Bioscience Facility Point Mugu, CA	
NURDC ltr to AEC		22-Mar-71	request to amend					Marine Bioscience Facility moved from Point Mugu to San Diego	
AEC		22-Mar-71	amended in its entirety	All listed in 33.100, Schedule A, Column II	any	As specified in Section 33.11 (c), 10 CFR Part 33 (Type C Broad License)	physiological studies and clinical diagnosis of animal diseases	NURDC San Diego, CA 92132	This is new application for same license number regarding the move of facility

## License No. 04-05645-04

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	14-Jan-69		Am-241	sealed neutron source	two sources, 50 millicuries each	test and evaluation of General Nucleonics Undersea Water Level Gage	Naval Undersea Warfare Center 3205 East Foothill Blvd, Pasadena, CA 91107	
AEC	1	28-Apr-70	name and address changed to NURDC, San Diego, CA; conditions 10., 12., and 14.d					NURDC, Pasadena and San Diego, CA and San Clemente Island, CA	
AEC	2	29-Jan-71	added material; authorized use; conditions 12., 14.D., and 15	B. Po-210-Be C. Co-60 D. Cs-137 E. Am-241 F. Cd-109 G. Cs-137	B. sealed source C. sealed source D. sealed source E. diffusion bonded source F. diffusion bonded source G. sealed source	B. two sources, not to exceed 30 curies each C. 5 microcuries D. 5 microcuries E. 2 millicuries F. 2 millicuries G. 100 millicuries	B. used in research and development program involving elemental analysis techniques for metals and metal alloys C. and D. as calibration sources for radiation detection equipment E. and F. as exciter sources in an x-ray fluorescence spectroscopy program G. used as calibration source in development of radiation detection equipment	NURDC, San Diego, CA	
AEC	3	20-Aug-71	conditions 10. and 12.					NURDC San Diego, CA and may also be used at San Clemente Island, CA; Port Hueneme, CA; Panama City FL and Kaneohe Bay, HI	
AEC	4	23-Aug-72	added material	H. Sb-124	H. sealed source	H. 1 curie	H. development and calibration of radiation detection instruments	NURDC San Diego, CA	
AEC	5	11-Oct-73	added material	I. In-114m J. Sn-113 K. Th-228 L. Sc-46	I. sealed sources J. sealed sources K. sealed sources L. sealed sources	I. 5 millicuries J. 20 millicuries K. 1 millicuries L. 5 millicuries	I. through L. development and calibration of radiation detection instruments	NURDC, San Diego, CA	
NUC ltr to AEC	request to amend	4-Sep-73	to authorize possession and use	Am-241	sealed source	100 millicuries	x-ray fluorescence program	source will be used and stored in Bldg 31T NUC, Point Loma, CA	

## License No. 04-05645-04

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	6	8-Nov-73	add material; authorized use; 14.A (1, 2, 3); 14.B, C, D; 15.	M. Am-241	sealed source	100 millicuries	x-ray fluorescence program	NURDC, San Diego, CA	
AEC	7	1-Feb-74	amended in its entirety	A. Am-241 B. Po-210 C. Co-60 D. Cs-137 E. Am-241 F. Cd-109 G. Sb-124 H. In-114m I. Sn-113 J. Th-228 K. Sc-46	A. sealed neutron source B. sealed neutron source C. sealed source D. sealed source E. sealed source F. sealed source G. sealed source H. sealed source I. sealed source J. sealed source K. sealed source	A. 2 sources, of 50 millicuries B. 35 millicuries C. 5 microcuries D. 100 millicuries E. 1 source 2 millicuries, 1 source 100 millicuries F. 2 millicuries G. 1 curie H. 5 millicuries I. 20 millicuries J. 1 millicurie K. 5 millicurie	A. development and testing of undersea water level gauge B. through K. development and calibration of radiation detection instruments and x-ray fluorescence devices	NUC, San Diego, CA	
AEC	8	22-Feb-74	added material; authorized use	L. Cs-137	L. sealed source	L. 5 microcuries	L. instrument calibration	NUC, San Diego, CA	
NRC	9	12-May-77	licensee's name and address changed: Naval Undersea Center (NUC), San Diego, CA to: NOSC, San Diego, CA					NOSC, San Diego, CA	
NRC	10	17-Nov-78	condition 14					NOSC, San Diego, CA	
NRC	11	25-Jan-79	expiration date changed to 30-April-1979					NOSC, San Diego, CA	
RASO ltr to NOSC		30-Jan-79	renewal request					Bldg 46, source storage in a water-shielded tube in a 10 foot deep underground storage well; a 50-liter test tank used to contain water solutions of NA-24, Br-80 and Cl-38 for submerged detector tests, at NOSC, San Diego, CA	



License No. 04-05645-04

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	12	4-Jun-79	amended in its entirety	A. Am-241 B. Am-241 C. Co-60 D. Fe-55 E. Co-60 F. Cs-137 G. Cl-38 H. Na-24 I. Br-80	A. sealed source B. diffused bonded sealed source C. sealed source D. sealed source E. sealed source F. sealed source G. any H. any I. any	A. 100 millicuries B. 2 millicuries C. 1 source 75 millicuries and 4 sources of 24 millicuries D. 1 millicuries E. 2.7 microcuries F. two sources of 50 millicuries each G. 10 millicuries H. 10 millicuries I. 10 millicuries	A. through F. development and testing of samples and x-ray fluorescence devices G. through I. submerged detector tests	NOSC 271 Catalina Blvd San Diego, CA	
NRC	13	26-Nov-79	conditions 12. and 15.					NOSC, San Diego, CA	
NRC	14	31-Dec-80	condition 15					NOSC, San Diego, CA	
RASO ltr to NRC		3-Sep-86	request to terminate						All material and operations formerly used and possessed under 04-05645-04 now covered by NRC BML 04-13495-02, a Type A specific license of broad scope

License No. 04-05645-05

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	issued	24-Jan-79		A. Cl-38 B. Na-24 C. Br-80	A. any B. any C. any	A. 10 millicuries B. 10 millicuries C. 10 millicuries	A. through C. used in instrument calibration	NOSC 271 Catalina Blvd San Diego, CA	
NRC	1	26-Nov-79	conditions 12 and 14.					NOSC 271 Catalina Blvd San Diego, CA	
NRC	2	15-Apr-81	terminated					NOSC 271 Catalina Blvd San Diego, CA	

## License No. 04-05645-06

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	issued	16-Oct-79		Sr-90	strontium titanate contained in sealed source	90,483 curies	RTG	NOSC Fairway, Rock, Alask Island, Berring Strait	
NRC	1	18-Mar-81	amended in its entirety	A. Sr-90 B. Sr-90 C. Sr-90	A. strontium titanate contained in sealed sources B. strontium titanate sealed sources C. strontium titanate sealed sources	A. 90,483 curies B. 109,600 curies C. 109,100 curies	RTGs	NOSC Fairway, Rock, Alask Island, Berring Strait	
NRC	2	23-Oct-84	amended in its entirety	A. Sr-90 B. Sr-90 C. Sr-90	A. strontium titanate contained in sealed sources B. strontium titanate contained in sealed sources C. strontium titanate contained in sealed sources	A. 90,483 curies B. 109,600 curies C. 109,100 curies	RTGs	NOSC Fairway, Rock, Alask Island, Berring Strait	
NRC	3	20-Dec-84	amended in its entirety	A. Sr-90 B. Sr-90 C. Sr-90	A. strontium titanate contained in sealed sources B. strontium titanate contained in sealed sources C. strontium titanate contained in sealed sources	A. 79,446 curies B. 103,170 curies C. 102,699 curies	RTGs	NOSC Fairway, Rock, Alask Island, Berring Strait	
RASO ltr to NOSC		18-May-87	license converted to NRMP program						NRC Lic. No. 04-05645-06 conversion date: 01-April 87. NRMP No. 04-66001-N1NP effective date: 01 April 87 expiration date: 31 Dec 89

License No. 04-13452-01

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	26-Sep-69		a. Am-241 b. Am-241 c. Hg-203 d. Ba-133 e. Mn-54 f. Co-60 g. Y-88 h. Cs-137 i. C-14 j. Sr-90 k. Po-210 l. Co-58 m. Co-60 n. Sc-46 o. Zn-65 p. Cs-134 q. Cs-137 r. Ti-44 s. Cs-137 t. Co-60 u. Ba-133 v. Cd-109 w. Ru-106 x. Au-195 y. Sn-113 z. Ti-44 Aa. Ag-110 Bb. H-3 Cc. H-3	a. sealed and plated sources b. gamma counting standard c. gamma counting standard d. gamma counting standard e. gamma counting standard f. gamma counting standard g. gamma counting standard h. gamma counting standard i. deposited beta standard j. deposited beta standard k. deposited Alpha standard l. sealed in plastic m. sealed in plastic n. sealed in plastic o. sealed in plastic p. sealed in plastic q. sealed in plastic r. sealed in plastic s. solution t. solution u. solution v. solution w. solution x. solution y. solution z. solution Aa. solution Bb. titanium tritide targets Cc. containment on accelerator and assoc. equipment	a. 33.01012 millicuries total b. 10 microcuries c. 10 microcuries d. 10 microcuries e. 11 microcuries f. 11 microcuries g. 10 microcuries h. 1 microcurie i. .02 microcurie j. .04 microcurie k. 2x10 <sup>-4</sup> microcuries l. 1.6 microcuries m. 3.21 microcuries n. .1 microcurie o. .1 microcurie p. .4 microcurie q. 1.5 microcuries r. .2 microcuries s. 2 millicuries t. 2 microcuries u. 5 millicuries v. 50 millicuries w. 1.5 millicuries x. .01 microcurie y. 1 millicurie z. 1 millicurie Aa. 5 millicuries Bb. 28 curies Cc. 5 millicuries	for storage only	storage in Bldg 120 NURDC San Diego, CA	
AEC	1	5-Dec-73	name change to: NUC; subitem 9.A through CC to read: storage at Naval Undersea Center, San Diego, CA					NUC, San Diego, CA	
AEC	2	30-Sep-74	expiration date changed to 31-Dec-74					NUC, San Diego, CA	
NUC Itr to AEC		3-Feb-75	request to terminate						Certification of Disposition of Materials transferred to one of the following: California Lic. No. 078460 to BML 04-13495-02 or BML 04-13495-03

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	2-Mar-70		A. Pd-103 B. Pd-109	A. any B. any	A. 10 millicuries B. 10 millicuries	A. and B. isolation of Palladium from sea water	Naval Undersea Research and Development Center (NURDC) San Diego, CA	
AEC	1	10-Aug-70	material added; authorized use; condition 13 amended	C. Sb-125 D. As-77 E. Ba-133 F. Cd-109 G. Ce-141 H. Cs-137 I. Cr-51 J. Co-60 K. I-125 L. Mn-54 M. Hg-203 N. Mo-99 O. Ni-63 P. P-32 Q. K-42 R. Se-75 S. Ag-110 T. Sr-85 U. S-35 V. Te-127 W. Sn-113 X. Zr-95 Y. Ru-106 Z. Sc-46 AA. Re-186 BB. In-114 CC. Ir-192	C. any D. any E. any F. any G. any H. any I. any J. any K. any L. any M. any N. any O. any P. any Q. any R. any S. any T. any U. any V. any W. any X. any Y. any Z. any AA. any BB. any CC. any	C. 1 millicurie D. 1 millicurie E. 1 millicurie F. 1 millicurie G. 1 millicurie H. 1 millicurie I. 1 millicurie J. 1 millicurie K. 1 millicurie L. 1 millicurie M. 1 millicurie N. 1 millicurie O. 1 millicurie P. 1 millicurie Q. 1 millicurie R. 1 millicurie S. 1 millicurie T. 1 millicurie U. 1 millicurie V. 1 millicurie W. 1 millicurie X. 1 millicurie Y. 1 millicurie Z. 1 millicurie AA. 1 millicurie BB. 1 millicurie CC. 1 millicurie	A. to CC. for developing a process to isolate these radioactive materials from the sea water and to be used in experiments to predict acoustic interference in the sea.	NURDC San Diego, CA	
AEC	2	9-Oct-70	material added; authorized use; conditions 12. and 13. amended	DD. Zn-65 EE. Cu-64	DD. any EE. any	DD. 1 millicurie EE. 10 millicuries	DD. and EE. for developing a process to isolate these radioactive materials from the sea water and to be used in experiments to predict acoustic interference in the sea.	NURDC San Diego, CA	

License No. 04-13495-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	3	14-Nov-72	material added; authorized use; condition 13. amended	FF. Br-82 GG. Au-198 HH. I-131 II. La-140 JJ. Na-24 KK. Fe-59 LL. Ge-68 MM. Ac-227 NN. Rb-84 OO. V-49	FF. any GG. any HH. any II. any JJ. any KK. any LL. any MM. any NN. any OO. any	FF. 1 millicurie GG. 1 millicurie HH. 1 millicurie II. 1 millicurie JJ. 1 millicurie KK. 1 millicurie LL. 1 millicurie MM. 1 millicurie NN. 1 millicurie OO. 1 millicurie	FF. through OO. for developing a process to isolate these radioactive materials from the sea water and to be used in experiments to predict acoustic interference in the sea.	NURDC San Diego, CA	
NUC ltr to AEC		26-Dec-73	request to add additional user and facility					NUC 3202 E. Foothill Blvd Pasadena, CA Bldg 3, Chemistry and Biology Laboratory	
AEC	4	19-Feb-74	name change to: Naval Undersea Center; added material; authorized use; conditions 10. and 12. amended	Any byproduct material between Atomic Nos. 3 and 83, inclusive	Irradiated test samples	not to exceed 100 microcuries per radionuclide	Laboratory radiochemical separations	NUC San Diego, CA	
NUC ltr to NRC		4-Feb-75	request to renew	Ac-227 Sb-122 Sb-124 As-76 As-77 Ba-133 Br-82 Cd-109 C-14 Ce-141 Cs-137 Cl-38 Cr-51 Co-60 Cu-64 Ge-68 Au-198	any form any form any form any form any form any form any form any form any form any form any form any form any form any form any form any form any form	1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 1 millicurie 10 millicuries 1 millicurie 1 millicurie 10 millicurie 1 millicurie 1 millicurie	A. and B. for developing processes to isolate radionuclides from sea water, tracers in development of analytical procedures, and tracers in biological uptake studies	NUC San Diego, CA	Facilities include a radioisotope laboratory and counting facilities in Bldgs 149 and 106.



License No. 04-13495-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	6	18-Jul-75	amended in its entirety	A. Any byproduct material between Atomic Nos. 3 and 83, inclusive  B. Any byproduct material between Atomic Nos. 3 and 83, inclusive	A. any  B. Irradiated test samples	A. 1 millicurie of each except as follows:  Cl-38 10 millicuries Cu-64 10 millicuries Pd-103 10 millicuries Pd-109 10 millicuries Na-24 10 millicuries  B. not to exceed 100 microcuries per radionuclide	A. and B. for developing processes to isolate radionuclides from sea water, tracers in development of analytical procedures, and tracers in biological uptake studies	NUC San Diego, CA	
NRC	7	12-May-77	licensee's name and address change: Naval Undersea Center San Diego, CA 92132 to Naval Ocean Systems Center San Diego, CA 921521					NOSC San Diego, CA 92152	
NRC	8	17-Nov-78	condition 13. amended					NOSC San Diego, CA 92152	
NRC	9	17-Dec-79	conditions 12. and 13. amended					NOSC San Diego, CA 92152	
NRC	10	5-Jun-80	expiration date changed to 31 August 1980					NOSC San Diego, CA 92152	
NRC	11	16-Jan-81	condition 13. amended					NOSC San Diego, CA 92152	
NRC	12	15-Apr-81	amended in its entirety	A. Any byproduct material between Atomic Nos. 3 and 83, inclusive B. Am-241 C. Am-241 D. Cf-252 E. Cs-137	A. any B. sealed sources C. sealed sources D. sealed sources E. sealed sources F. sealed sources	A. 1 millicurie of each except as follows: Br-80/80m 20 millicuries Br-82 10 millicuries Cl-38 10 millicuries Cu-64 10 millicuries Na-24 10 millicuries S-35 10 millicuries Pd-103 10 millicuries Pd-109 10 millicuries  B. not to exceed 2 millicuries per source C. not to exceed 100 millicuries per source D. not to exceed 50 millicuries total E. not to exceed 300 millicuries total F. not to exceed 380 millicuries total G. not to exceed 250 millicuries per foil	A. through H. for research and development as defined in 30.4(a) of 10 CFR Part 30	NOSC San Diego, CA 92152	



## License No. 04-13495-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
				F. Co-60 G. H-3 H. Ni-63	sealed sources G. titanium tritide foils in detector cells H. foils	H. not to exceed 8 millicuries per foil			
NRC	13	13-Jul-81	material added; authorized use	A. Any byproduct material between Atomic Nos. 3 and 83, inclusive B. Am-241 C. Cf-252 D. Cs-137 E. Co-60 F. H-3 G. Ni-63	A. any sealed sources B. sealed sources C. sealed sources D. sealed sources E. sealed sources F. titanium tritide foils in detector cells G. foils or plated source	A. not to exceed 20 millicuries per radionuclide B. not to exceed 200 millicuries per source C. not to exceed 100 millicuries total D. not to exceed 200 millicuries per source E. not to exceed 200 millicuries per source F. not to exceed 300 millicuries per foil G. not to exceed 15 millicuries per foil or source	A. through G. for research and development as defined in 30.4(a) of 10 CFR Part 30	NOSC San Diego, CA 92152	
NRC	14	29-Aug-81	material added; authorized use; condition 15. amended	H. Am-241 I. Po-210	H. sealed neutron source I. plated source	H. not to exceed 75 millicuries per source I. not to exceed 15 microcuries per source	H. for use in custom made undersea water level gauge I. calibration of instruments	NOSC San Diego, CA 92152	
NRC	15	16-Sep-81	material added	Am-241	sealed neutron source	not to exceed 75 millicuries per source		NOSC San Diego, CA 92152	
NRC	16	18-Jun-82	material added; authorized use; condition 15. amended	A. Any byproduct material between Atomic Nos. 3 and 83, inclusive B. Am-241 C. Cf-252 D. Cs-137 E. Co-60 F. H-3 G. Ni-63 H. Am-241	A. any sealed sources B. sealed sources C. sealed neutron sources D. sealed sources E. sealed sources F. titanium	A. not to exceed 20 millicuries per radionuclide B. not to exceed 200 millicuries per source C. not to exceed 300 millicuries total D. not to exceed 500 millicuries per source E. not to exceed 500 millicuries per source F. not to exceed 300 millicuries per foil G. not to exceed 15 millicuries per foil or source H. not to exceed 75 millicuries per source I. not to exceed 15 microcuries per source	A. though G. for research and development as defined in 30.4(q) of 10 CFR Part 30  H. for us in a custom made undersea	NOSC San Diego, CA 92152	

License No. 04-13495-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
				I. Po-210	tritide foils in detector cells G. foils or plated source H. sealed neutron source I. plated source		water level gauge  I. calibration of instruments		
NRC	17	10-Jan-86	material added; authorized use; conditions 10., 15., and 18. amended; condition 19 added	A. Any byproduct material between Atomic Nos. 3 and 83, inclusive B. Am-241 C. Cf-252 D. Cs-137 E. Co-60 F. H-3 G. Ni-63 H. Am-241 I. Po-210	A. any B. sealed sources C. sealed neutron sources D. sealed sources E. sealed sources F. titanium tritide foils in detector cells G. foils or plated source H. sealed neutron source I. plated source	A. not to exceed 50 millicuries per radionuclide B. not to exceed 200 millicuries per source C. not to exceed 500 millicuries total D. not to exceed 500 millicuries per source E. not to exceed 500 millicuries per source F. not to exceed 300 millicuries per foil G. not to exceed 15 millicuries per foil or source H. not to exceed 75 millicuries per source I. not to exceed 15 microcuries per source	A. though G. for research and development as defined in 30.4(q) of 10 CFR Part 30  H. for us in a custom made undersea water level gauge  I. calibration of instruments	a. 271 Catalina Blvd San Diego, CA 92152  b. NOSC Hawaii Lab P.O. box 997 Kailua, HI 96734  c. temporary job sites anywhere in the United States	Condition 19: The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Title 10, CFR, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."
NRC	18	4-May-80	material added; authorized use; condition 10. amended	H-3	custom madae sealed light source	not to exceed 1 curie per radionuclide	research applications	NOSC San Diego, CA 92152	
NRC	19	23-Aug-84	conditions 18. amended; conditions 20. and 21. added					NOSC San Diego, CA 92152	20. licensee shall not use licensed material in ocean waters where activity is released except as

License No. 04-13495-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
									<p>provided otherwise by a specific condition of this license. 21. the license does not authorize the disposal or abandonment of licensed material in ocean waters.</p> <p>*NRC did not approve disposal request by NOSC and added these two conditions. The EPA has sole responsibility for regulating the release or disposal of most radioactive materials in territorial or international ocean waters (NRC ltr to NOSC dtd 23-08-84).</p>
NRC	20	5-Jun-86	expiration date extended to 31 December 1986					NOSC San Diego, CA 92152	
NOSC ltr to NRC		13-Nov-86	close-out survey of Bldg 596						materials were first authorized under NRC Lic No. 04-13495-06 and later transferred to NRC Lic, 04-13495-02. Bldg 596

License No. 04-13495-02

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
									located at former Marine Mammal Facility at NAVOCEANSYS CEN in San Diego, CA The AAS room (no room number referenced) was the only area where residual contamination was found, within a refridgerator.
NRC	21	3-Dec-86	expiration date extended to 30 June 1987					NOSC San Diego, CA 92152	
NAVOC EANSYS CEN ltr to RASO		15-Jun-87	NRC Lic 04-13495-02 converted to NRMP 04-66001-E1NP						Certificate of NRC License Conversion to NRMP  NRC Lic No. 04-13495-02 Conversion date: 01 April 87  NRMP No. 04-66001-E1NP Effective date: 01 April 87 Expiration date: 30 June 1987

License No. 04-13495-03

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	10-Aug-70		A. Am-241 B. Fe-55 C. Cd-109 D. Am-241 E. Hg-203 F. Co-60 G. Ba-133 H. Cs-137 I. Mn-54 J. Am-241 K. Am-241 L. Cd-109 M. Cs-137 N. Co-60 O. Mn-54	A. sealed sources B. sealed sources C. sealed sources D. sealed sources E. sealed sources F. sealed sources G. sealed sources H. sealed sources I. sealed sources J. sealed sources K. sealed sources L. sealed sources M. sealed sources N. sealed sources O.sealed sources	A. 50 millicuries total two sources, not to exceed 25 millicuries each B. 10 millicuries C. 10 millicuries total two sources, not to exceed 5 millicuries each D. 11 microcuries E. 11 microcuries F. 10 microcuries G. 8 microcuries H. 10 microcuries I. 10 microcuries J. 1 millicurie K. 2 millicuries L. 2 millicuries M. 1 microcurie N. 1 microcurie O. 1 microcurie	A. through C. and J. through L. to be used as exciter sources in radioisotope fluorescence spectrometry  D. through I. and N. through O. used as standards in the calibration of x-ray and gamma ray instruments	NURDC San Diego, CA 92132	
NNPU ltr to NRC		7-Jul-75	endorsed NUC request to renew					Byproduct materials will be used and stored in Bldgs 7T (NUC Marine Life Science Facility, west side of Point Loma) and 106 (NUC waterfront) Bldg 106, Rm 180- radiochemical laboratory Bldg 106, Rm 174- counting laboratory Bldg 7T contains office, lab and experimental work area spaces with lab benches, counting equipment and radioisotope storage facilities	

License No. 04-13495-03

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	1	8-Sep-75	amended in its entirety	A. Am-241 B. Am-241 C. Am-241 D. Cd-109 E. Cd-109 F. Fe-55 G. Am-241 H. Hg-203 I. Co-60 J. Ba-133 K. Cs-137 L. Mn-54	A. sealed sources B. sealed sources C. sealed sources D. sealed sources E. sealed sources F. sealed sources G. sealed sources H. sealed sources I. sealed sources J. sealed sources K. sealed sources L. sealed sources	A. 100 millicuries B. 2 millicuries C. 1 millicurie D. 2 millicuries E. 10 millicuries F. 10 millicuries G. 11 microcuries H. 10 microcuries I. 10 microcuries J. 8 microcuries K. 10 microcuries L. 10 microcuries	A. through F. used as exciter sources in radioisotope fluorescence spectrometry G. through L. to be used for instrument calibration	NUC San Diego, CA 92132	
NRC	2	12-May-77	licensee's name and address changed: Naval Undersea Center, San Diego, CA 92132 to Naval Ocean System Center, San Diego, CA 92152					NOSC San Diego, CA 92152	
NRC	3	24-Feb-78	condition 15. amended					NOSC San Diego, CA 92152	
NRC	4	2-Aug-79	terminated					NOSC San Diego, CA 92152	

License No. 04-13495-04

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	27-Nov-70		H-3	foils	two foils not to exceed 2.50 millicuries each	used within detector cell housed within a gas chromatography	NUROC San Diego, CA 92132	
NNPU Itrto NRC		14-Nov-75	Request to cancel license						no materials have been procured under this license and no procurement of materials is planned. Certificate of Disposition attached

## License No. 04-13495-05

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	1-Feb-71		Cf-252	sealed source	17 microcuries (0.0315 microgram)	calibration source for neutron detectors	NURDC San Diego, CA 92132	
AEC	1	16-Jun-72	material added; authorized use; condition 16. amended	Cf-252	sealed source	two sources: 2.1 micrograms and other containing 100 micrograms	development and calibration of radiation detection systems	NURDC San Diego, CA 92132	
AEC	2	9-Nov-72	subitem 8.B amended			2 sources: one containing 2.1 micrograms and one containing 250 micrograms		NURDC San Diego, CA 92132	
AEC	3	14-Jan-74	licensee's name and address changed to: Naval Undersea Center Radiation and Chemistry Division San Diego, CA 92132; condition 16. amended					NUC Rad. and Chem. Div. San Diego, CA 92132	
AEC	4	16-Apr-74	subitem 8.B amended			1 source of 2.1 micrograms, 1 source of 100 micrograms, and 1 source of 0.257 micrograms		NUC Rad. and Chem. Div. San Diego, CA 92132	
NUC ltr to NRC		30-Dec-75	renewal request					material used and stored in Bldg 46 located at NUC, San Diego waterfront and a source range located adjacent to bldg. source storage in water-shielded tube in a 10-foot deep underground storage well. Sources exposed on top of tower, variable height, between 6' to 30'	
NRC	5	21-Jan-76	expiration date changed to 30 April 1976					NUC Rad. and Chem. Div. San Diego, CA 92132	



## License No. 04-13495-05

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	6	30-Apr-76	amended in its entirety	A. Cf-252 B. Cf-252 C. Cf-252	A. sealed source B. sealed source C. sealed source	A. 6 microcuries B. one source of 85 microcuries and one source of 380 microcuries C. 43 millicuries	calibration source for neutron detection systems	NUC Rad. and Chem. Div. San Diego, CA 92132	also be used on Navy craft operated in the waters adjacent to San Diego Harbor
NRC	7	22-Apr-77	material added; authorized use; (subitem 6.B, 7.B, and 8.B amended)	B. Cf-252 D. Cf-252	B. sealed source D. sealed source	B. one source of 85 microcuries D. one source of 380 microcuries	calibration source for neutron detection systems	NUC Rad. and Chem. Div. San Diego, CA 92132	
NRC	8	12-May-77	licensee's name and address changed from: Naval Undersea Center Radiation and Chemistry Division San Diego, CA 92132 to: Naval Ocean Systems Center San Diego, CA 92152					NOSC San Diego, CA 92152	
NRC	9	17-Nov-78	condition 15. amended					NOSC San Diego, CA 92152	
NRC	11	23-Feb-81	condition 15. amended					NOSC San Diego, CA 92152	
NRC	12	23-Mar-81	expiration date changed to 31 July 1981					NOSC San Diego, CA 92152	
NRC	13	15-Apr-81	terminated					NOSC San Diego, CA 92152	

## License No. 04-13495-06

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
AEC	issued	2-Jul-71		A. as specified in Section 33.100, Schedule A, 10 CFR 33	A. any	A. as specified in Section 33.11 (c), 10 CFR 33	physiological studies and clinical diagnosis of animal diseases	NURDC San Diego, CA 92132	
NRC	1	21-Jan-77	amended in its entirety	A. as specified in Section 33.100, Schedule A, 10 CFR 33	A. any	A. as specified in Section 33.11 (c), 10 CFR 33 (Type C Broad License)	physiological studies and clinical diagnosis of animal diseases	NURDC San Diego, CA 92132	
NRC	2	12-May-77	licensee's name and address changed: Naval Undersea Center San Diego, CA 92132 to: Naval Ocean Systems Center San Diego, CA 92152					NOSC San Diego, CA 92152	
NRC	3	17-Nov-78	conditon 15. amended					NOSC San Diego, CA 92152	
NRC	4	18-Jan-79	conditon 15. amended					NOSC San Diego, CA 92152	
NRC	5	26-Nov-79	conditon 15. amended					NOSC San Diego, CA 92152	
RASO ltr to NRC		11-Dec-81	NOSC request to renew					Bldg 46 (sealed source and short-lived radionuclide usage) Bldg 106 (radiochemistry) Bldgs 622, 623, and 596 (marine biology laboratories) usage of two chromatographs Pier 302, marine mammal pens	
NRC	6	28-May-82	item 9.A and condition 10. amended				9.A for use in performing animal studies including tracer studies in marine mammals	NOSC San Diego, CA 92152	

License No. 04-13495-06

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
RASO ltr to NRC		3-Sep-86	request to terminate endorsed						Certificate of Disposition of Materials dtd 20 Aug 86 all operations and materials that were formerly used and possessed under Lic. 04- 13495-06 are now covered by USNRC 04- 13495-02, a Type A specific license of broad scope
NOSC ltr to RASO		15-Jun-87	NRC License conversion to NRMP					NOSC San Diego, CA 92152	Certificate of NRC License Conversion to NRMP dtd 08 June 1987: NRC Lic. No. 04- 13495- 06 Conversion date: 01 April 87  NRMP No. 04- 66001-G1NP Effective date: 01 April 87 Expiration date: 31 Jan 82 (timely filed)

## SNM-35

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NAVFA CENG OM ltr to AEC	endorsed request for license	29-Oct-69		1. Pu-239-Be 2. Pu-238 3. U-235	1. sealed neutron source 2. fuel forms 3. any	1. 16 grams 2. 50 mg 3. 120 grams	1. calibration 2. SEPO program in ocean engineering studies 3. encapsulated, used as target material in reactor irradiation		

SNM-567

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
									No license found. Mentioned in correspondence

## SNM-1154

Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form (AEC Item 7)	Quantity	Authorized Use (AEC Item 8)	Location	Notes
AEC		26-Sep-69		Pu Uranium enriched in the U-235 isotope	Pu: 16 grams encapsulated as a Pu-Be neutron source U-235: 10 grams as a solution and 107 grams as metal foil		for storage only in accordance with the application dtd 18-08-69	NURDC San Diego, CA	
NURDC ltr to AEC		15-Dec-69	additional information					referenced the source will be used in Bldg T31	
AEC		10-Feb-70		Pu U-235	16 grams encapsulated as a Pu-Be neutron source 50 milligrams as PuO2 microspheres  120 grams		for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplement dtd 15-12-69	licensee's facilities at San Diego, Pasadena, and San Clemente Island	
AEC	1	15-May-70	items 6, 7, and 8 amended	Pu Uranium enriched in the U-235 isotope	Pu: 16 grams encapsulated as a Pu-Be neutron source; 50 milligrams as PuO2 microspheres; and 20 micrograms as alpha sources		for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplement dtd 15-12-69 and 27-03-70		
AEC	2	9-Jul-70	items 7 and 8 amended		Pu: 16 grams encapsulated as a Pu-Be neutron source for calibration purposes; 50 milligrams as fused PuO2 microspheres for ocean engineering studies; 100 grams as molybdenum clad cermet for marine environment tests; and 20 micrograms as alpha sources for counting standards  U-235: 120 grams for target material in irradiation studies		for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplements dtd 15-12-69, March 27 and May 15, 1970		
AEC	3	23-Apr-71	item 8 amended				for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplements dtd 15-12-69; March 27 and May 15, 1970 and April 5, 1971		

## SNM-1154

Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form (AEC Item 7)	Quantity	Authorized Use (AEC Item 8)	Location	Notes
NAVFA CENG OM ltr to AEC		7-Oct-71						source will be used in 31T area when not in use, source will be locked in storage container in Trailer N-11 NURDC, San Diego, CA	
AEC	4	8-Nov-71	items 7 and 8 amended; item 12 added			Pu: 176 grams encapsulated as Pu-Be neutron sources for calibration purposes and neutron activation analysis; 20 grams as molybdenum clad cermet for marine environment tests; and 20 micrograms as alpha sources for counting standards  U-235: 120 grams for target material in irradiation studies; and 1.5 grams as unclad irradiated fuel segments for marine environment tests	for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplements dtd 15-12-69; March 27 and May 15, 1970; April 5, August 30, and August 31, 1971	NURDC San Diego, CA	Condition 12 reads: Pursuant to 10 CFR 30, the licensee is authorized to possess and use up to 2.5 curies of byproduct material contained in 1.5 grams U-235 as unclad irradiated fuel segments
AEC	5	22-Dec-72	items 7 and 8 amended	Pu U-235		Pu: 16 grams encapsulated as Pu-Be neutron sources for calibration purposes and neutron activation analysis; 40 grams (principle isotope Pu-238) as oxide pellets; and 20 micrograms as alpha sources for counting standards.  U-235: 120 grams for target material during irradiation studies; and 1.5 grams as unclad irradiated fuel segments for marine environment tests.	for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplements dtd 15-12-69; March 27 and May 15, 1970; April 5, August 30, and August 31, 1971; and 03-11-72		
AEC	6	3-Apr-74	items 7 and 8 amended			Pu: 16 grams encapsulated as Pu-Be neutron sources for calibration purposes and neutron activation analysis; 40 grams (principle isotope Pu-238) as oxide pellets; and 20 micrograms as alpha sources for counting standards; and 52 grams (principle isotope Pu-238) as 2 clad oxide pellets.  U-235: 120 grams for target material during irradiation studies	for use in accordance with the statements, representations, and conditions specified in the licensee's application dtd 26-9-69 and supplements dtd 15-12-69; March 27 and May 15, 1970; April 5, August 30, and August 31, 1971; 03-11-72; and 26-12-73	NUC San Diego, CA 92132	

## SNM-1154

Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form (AEC Item 7)	Quantity	Authorized Use (AEC Item 8)	Location	Notes
AEC	7	13-Mar-75	expiration date changed to 31 May 1975; items 7. and 8. amended				item 8. was not amended on supplementary sheet	NUC San Diego, CA 92132	
RASO ltr to NRC		21-Apr-77	license name change to: Naval Ocean Systems Center San Diego, CA 92152						Naval Electronics Laboratory and Naval Undersea Center were disestablished, all functions and facilities of the two have been combined under NOSC
NRC	8	5-Jan-78	amended in its entirety	A. Pu-238 C. Pu-239 D. Pu-239 E. U-235	A. 88 grams as oxide pellets C. 16 grams encapsulated as Pu-Be neutron source D. 20 micrograms as alpha source E. 120 grams as metal foil		Research and development activities and instrument calibration in accordance with statements, representations, and procedures contained in application submitted by letter dtd 04-02-75; ltr dtd 07-04-75; and applications dtd 21-04-77, 09-11-77		Note: there was an Amendment 08 (dtd 01-10-75) and an Amendment 08 Supplementary Sheet (dtd 05-01-78). The supplement sheet removed 6.8 and 7.8 from the initial Amendment 8
NRC	9	17-Nov-78	item 8 amended				Research and development activities and instrument calibration in accordance with statements, representations, and procedures contained in application submitted by letter dtd 04-02-75; ltr dtd 07-04-75; and applications dtd 21-04-77, 09-11-77, 10-01-78 and 02-11-78		



Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form (AEC Item 7)	Quantity	Authorized Use (AEC Item 8)	Location	Notes
NRC	10	17-Dec-79	item 8 amended				Research and development activities and instrument calibration in accordance with statements, representations, and procedures contained in application submitted by letter dtd 04-02-75; ltr dtd 07-04-75; and applications dtd 21-04-77, 09-11-77, 10-01-78 and 02-11-78; and ltr dtd 19-09-79.		
NRC	11	6-Mar-80	material added; authorized use	F. Pu-237 G. U-237		F. 1 x 10 <sup>-3</sup> micrograms G. 2 x 10 <sup>-4</sup> micrograms	Research and development activities and instrument calibration in accordance with statements, representations, and procedures contained in application submitted by letter dtd 04-02-75; ltr dtd 07-04-75; and applications dtd 21-04-77, 09-11-77, 10-01-78 and 02-11-78; and ltr dtd 19-09-79 and 25-01-80.		
NRC	12	27-Jul-81	amended in its entirety	A. Pu-239 B. Pu-239 C. Pu-238 D. U-237 E. Pu-237 F. Pu-238	A. sealed neutron source B. alpha sources C. alpha source D. nitrate or chloride solution E. nitrate or chloride solution F. plutonium oxide (PPO) as iridian clad heat source	A. 16 grams B. 20 micrograms C. 1.2 nanogram D. 10 microcuries E. 10 microcuries F. 306 grams	A. through E. for use in research and development as defined in Section 70.4(j) of 10 CFR 70, and instrument calibration F. for testing as described in letter dtd 18-05-81	facilities at San Diego and San Clemente Island sites	
NRC	13	3-Dec-81	condition 17. amended					NOSC San Diego, CA 92151	
NRC	14	22-Mar-82	condition 17. amended					NOSC San Diego, CA 92151	
NRC	15	1983	condition 17. amended					NOSC San Diego, CA 92151	

## SNM-1154

Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form (AEC Item 7)	Quantity	Authorized Use (AEC Item 8)	Location	Notes
NRC	16	18-Jul-83	condition 17. amended					NOSC San Diego, CA 92151	
NRC	17	27-Jun-86	expiration date changed to 31 October 1986					NOSC San Diego, CA 92151	
NRC	18	13-Nov-86	expiration date extended to 30 April 1987					NOSC San Diego, CA 92151	
RASO ltr to NOSC		18-May-87	conversion to NRMP program					NAVOCEANSY SCEN San Diego, CA 92152-5000	NRC Lic. No. SNM-1154 Conversion date: 01 April 1987  NRMP NO. 04-66001-H1NP Effective date: 01 April 1987 Expiration date: 31 Oct 1987
RASO ltr to NOSC		18-May-94	termination of NRMP 04-66001-H1NP/formerly NRC Lic. SNM-1154						Radiation safety inspection and survey, Bldg 106, Room 186 (radioisotope laboratory) attachment

SUB-1113

Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form	Quantity (AEC Item 7)	Authorized Use (AEC Item 8)	Location	Notes
AEC	issued	28-Jan-72		Uranium		140 kilograms	metal billets for research and development in accordance with the statements, representations and conditions specified in the licensee's application dtd 21-12-71	The address specified in Item 2 above; Naval Ammunition Depot, Concord, MA and Sandia Base, Albuquerque, NM	
AEC	1	24-Apr-72	item 9 amended					The address specified in Item 2 above; Naval Ammunition Depot, Concord, CA and Sandia Base, Albuquerque, NM	
NRC	2	21-Oct-77	amended in its entirety	Uranium	natural or depleted uranium metal plates	50 kilograms	laboratory studies to determine radiation detector response	NOSC San Diego, CA 92152 and Hanson Laboratory, Stanford University, Palo Alto, CA	
NRC	3	17-Nov-78	condition 14 amended					NOSC San Diego, CA 92152	
NRC	4	26-Nov-79	conditions 12. and 14. amended						
NRC	5	13-Feb-81	condtion 14. amended						
NRC	6	13-Aug-82	amended in its entirety	A. Natural Uranium B. depleted Uranium C. Natural Thorium	A. any B. any C. any	A. 100 kilograms B. 100 kilograms C. 100 kilograms	A. through C. research and development activities and as calibration of instruments, accelerator targers, shielding materials, tracer studies, components of projectiles and counterweights.	NOSC San Diego, CA 92152	

SUB-1113

Issuer	Amendment No.	Date	Change	Isotope(s) Authorized (AEC Item 6)	Form (AEC Item 7)	Quantity	Authorized Use (AEC Item 8)	Location	Notes
NRC	7	26-Oct-86	amended in its entirety	A. Natural Uranium B. depleted Uranium C. Natural Thorium	A. any B. any C. any	A. 100 kilograms B. 100 kilograms C. 100 kilograms	A. through C. research and development activities and as calibration of instruments, accelerator targets, shielding materials, tracer studies, components of projectiles and counterweights.	NOSC San Diego, CA 92152	
NOSC ltr to RASO		8-Jun-87	license converted to NRMP Program					NOSC San Diego, CA 92152	NRC Lic. No. SUB-1113 Conversion date: 01 April 1987  NRMP NO. 04-66001-S1NP Effective date: 01 April 1987 Expiration date: 31 Aug 1987

License No. 45-16359-03

Issuer	Amendment No.	Date	Change	Isotopes Authorized	Form	Quantity	Authorized Use	Location	Notes
NRC	1	5-Jan-76	amended in its entirety	A. Sr-90 B. Sr-90 C. Sr-90 D. Sr-90 E. Sr-90 F. Sr-90 G. Sr-90 H. Sr-90 I. Sr-90 J. Sr-90 K. Uranium, depleted in isotope U-235 L. Sr-90 M. Uranium, depleted in isotope U-235 N. Sr-90 O. Sr-90 P. Sr-90 Q. Sr-90 R. Uranium, depleted in isotope U-235 S. Sr-90 T. Uranium, depleted in isotope U-235 U. Sr-90 V. Uranium, depleted in isotope U-235	A. strontium titanate contained in RTG B. strontium titanate contained in RTG C. strontium titanate contained in RTG D. strontium titanate contained in RTG E. strontium titanate contained in RTG F. strontium titanate contained in RTG G. strontium titanate contained in RTG H. strontium titanate contained in RTG I. strontium titanate contained in RTG J. strontium titanate contained in RTG K. metal shielding contained in RTG L. strontium titanate contained in RTG M. metal shielding contained in RTG N. strontium titanate contained in RTG O. strontium titanate contained in RTG P. strontium titanate contained in RTG Q. strontium titanate contained in RTG R. metal shielding contained in RTG S. strontium titanate contained in RTG T. metal shielding contained in RTG U. strontium titanate contained in RTG V. metal shielding contained in RTG	A. 125,000 curies in one generator B. 375,000 curies total, not exceeding 125,000 curies in each generator C. 25,000 curies in each generator D. 164,000 curies total, not to exceeding 8,200 curies in each generator E. 1,250,000 curies total, not exceeding 125,000 curies in each generator F. 2,500,000 curies total, not exceeding 125,000 curies in each generator G. 1,250,000 curies total, not exceeding 125,000 curies in each generator H. 1,250,000 curies total, not exceeding 125,000 curies in each generator I. 400,000 curies total, not exceeding 40,000 curies in each generator J. 330,000 curies total, not exceeding 33,000 curies in each generator K. 2,700 pounds total, with 270 pounds in each generator L. 16,800 curies total, not exceeding 2,800 curies in each generator M. 1,500 pounds total, not exceeding 250 pounds in each generator N. 31,000 curies in each generator O. 2,500,000 curies total, not exceeding 125,000 curies in each generator P. 3,700,000 curies total, not	A. through V. store, install, operate, utilize, and service the radioisotope power devices identified in item 7 of this license in the research, development, testing, evaluation, or operation of Naval apparatus, equipment, and systems. Changing, adjusting, or other handling of heat source capsules containing radioactive material is not authorized.	NAVFACENGCOM 200 Stovall St Alexandria, VA 22332  Any location in the US, as defined in Section 30.4(u), Title 10, Chapter 1, CFR Part 30, where the USNRC maintains jurisdiction for regulating the use of licensed material, international waters, and Antarctica	Navy correspondence indicates NOSC involvement with this license.

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						exceeding 370,000 curies in each generator Q. 83,000 curies total, not exceeding 8,300 curies in each generator R. 1,800 pounds total, approximately 180 pounds in each generator S. 227,400 curies total, not exceeding 56,850 curies in each generator T. 1,880 pounds total, with approximately 470 pounds in each generator U. 165,000 curies total not exceeding 165,000 curies in each generator V. 650 pounds total, with approximately 641 pounds in each generator			

## NRMP 04-66001-D1NP RADIOACTIVE MATERIAL INVENTORY

Local Source ID	Radionuclide Identity	Chem&Phys Form	Activity (uCi)	Activity (Bq)	Activity Determination Date	Quantity of Source(s)	Manufacturer	Storage Location	Awaiting Dispositon	Method or Procedure of Disposal	LLRW REQ Submitted
TS-101	Cs-137	metal wand	9.000E+00	3.330E+05	unk	1		Building 311, room 105	YES	LLRW	Yes
52404	Am-241 w/Be	AmBe sealed	47,301	1.750E+09	07-Jun-08	1	NER cap #4478	Building 111, well #4	YES	UCSD	No
52464	Am-241 w/Be	AmBe sealed	1,000,000	3.700E+10	07-Jun-08	1	MRC-17S9	Building 111, well #4	YES	orphan	Yes
52465	Am-241 w/Be	AmBe sealed	2,470,000	9.139E+10	01-Oct-72	1	MRC-N-SS-W-AMBE 1279	Building 111, well #4	YES	orphan	Yes
52476	Cf-252	sealed	243	8.991E+06	07-Jun-08	1	FTC-Cf-198	Building 111, well #4	YES	UCSD	No
52432	Pu-239 w/Be	sealed	998,888	3.696E+10	07-Jun-08	1		Building 111, well #4	YES	UCSD	No
55501	Co-60	sealed	5.7	2.109E+05	07-Jun-08	1	ICN	Building 111, vault #4	YES	LLRW	Yes
55503	Co-60	sealed	549	2.031E+07	07-Jun-08	1	ICN	Building 111, vault #4	YES	UCSD	No
52401	Am-241	sealed	10	3.700E+05	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
52454	U-235	encapsulated	30.6	1.132E+06	07-Jun-08	1	New Brunswick Labs	Building 111, vault #3	YES	UCSD	No
52448	Am-241	sealed	24.1	8.918E+05	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
52457	Am-241	sealed	4,869	1.802E+08	07-Jun-08	1		Building 111, vault #3	YES	Orphan	Yes
52419	Cm-244 w/C-13	sealed	89,181	3.300E+09	07-Jun-08	1	Amersham	Building 111, vault #3	YES	orphan	Yes
52449	Cm-244 w/Be	sealed w/Be	42,233	1.563E+09	07-Jun-08	1		Building 111, vault #3	YES	orphan	Yes
52450	Cm-244 w/Be	sealed w/Be	12,670	4.688E+08	07-Jun-08	1		Building 111, vault #3	YES	orphan	Yes
52420	Cs-137	sealed	7	2.590E+05	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
52447	Am-241 w/Be	sealed/Be window	19,291	7.138E+08	07-Jun-08	1		Building 111, vault #3	YES	orphan	Yes
52455	Pu-239 WG	encapsulated	296,000	1.095E+10	07-Jun-08	1	DOE New Brunswick Lab	Building 111, vault #3	YES	UCSD	No
52426	DU	metal slab	2,990	1.106E+08	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
52427	DU	metal slab	3,003	1.111E+08	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
52428	DU	metal slab	3,013	1.115E+08	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
52429	DU	metal slab	3,026	1.120E+08	07-Jun-08	1		Building 111, vault #3	YES	LLRW	Yes
657-14-2	Cs-137	sealed	109	4.033E+06	01-Jun-99	1		Building 111, vault #3	YES	LLRW	Yes
52402	Am-241	sealed	94,566	3.499E+09	07-Jun-08	1	Isotope Product Labs	Building 111, vault #1	YES	orphan	Yes
Q-022	55/Am-241/Cd-1	device	50000/5000/4000	1.850E+09/1.850E+08/1.480E+08	unk	1	X nuclear produ	Building 111, Rm 149	YES	LLRW	YES
none	UO2(CH3COO)2	Aqueous solution	unk	unk		5		Bldg 111, Rm 149	YES	LLRW	YES