/-1999)	ON APPROVED BY O Estimated burden request: 15 minut	APPROVED BY OMB: NO. 3150-0013 EXPIRES: 07/31/2002 Estimated burden per response to comply with this mandatory collection request: 15 minutes. This notification is required so that NRC may schedule inspection of the activities to ensure that they are conducted in					
REPORT OI		/ITIES IN	accordance with r	requirements for p ments regarding	rotection of the public health and burden estimate to the Records		
NON-AGREEMEN	Management Bran	ich (T-6 E6), U.S. 20555-0001, or b	Nuclear Regulatory Commission, internet e-mail to bis1@nrc.gov.				
	and to the Desk C NEOB-10202, (3)	Officer, Office of In 150-0013) Offic	formation and Regulatory Affairs, e of Management and Budget,				
	 Washington, DC collection does not 	Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the					
(Please read the i	nstructions before comple	ting this form)	respond to, the info	nduct or sponsor, ormation collection	and a person is not required to		
NAME OF LICENSEE (Person or fin	rm proposing to conduct the activities des	cribed below)		2. TYPE OF	REPORT		
)regon State Unive	ersity						
ADDRESS OF LICENSEE (Mailing	4. LICENSEE CONT	4 LICENSEE CONTACT AND TITLE Rainier Farmer, Rad, Safety Officer					
124 Radiation Co	Rainier H						
Corvallis, OR 9	7331–5904						
	5. TELEPHONE NUM (Include Area Cod	ø)	6. FACSIMILE NUMBER (Include Area Code)				
·····		الورائي كريستي فارسا بسائمة ال	541-737-70	080	541-737-0480		
7.	ACTIVITIES TO BE CONDUCT	ED UNDER THE GE	NERAL LICENSE GIV	EN IN 10 CFR 1	50.20		
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			<u> </u>				
PORTABLE GAUGE	S XX OTHER (Specify) 🔿 Prima	ry productiv	ity studie	S		
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CLIENT NAME ADDRESS, CITY/C	OUNTY, STATE, ZIP CODE	9. ACTUAL F (Street an	HYSICAL ADDRESS OF WO		ddress or directions as possible 1		
n/a		Crat	er Lake Nation	nal Park			
, u		Crat	er Lake, Orego	Lake, Oregon 95 200			
		10. CLIENT (Include	ELEPHONE NUMBER	11. WORK LOG (Include An	CATION TELEPHONE NUMBER		
	SCHEDULED	13. NUMBER OF	14. ADD	15. DELETE	16. LOCATION		
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12 DATES	то Мау 30, 2001	2			NUMBER TO BE ASSIGNED BY NRC, 001) 928		
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Oregon State University

124 Radiation Center Corvallis, Oregon 97331-5904 M. Christi Hernandez U.S. Nuclear Regulatory Commission Region IV DNMS/NMLB Attn: Reciprocity 611 Ryan Plaza Drive, Suite 400 Arlington, TX 76011-8064

Reference: Oregon State University; Oregon radioactive materials license ORE-90005

Ms. Hernandez:

Attached is an NRC 241 form and four copies of OSU's radioactive materials license.

This work is a continuation of work performed for the past 16 years involving use of ¹⁴C in primary productivity studies. The site of the study is Crater Lake National Park, Crater Lake, Oregon. Dates for the work are May 29-30, 2001. Inclement weather may force the work to be rescheduled; if so, we will notify you via telephone or fax.

This project, if performed at a State-jurisdiction location, would conform to the provisions of ORE-90005, plus OSU radiation use authorization 321.

Please note that Oregon State University is a non-profit educational institution and is therefore exempt from reciprocity fees. If you have any questions, please call me at (541) 737-7082. Thank you.

Sincerely,

Daniel Harlan Assistant Radiation Safety Officer

May 18, 2001

25 20

Telephone 541.737.2227

attachments

cc w/o attachments: G. Larson

STATE OF OREGON OREGON STATE HEALTH DIVISION DEPARTMENT OF HUMAN SERVICES

Page 1 of 6 Pages License No. ORE-90005 Amendment Number 71

RADIOACTIVE MATERIALS LICENSE

Pursuant to the Radiation Control Act and the Oregon Rules for the Control of Radiation, and in reliance on statements and representations heretofore made by the Licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive materials for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations, and orders now or hereafter in effect of the State Health Division and to any and all conditions specified below.

In accordance with letters dated September 27, 2000 and October 23, 2000, Oregon Radioactive Materials License Number ORE-90005 is amended to read as follows:

	Licenee			3. License Number	ORE-900	05
1. Name	Oregon State University			4. Expiration Date		
	Radiation Safety Office				October 3	1, 2001
2. Address	124 Radiation Center			3. Reference Number	Priority 2/	Program Code 01100
	Corvallis, Oregon 97331-5904				Broad Sco	ope A
	6. Radioactive materials (element and mass number)		7. Chemical a	nd/or physical form	٤	 Maximum quantity licensee may possess at any one time
А.	Any radioactive material between atomic numbers 1 through 83, inclusive	A.	Any		А.	120 Curies (1500 millicuries each, except as provided below).
В.	Any radioactive material between atomic numbers 84 and 103, inclusive	B.	Any		В.	115 millicuries (5 millicuries each, except as provided below).
C.	Any radioactive material with a half-life of 24 hours or less, incident to the irradiation of samples in a reactor	C.	Any		C.	100 Curies.
D.	Carbon-14	D.	Any		Ď.	10 Curies.
E.	Any radioactive material with a half-life of 90 days or less	E.	Any		E.	100 Curies.
F.	Hydrogen-3	F.	Any		F.	500 Curies.
G.	Americium-241	G.	Sealed	sources	G.	1 Curie.
H.	Radium-226	H.	Sealed	sources	H.	500 millicuries.
I.	Strontium-90	I.	Sealed	sources	I.	500 millicuries.
J.	Cadmium-117	J.	Cadmiı	ım shields	J.	3 Curies.
K.	Cesium-137	K.	Sealed Kellogg Amersh	source (M. W. g, Type 23, nam Model X.19)	K.	23 Curies.

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RADIOACTIVE MATERIALS LICENSE

Continued from Page 1

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6.	Radioactive materials (element & mass number)	7.	Chemical and/or physical form	8.	Maximum quantity licensee may possess at any one time
L.	Cobalt-60	L.	Sealed source (U.S. Nuclear Corp. Model 339; ICN Model No. 373; AECL Type SRC-3 Drawing No. C-164)	L.	7 Curies.
M.	Natural uranium	M.	Any	M.	2500 kilograms.
N.	Depleted uranium	N.	Any	N.	10 kilograms.
Ο.	Cobalt-60	Ο.	Sealed sources (encapsulated by AECL per Budd Co. Drawing No. A- 24476)	0.	4000 Curies.
Р.	Radium-226	P.	Foil	P.	25 millicuries.
Q.	Cesium-137:Americium- 241:Beryllium or Americium-Beryllium or Cesium-137	Q.	Sealed sources	Q.	See Subitem 9.Q. below.
R.	Any radioactive material	R.	Analytical samples	R.	See Subitem 9.R. below.
S.	Americium-241	S.	Sealed sources (Amersham Models IE3.A1, AMM and CLC)	S.	30 microcuries.
Τ.	Curium-244	T.	Sealed sources (Amersham Models IE3.A1, AMM and CLC)	Т.	13 millicuries.
U.	Iron-55	U.	Sealed sources (Amersham Models IE3.A, AMM and CLC)	U.	20 millicuries.
V.	Cobalt-60	V.	Sealed sources (AECL Model Numbers C-166 or C-167 or C-185 or C-198 source pencil)	V.	7500 Curies.
W.	Nickel-63	W.	Sealed source	W.	No single source to exceed 20 millicuries.

RADIOACTIVE MATERIALS LICENSE

Page 3 of 6 Pages License No. ORE-90005 Amendment Number 71

Continued from Page 2

6.	Radioactive materials (element & mass number)	7.	Chemical and/or physical form	8.	Maximum quantity licensee may possess at any one time
X.	Cobalt-57	X.	Sealed source (Amersham Model CTC.D2; Dupont/NEN Model NER- 472)	Χ.	One source, not to exceed 40 millicuries.
Y.	Cobalt-57	Υ.	Sealed source (Amersham Model CTC.D2; Dupont/NEN Model NER- 472)	Y.	One source, not to exceed 12 millicuries.
Z.	Plutonium-239	Z.	Sealed sources (Monsanto Research Corp. Model Nos. MRC-N-SS-W-PuBe 359 and MRC-N-SS-W-PuBe 329)	Z.	5 Curies.
AA.	Cesium-137	AA.	Sealed source (ORNL capsule number DSK-2384)	AA.	One source, not to exceed 130 Curies.
BB.	Cesium-137	BB.	Sealed source (Nuclear Chicago Model OCD-S- 104)	BB.	One source, not to exceed 16 millicuries.
CC.	Cesium-137	CC.	Sealed source (Isotope Products Laboratories Model HEG-127-10)	CC.	One source, not to exceed 12 millicuries.

9. Authorized use:

- A. through I., N., P., and Z. "Research and Development" as defined in Oregon Rules for the Control of Radiation, OAR 333-100-005(112).
- J. For possession only.
- K. For instruction and research in radiography, instrument calibration and lower animal irradiation.
- L. For calibration of instruments.
- M. For use in graphite subcritical assembly.

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RADIOACTIVE MATERIALS LICENSE

Continued from Page 3

- (9.) O. To be used in a custom-designed, self-shielded irradiator for the study of effects of radiation.
 - Q. To be used in Troxler, CPN, Siemens, Humboldt or other devices specifically authorized by the U.S. Nuclear Regulatory Commission or an Agreement State for portable moisture and/or density measurements.
 - R. For possession incident to the performance of tests for leakage or contamination of sealed sources containing licensed materials.
 - S. through U. To be used in an ASOMA Model 8620 x-ray fluorescence analyzer to analyze materials.
 - V. To be used in a Gammacell 220 for irradiation of materials.
 - W. To be used in gas chromatographs for sample analysis.
 - X. To be used in a SCITEC MAP-3 Series spectrum analyzer for lead-in-paint analysis.
 - Y. To be used in a SCITEC MAP-4 Series spectrum analyzer for lead-in-paint analysis.
 - AA. To be used in an Amersham Corporation (formerly Technical Operations, Inc.) CDV-794 Model 2 calibrator for instrument calibration.
 - BB. To be used in a CDV-790 Model 1 calibrator for instrument calibration.
 - CC. To be used in a Geotek Multi-Sensor Core Logger to determine density of sediment core samples.

CONDITIONS

- 10. A. Radioisotopes may be stored or used in any Oregon-jurisdiction facility under administrative control of Oregon State University.
 - B. Radioisotopes may be used and stored temporarily at any other Oregon-jurisdiction locations provided that specific approval has been given by the Oregon State University Radiation Safety Committee for the work proposed and location(s) proposed, and specific approval of the location's owner or operator is obtained.
 - C. Radioisotopes may be used at non-Oregon jurisdiction locations pursuant to reciprocity agreement with the regulatory agencies having jurisdiction.
- 11. This license is subject to and void without an annual validation certificate. Insofar as the licensee has submitted the proper fee prior to the expiration of a validation certificate, such existing validation certificate shall not expire until the issuance of a new validation certificate for the then current fiscal year.

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RADIOACTIVE MATERIALS LICENSE

Continued from Page 4

CONDITIONS (cont.)

- 12. The Radiation Safety Officer for the activities authorized by this license is Rainier Farmer.
- 13. Radioactive material shall be used by, or under the supervision of, individuals designated by the Chairperson, Radiation Safety Committee.
- 14. The licensee shall comply with provisions of 333-102-305(10) (registration of sealed sources in new manufacture), 333-102-305(11) (6-month inventory), 333-102-305(12) (transportation), 333-102-305(17) (internal monitoring), 333-102-305(18) (6-month leak test), 333-102-305(22) (decay-in-storage), 333-102-305(23) (constant surveillance of materials in unrestricted area), and 333-102-305(24) (manufacturer's instructions for detector cells), "Terms and Conditions of Licenses".
- 15. Experimental animals administered radioactive materials or their products shall not be used for human consumption.
- 16. Notwithstanding the specific terms and conditions for broad licenses, byproduct materials produced in the Oregon State University TRIGA Reactor, and used under this license, are exempt from the requirements of OAR 333-102-910(3).
- 17. The licensee shall only offer plutonium to a carrier for shipment by air, or transport plutonium by air, in accordance with the provisions of 10 CFR Part 71 and the IATA Dangerous Goods Regulations, as applicable.
- 18. The licensee shall ensure that radioactive material used in open form does not result in a total effective dose equivalent (TEDE) that exceeds the limits in OAR 333-120-100 (Appendix B, Table 1).
- 19. The licensee is authorized to collect leak test samples for analysis by the licensee. Alternately, tests for leakage and/or contamination may be performed by persons specifically licensed by the Oregon Health Division, U.S. Nuclear Regulatory Commission, or another Agreement State to perform such services.
- 20. Except as specifically provided otherwise by this license, the licensee shall conduct its program in accordance with statements, representations and procedures contained in the documents, including any enclosures listed below. The Oregon Rules for the Control of Radiation shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the rules.
 - A. Application dated September 28, 1994, signed by W. Lee Schroeder.
 - B. Facsimile document dated December 2, 1994, signed by Rainier Farmer.
 - C. Letter dated March 1, 1995, signed by Rainier Farmer.

Page 6 of 6 Pages License No. ORE-90005 Amendment Number 71

RADIOACTIVE MATERIALS LICENSE

Continued from Page 5

CONDITIONS (cont.)

(20.) D. Facsin	nile document dated May	8, 1995, signed by Rainier Farmer.
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- E. Letter dated June 7, 1995, signed by Rainier Farmer.
- F. Letter, with revised documents, dated May 16, 1996, signed by Rainier Farmer.
- G. Facsimile document dated August 14, 1996, signed by Rainier Farmer.
- H. Letter dated August 29, 1996, signed by Rainier Farmer.
- I. Letter dated October 1, 1996, signed by Rainier Farmer.
- J. Letter dated June 16, 1997, from Rainier Farmer.
- K. Facsimile document dated June 27, 1997, signed by Rainier Farmer.
- L. Letter dated December 2, 1997, signed by Rainier Farmer.
- M. Letter dated February 24, 1998, signed by Rainier Farmer.
- N. E-mail correspondence dated April 8, 1998, from Rainier Farmer.
- O. Letter dated November 24, 1998, signed by Rainier Farmer.
- P. Letter dated September 27, 2000, signed by Rainier Farmer.
- Q. Letter dated October 23, 2000, signed by Rainier Farmer.

Date November 9, 2000

FOR THE OREGON HEALTH DIVISION

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61 Ray D. Paris, Manager Radiation Protection Services