

INTERIM REPORT

ACCESSION NO. \_\_\_\_\_  
ORNL/HASRD-74 \_\_\_\_\_

Contract Program or Project Title: Evaluation of Docket Files of Terminated Licenses

Subject of this Document: Technical Progress

Type of Document: Monthly Progress Report

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Date of Document: March 1980

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Prepared for  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555  
Under Interagency Agreement(s) DOE #40-549-75  
NRC FIN No. A9085-7

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Department of Energy

INTERIM REPORT

NRC Research and Technical  
Assistance Report

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MONTHLY PROGRESS REPORT FOR MARCH 1980  
EVALUATION OF DOCKET FILES OF TERMINATED LICENSES  
(189 No. A9085-7)

PRINCIPAL SCIENTISTS: C. F. Holoway and H. W. Dickson

Objectives:

The technical objective of this project is to review terminated licenses in the Nuclear Regulatory Commission (NRC) Docket File System, extract pertinent data, create a computer file of these data and identify which previously licensed sites potentially could constitute residual radiological safety hazards.

Major Accomplishments:

The number of radionuclides covered by licenses analyzed so far has been increased from 132 to 139. Calculations have been made for the annual limits of intake (ALI). The seven new radionuclides are listed in Table 1. For the other 132 radionuclides, see Attachment 3 of the monthly progress report for February (ORNL/HASRD-70).

Table 1. Radionuclides Added - March 1980

ISOTOPE	CRITICAL ORGAN(S)	HALF-LIFE (YRS)	ALI (MBq)	PERMISSIBLE AMTS AFTER TIME t (yrs) (MBq)			
				t=0	t=5	t=10	t=20
Az-37	Skin	9.5(-2)	2.7(5)	2.7(8)	>3.7(7)		
I-126	Thyroid	0.036	5.9(-1)	5.9(1)	>3.7(7)		
Xe-127	d	0.17	1.9	1.9	>3.7(7)		
Ta-129m	Lung	0.092	2.7	2.7(2)	>3.7(7)		
I-132	Thyroid	2.6(-4)	18	1.8(3)	>3.7(7)		
Ce-144	Lung	0.78	0.54	56	4.7(3)		
Pr-144	Lung	3.3(-5)	0.54	56	4.7(3)	4.1(5)	>3.7(7)

The number of Part 30 dockets screened and categorized by individual analysis to date is 1830. Approximately 1400 of these records are now in a permanent computer file and available for retrieval by a remote terminal.

A total of 54 dockets have been group-analyzed to date. Results are shown in Table 2.

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Table 2. Group analysis of docket files

Category	Categorization before group analysis	Categorization after group analysis
No	12	21
Un	42	9
OK	<u>0</u>	<u>24</u>
Total	54	54

A printout of active licenses was requested by the Oak Ridge analysis team as an auxiliary aid. An NRC printout, which is assumed to be that of all active (and recently terminated) Part 30 licenses and licensees was sent. Some Part 40 and 70 licenses were noted in the printout as well. This NRC printout, which can be designated "NRC Printout of Active Part 30 Licenses" has been used primarily to cite "presently held" license numbers in the Comments column of the Group Docket Analysis form (Attachment 1). A license number not found on this NRC printout is assumed to have been terminated.

The NRC requested a further review of licenses permitting possession of Cs-137, Co-60, and Sr-90 sealed sources. Five hundred ninety-five records were pulled from the data base containing these isotopes. Of this number 158 had a Total Screening Factor (TSF) over 100. Of these 158 records 36:

- (1) were transferred to a later license; or
- (2) had a certificate showing transfer to another company; or
- (3) had a certificate that all material was properly disposed; or
- (4) contained information that material was exported; or
- (5) contained information that material was never possessed.

Of the 123 records remaining, 69 are superseded by later licenses not found on the current ORNL computer base. They may be in later folders or covered by active licenses. Presently 35 of the 123 records are tentatively categorized "No," the remaining 88 as "Un."

As part of quality control procedures, four dockets categorized OK were picked at random from each of six boxes previously analyzed by Evaluation Research Corporation reviewers and reexamined. The results are shown in Attachment 2. Additions were made to 6 of the 24 docket records and 4 of the categorizations were challenged -- to be resolved in group analysis later and/or pending a decision from NRC as to whether the operating factor for sealed sources should be taken as 1 or 0.01.

An operating factor of 0.01 is less restrictive than 1. If used, an operating factor of 0.01 would be limited to the sealed sources: Co-60, Cs-137, and Sr-90, for containment walls not readily punctured or crushed. Other sealed sources would be considered unsealed. This matter will be discussed at the next group-analysis session, pending discussion with the NRC technical monitor.

Manpower and Cost Summary:

Efforts in Man Months			Cost K\$			Additional cost to completion (est.)
Mar. 1980	FY 1980	Total to date	Mar. 1980	FY 1980	Total cost to date K\$	
0.2	8.0	62.9	1.4	96.1	384.1	165,000

## Attachment 1.

ERC/ORNL

Group  
Docket Analysis

Date: Feb. 28, 1980

No.	Record No.	License No.	Licensee	Orig. Cat.	Analyst						Group Cat.	Comments
					DGJ	LEB	JSE	HWD	CFH	PML		
1	148	12-0621-01	Abbott Laboratory North Chicago, IL	2No	No	No	No	No	No	No	2No	Could possess any by-product material between Atomic Number 3-83 in 5Ci amounts. Potential large quantities hazardous radionuclides. Presently hold 12-0621-02, 03, 05, 06, 07, 08
2	156	8-0604-01	Carnegie Institution of Washington Washington, D.C.	2No	OK	OK	Un	OK	OK	OK	2OK	Presently hold 08-0604-03, 04
3	648	31-0452-02	Columbia University, NY, NY	2No	Un	Un	Un	Un	Un	Un	2Un	Could possess any by-product material between atomic number 3-83 in 500 mCi amounts. Potential large quantities of hazardous radionuclides.
4	655	31-5542-04	Columbia University New York, NY	2No	OK	No	OK	OK	OK	OK	2OK	Presently hold 31-5542-18
5	682	21-1931-01	Bendix Aviation Corporation Detroit, MI	2No	No	No	No	Un	No	No	2No	Sr-90 possessed in 225 mCi amounts as nitrate. Presently hold 21-3386-01, 21-11524-02, 03, 21-1931-04, 05
6	1	37-7690-04	Bartol Research Foundation Swarthmore, PA	2Un	OK	OK	OK	OK	OK	Un	2OK	No active licenses.



## Attachment 1. (continued)

ERC/ORNL

Group  
Docket AnalysisDate: March 12, 1980

No.	Record No.	License No.	Licensee	Orig. Cat.	Analyst						Group Cat.	Comments
					DGJ	LEB	JSE	HWD	CFH	PML		
12	150	4-0650-01	California, Regents of the University of Berkeley, CA	2Un	No	No	No	No	No	No	2No	Possibility of large amount of hazardous radionuclides. Waste disposal on campus had violations. (Agreement State)
13	157	12-0509-02	Chicago, University of Chicago, IL	2Un	No	No	No	No	No	No	2No	Large possession limits for Sr-90 and Co-60. (Hold licenses # 12-0509-03, 07, 08, 12-1721-02)
14	263	29-0035-02	Weston Electrical Inst. Corp. Engr. Div. Mat. Sect. Newark, NJ	2Un	OK	OK	OK	OK	OK	OK	2OK	
15	313	4-0424-03	Douglas Aircraft Co., Inc. Metals and Process Eng. Dept. Santa Monica, CA	2Un	OK	Un	Un	Un	Un	Un	2Un	Could possess 20 mCi of Sr-90 and other long-lived isotopes.
16	318	4-04240-7	Douglas Aircraft Co., INC., Mat. Research and Process Eng. Dept. Santa Monica, CA	2Un	No	OK	OK	OK	Un	OK	2Un	Lost source at White Sands proving grounds.
17	320	4-0424-04	Douglas Aircraft Co., Inc., Mat. and Process Eng. Dept. Santa Monica, CA	2Un	OK	Un	Un	No	Un	Un	2Un	Hazardous materials in potentially large amounts and Sr-90 is considered a thin section source easily ruptured.

## Attachment 1. (continued)

ERC/ORNL

Group  
Docket AnalysisDate: March 12, 1980

No.	Record No.	License No.	Licensee	Orig. Cat.	Analyst						Group Cat.	Comments
					DGJ	LEB	JSE	HWD	CFH	PML		
18	324	12-0764-01	Admiral Corp., Radiation Damage Dept. Chicago, IL	2Un	No	No	Un	No	No	No	2No	Large quantities of Co-60 and Sr-90. (No active license)
19	326	4-0436-05	Aerojet-General Corporation Azusa, CA	2Un	OK	OK	OK	OK	OK	OK	2OK	
20	327	4-0436-06	Aerojet General Corporation, Radiation Lab Azusa, CA	2Un	No	Un	Un	No	No	No	2No	Not enough information - some work classified. (Agreement State)
21	332	37-0637-05	Franklin Inst., Solid State Phys. Branch Philadelphia, PA	2Un	OK	OK	Un	OK	Un	Un	2Un	Identity of material unknown. (37-0637-10)
22	422	37-0611-02	Budd Co., Nuclear Div., Gamma Corp. Philadelphia, PA	2Un	Un	No	No	No	No	No	2No	Fabricate large quantities of sealed sources. (Under Budd Co., #37-5680-03) (37-19108-01)
23	450	12-2172-01	Burgess Battery Co., Eng. Dept. Freeport, IL	2Un	No	No	Un	No	Un	Un	2No	Large amounts of Sr-90. Questionable experience in handling radioactive materials. (No active license)



## Attachment 1. (continued)

ERC/ORNL

Group  
Docket AnalysisDate: March 12, 1980

No.	Record No.	License No.	Licensee	Orig. Cat.	Analyst						Group Cat.	Comments
					DGJ	LEB	JSE	HWD	CFH	PML		
24												Included with No. 12 - Same license.
25	540	37-0136-11	Gulf Research and Development Co., Physical Science Division Pittsburg, PA	2Un	OK	Un	OK	OK	Un	OK	20K	
26	555	37-2489-01	Haller, Raymond and Brown, Inc. Analysis Dept. State College, PA	2Un	OK	OK	OK	OK	OK	OK	20K	
27	557	29-0459-01	Ciba Pharmaceuticals Products, Inc., Dept. of Biochemistry Summit, NJ	2Un	OK	OK	OK	OK	OK	OK	20K	
28	560	34-6903-01	University of Cincinnati, College of Med. Cincinnati, OH	2Un	OK	OK	OK	OK	OK	OK	20K	
29	653	31-0462-03	Columbia Univ., College of Physicians & Surgeons Rad. Res. Lab. New York, NY	2Un	No	OK	Un	Un	Un	OK	2Un	May be a distribution point for isotopes. May not be all medical isotopes.

Attachment 1. (continued)

ERC/ORNL

Group  
Docket Analysis

Date: March 12, 1980

No.	Record No.	License No.	Licensee	Orig. Cat.	Analyst						Group Cat.	Comments		
					DGJ	LEB	JSE	HWD	CFH	PML				
30	663	31-5542-12	Columbia Univ., Nuclear Energy Tech. Lab., Chem. Eng. Dept. New York, NY	2Un	No	Un	Un	Un	Un	No	2Un	What is the status of the 1500 Ci Co-60 source?		
31	664	31-5542-15	Columbia Univ. Electronic Res. Lab. New York, NY	2Un	OK	OK	Un	OK	Un	OK	20K			
32	665	31-0106-01	Lamont Geological Observatory, Columbia Univ. Palisades, NY	2Un	OK	OK	OK	OK	OK	OK	20K			
33	666	31-0106-02	Columbia Univ., Lamont Geological Observatory, Geo. Dept. Palisades, NY	2Un	No	Un	Un	Un	Un	Un	2Un	Probably OK but blanket coverage large		
											Originally	No	Un	OK
											Results of GA	6	7	8

## Attachment 2.

<u>Box No.</u>	<u>Analyst</u>	<u>License Number</u>	<u>Comment</u>
10	JHJ	32-3383-1	OK
	JHJ	32-632-13	OK
	JHJ	16-1509-1	OK
	JHJ	11-1416-1	60Ci <sup>60</sup> Co source; TSF=1980; should be classified NO, pending decision on operating factor for sealed sources; license superseded by 11-1416-2 on 15 Nov. '957
8	LEB	29-591-2	OK
	LEB	4-504-3	OK
	LEB	12-2203-2	OK
	LEB	31-259-2	OK
13	JHJ	6-1781-1	OK 13 Curies total <sup>210</sup> Po-Be sources
	JHJ	4-839-7A60	OK
	JHJ	31-5712-11	OK
	JHJ	22-1642-3	OK
11	JHJ	12-2030-1	OK
	JHJ	42-3201-1	OK
	JHJ	17-3170-2	OK
	JHJ	53-3361-1A60	OK

## Attachment 2. (continued)

<u>Box No.</u>	<u>Analyst</u>	<u>License Number</u>	<u>Comment</u>
18	LEB	9-530-2	OK
	LEB	19-994-9	OK
	LEB	20-4146-1	OK
	LEB	17-775-1	OK
17	JHJ	31-329-2	OK License allows possession of sealed sources of <sup>60</sup> Co (30Ci), <sup>90</sup> Sr (5Ci), and <sup>137</sup> Cs (30Ci) with TSF=48,600; title and responsibility transferred to Curtiss-Wright Corporation
	JHJ	29-2438-3	License allows possession of a 15 mCi <sup>90</sup> Sr sealed source; TSF=128; should be classed UN pending decision on final classification of sealed sources.
	JHJ	39-1347-1	License allows possession of a total of 20 mCi <sup>90</sup> Sr sealed source; TSF=170; should be classed UN pending decision on final classification of sealed sources.
	JHJ	42-945-1	License allows possession of a total of 20Ci <sup>137</sup> Cs sealed sources; TSF=3400; item of non-compliance associated with shipment of an <sup>192</sup> I sealed source; should be classed NO pending decision on final classification of sealed sources.

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