Pratt & Whitney
A United Technologies Company

400 Main Street
East Hartford, Connecticut 06108

Dennis Lawyer
Health Physicist
Material Security and Industrial Branch
Division of Nuclear Materials Safety
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

MS16
P-2

REF: License No. 06-07522-02
Docket No. 03003796
Control No. 138547

Dear Mr. Lawyer:

Provided below are responses to requests for information (RFI) contained in a letter to Pratt & Whitney from Donna Janda, NRC Region 1, dated July 5, 2005.

RFI #1
Request for license termination must be signed by a management representative.
This was resolved by the letter from Kip Wyman, Director of Facilities and Services, to Denis Lawyer, NRC Region 1.

RFI #2
Sealed source leak tests missing.
The RSO has reviewed all the files that have to do with the subject license and has reported (in the submittal dated March 30, 2005) all existing information having to do with receipt and disposal of licensed radioactive material and with sealed source leak tests. A consultant from Radiation Safety Associates, Inc. has also reviewed these records and concurs that all available information has been reported to NRC in the March 30 letter. This is to confirm that there is no additional information in Pratt & Whitney's files on sealed source leak tests for the sealed sources cited in NRC's letter to Pratt & Whitney dated July 5, 2005.

On March 9, 2006, several rooms in D Building on the main Pratt & Whitney site in East Hartford were surveyed. These rooms were identified as locations where sealed sources in analytical instruments had been used. These rooms were abandoned and no longer contained any equipment or furniture. The building appears to be in the process of being demolished. No contamination was detected. Wipe test results are listed below.

Wipe No.	Location	DPM Channel 1	DPM Channel 2	CPM Channel 3
1		0	14.95	4.8
2		0	6.57	0

3		0	4.02	0
4		28.11	3.94	0
5	Performance Measurements Laboratory Front Room	0	3.59	0
6		0	5.37	0
7		0	5.14	0
8		3.91	3.64	0
9	Performance Measurements Laboratory Back Room	0	0	4.8
10		0	5.2	0.8
11		10.9	0	0
12		0	12.01	5.0
13	Air Conditioner	0	8.9	0

In all of the existing documentation of sealed source leak tests, and in the recollection of all the Pratt & Whitney employees interviewed, there has never been an incident involving a leaking sealed source.

RFI #3

Physio-Chemistry Lab at the Willgoos Turbine Laboratory, Final Status Survey

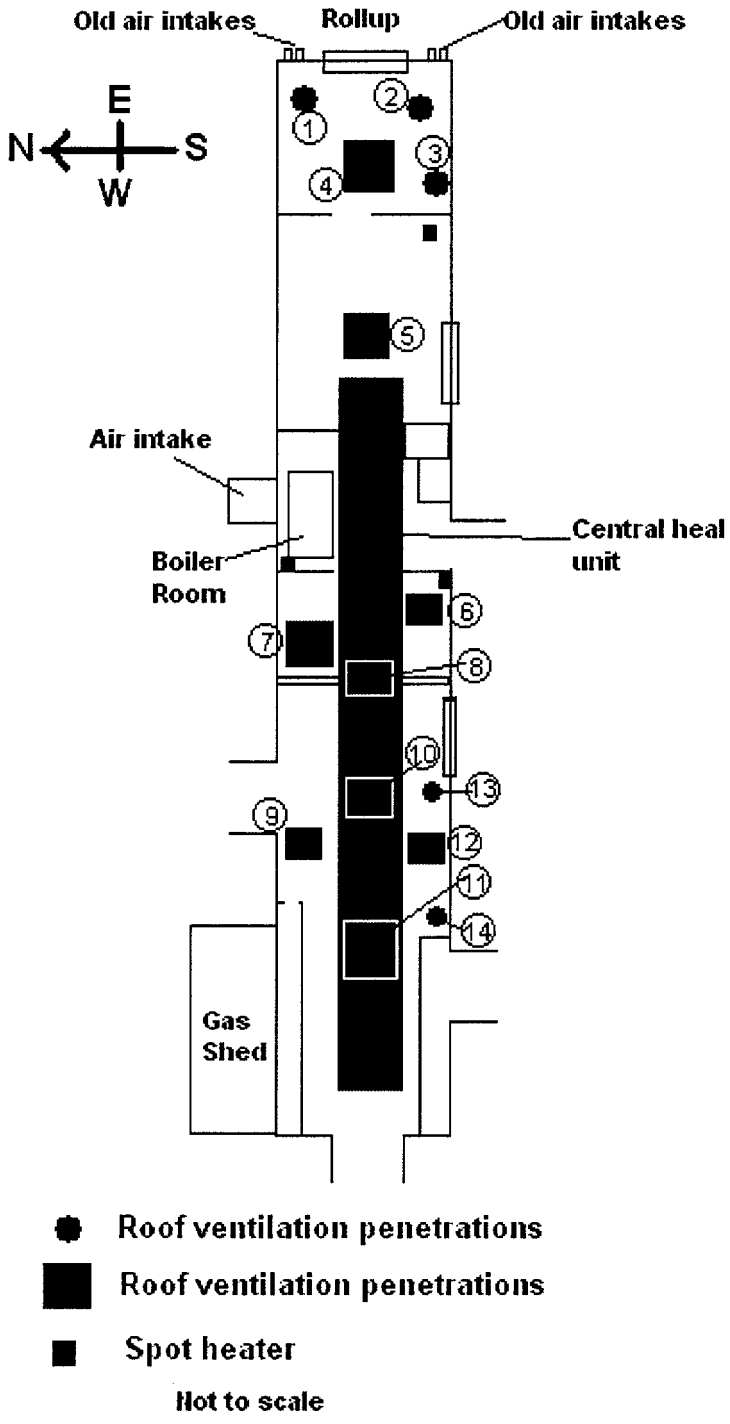
The building at the Physio-Chemistry Lab at the Willgoos facility in which C-14 (in the form of ^{14}CO gas) was used is an old, corrugated metal building, built on a concrete slab. It is in the mid stages of deterioration and currently used only for storage. During the original survey of this building (October 2004), scan surveys were performed by our consultant, Radiation Safety Associates, Inc. on all accessible floors and surfaces. This is alluded to in the previously submitted report but not clearly stated. It is likely that this gas was released to the atmosphere during the course of the research project, although no records of any releases can be located. No detectable radioactivity in excess of background was found during the scan survey.

In response to the questions in the letter from NRC dated July 5, 2005, a close inspection of the building was performed on November 30, 2005. Ventilation ducts, floor drains and roof penetrations were located and are indicated on the drawings below.

a. Ventilation and Exhaust

The original building was ventilated in the warmer months by roof fans and louvers located along the peak of the roof. There is now central heating system ducting in the center of the overhead, along with three spot heaters. There are also a number of old roof penetrations, and possibly some of them were used as fume hood exhausts. There is no ducting remaining in the building that might have been connected to fume hoods. The central duct is currently used for the heating and cooling system. There are no fume hoods remaining. Wipes and direct surveys were made on all roof vents. All remaining vestiges of roof penetrations and all remaining ventilation louvers have been wipe tested and surveyed directly. No detectable radioactive material was found. Results of these measurements are contained in the table following the drawing. All direct measurements were made with a G-M pancake-type frisker (SE International Inspector, Ser. #06213, cal. due Feb. 14, 2006).

Wipe Survey and Direct Measurement Results from Ventilation System



Wipe test results in the area of remaining ventilation components.

Wipe #	H-3 dpm/100 cm^2	C-14 dpm/100 cm^2
1	1.52	0
2	0	0
3	0	0
4	0	0
5	0	0
6	32.77	0
7	0	0
8	0	0
9	0	0
10	16.07	0
11	0	0
12	16.81	0
13	0	0
14	0	0

b. Floors

The entire floor had once been tiled with 9" by 9" tiles, which is apparently how the building was initially constructed. Most of these tiles have been removed. What remains is a layer of mastic ranging from very thin to quite thick (up to 1/16 inch or more), or bare concrete. Approximately half the floor surface is bare concrete and the rest is either mastic or tile. It is apparent that only a single layer of tile had ever been installed on this floor. Also, there is no evidence that after the tile had been removed from most of the floor that any paint had ever been applied to the floor.

Our consultant reports that scanning MDAs and direct measurement MDAs (see Attachment A) were calculated for the two proportional counters used during the March 2005 survey using the efficiencies obtained during calibration. The MDAs were then recalculated to take into account the effects of reduced counting efficiency in the unlikely case that C-14 contamination had seeped into the concrete underlying the floor tile and mastic. It is conservatively estimated, based on information provided in NUREG-1507, that as much as a 50% reduction in counting efficiency might have occurred in this case. These new concrete-attenuated MDAs are also listed in the Tables below. Details of the statistical calculations are provided in Attachment A. Having the efficiency of these instruments doubles the MDAs

Instrument	Scanning MDA (From Previous Report)	New Scanning MDA (Concrete Attenuation = 50%)
43-68 (125 cm^2)	2678	5356
43-37 (584 cm^2)	438	875

Instrument	Direct Measurement MDA (From Previous Report)	New Direct Measurement MDA (Concrete Attenuation = 50%)
43-68 (125 cm^2)	1016	2032
43-37 (584 cm^2)	375	750

DCGL Total (dpm/100 cm^2)	DCGL Removable (dpm/100 cm^2)	P&W ALARA
3.7E+6	3.7E+5	3E+3
3,700,000	370,000	3,000

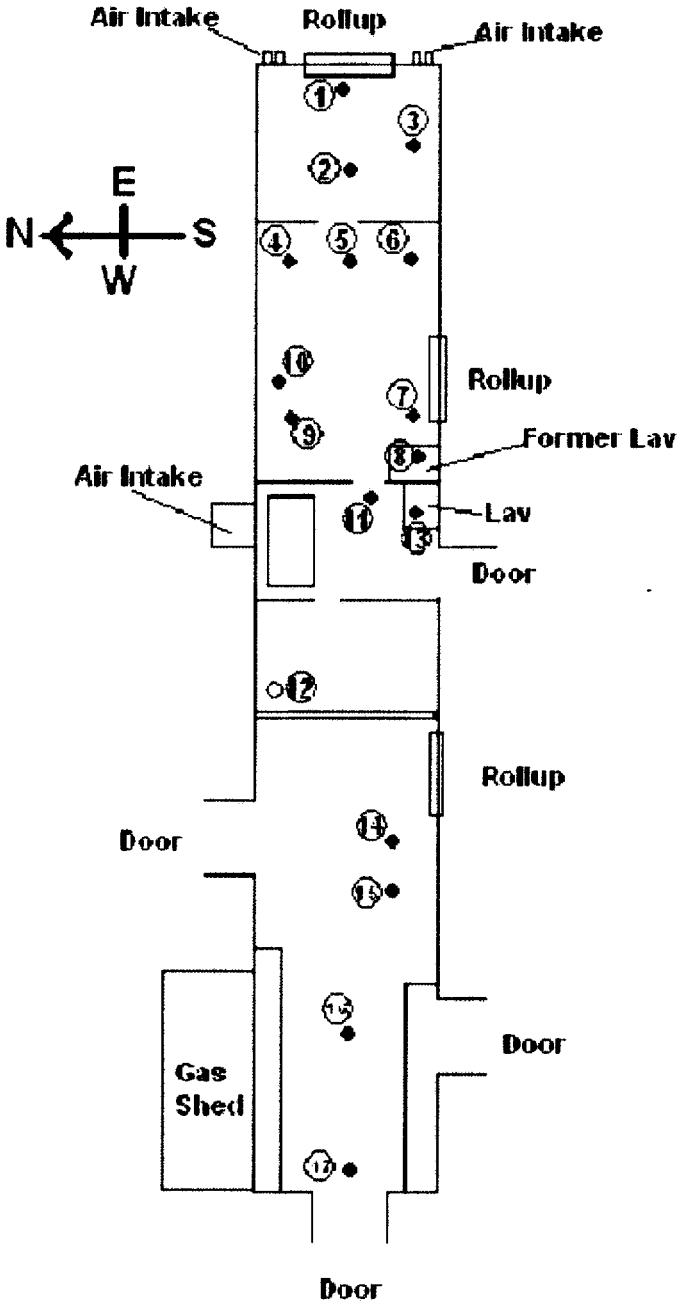
Conclusions (Floor):

1. There was no detectable removable contamination found anywhere in this facility.
2. All calculated MDAs are less than 1% of the DCGL for total C-14 contamination.
3. The concrete (i.e., the most restrictive) scanning MDA for the Ludlum 43-68 (125 cm^2) gas proportional counter exceeds the P&W ALARA guideline by nearly a factor of 2. However it must be noted that this hand-held instrument was used for scanning shelves and walls, not floors. The Ludlum 43-37 (584 cm^2) gas proportional floor monitor is better suited to floor scanning. The concrete scanning MDA for the 43-68 (875 dpm/100 cm^2 from the table above) is adequate for this survey.
4. There was no contamination found anywhere in this facility during the scanning or direct measurement phase of this decommissioning.

c. Floor Drains

During the close inspection of this building on November 30, 2005, 17 floor drains were located. There may be a few others that are hidden by the equipment and material stored inside this building. All of the floor drains are filled with concrete. This was a commitment made years ago between Pratt & Whitney and the U.S. EPA to prevent sewer discharge of oil and other chemicals. It is not feasible or ALARA to remove this concrete to perform a survey, especially since the C-14 used was in gaseous form and that no C-14 contamination was found anywhere else inside this building during the final radiological status survey. It is reasonable to assume that no C-14 is likely to have been discharged to the sewer.

Wipe Survey Results from Floor Drains



● Floor drain plugged with concrete
◇ Unblocked pipe stub
◆ Threaded brass plug
Not to scale.

Wipe test results in the area of the floor drains.

Wipe #	H-3 dpm/100 cm^2	C-14 dpm/100 cm^2
1	0	0
2	0	0
3	0	0
4	0	9.54
5	0	6.79
6	0	0
7	0	0
8	0	0
9	0	0
10	16.07	0
11	0	0
12	0	0
13	0	0.6
14	0	0
15	0	0
16	0	0
17	0	0

RFI #4

Cl-36 and Kr-85 Sources Permitted on the License

a. Cl-36, any, 2 mCi, 9/21/62 to 7/29/68.

The only previous use of Cl-36 on this license was in the form of a calibration standard. ("Shipping documentation of **a 0.00002 mCi Chlorine-36 source** sent back to the manufacturer (New England Nuclear) dated July 17, 1981. A memo dated August 15, 1988 documents a Chlorine 36 calibration source sent back to the manufacturer (Dupont) for disposal." {These documents were in the attachment to the original request for license termination dated March 30, 2005.}). There are no other records of Cl-36 sources in our files.

b. Kr-85 ($t_{1/2}$ = 10.72y), gas, 10 Ci, 4/18/66 to 2/26/68

It is likely that this gas was released during the period 1966-1968. There is, however, no record of the release in our records.

c. Kr-85, any form, 25 mCi, 4/18/66 to 2/26/98

Krypton (a noble gas, $t_{1/2}$ = 10.72 years) does not easily form molecules with other atoms, so listing the "form" of the isotope as "any" was probably an oversight. This source was likely in gaseous form, and was almost certainly released to the atmosphere. There is, however, no record of the release in our records.

RFI #5

Other Final Status Surveys submitted with March 30, 2005 request for termination. These reports were submitted in error. These facilities were never part of the byproduct material license that is the subject of this termination request. They were produced in support of the source material license that is still active at the East Hartford facility, and do not apply to this license termination request.

Sincerely,

04/10/06

Kip Wyman
Chief Manufacturing Engineer/
Director, Facilities & Services

4/3/06

Carlos Rivera
Radiation Safety Officer

Attachment A

Statistical information for the two gas-proportional detectors used during the final radiological status survey at the Pratt & Whitney Willgoos facility is provided below.

Ludlum 2224-1 + Ludlum 43-68 (125 cm^2)
DETECTION LIMITS--**DIRECT SURFACE CONTAMINATION MEASUREMENT**
Background Count = 331 cpm
Background Counting Time = 1 minutes
Sample Counting Time = 1 minutes
Detector Efficiency = 6.9 %
Detector Area = 125 cm^2
RESULTS:
Minimum Detectable Activity (MDA) = 1016 dpm/100 cm^2

Ludlum 2224-1 + Ludlum 43-68 (125 cm^2)
DETECTION LIMITS--**SCAN SURVEY**
Background Count = 331 cpm
Time Constant = 0.17 minutes
Background and Sample Counting Time = 0.34 minutes
Detector Efficiency = 4.6 %
Detector Area = 125 cm^2
RESULTS:
Minimum Detectable Activity (MDA) = 2678 dpm/100 cm^2

Ludlum 2224-1 + Ludlum 43-37 (584 cm^2)
DETECTION LIMITS--**DIRECT SURFACE CONTAMINATION MEASUREMENT**
Background Count = 441 cpm
Background Counting Time = 1 minutes
Sample Counting Time = 1 minutes
Detector Efficiency = 4.6%
Detector Area = 584 cm^2
RESULTS:
Minimum Detectable Activity (MDA) = 375 dpm/100 cm^2

Ludlum 2224-1 + Ludlum 43-37 (584 cm^2)
DETECTION LIMITS--**SCAN SURVEY**
Background Count = 441 cpm
Time Constant = 0.17 minutes
Background and Sample Counting Time = 0.34 minutes
Detector Efficiency = 6.9 %
Detector Area = 584 cm^2
RESULTS:
Minimum Detectable Activity (MDA) = 438 dpm/100 cm^2

All values calculated to 95% CL via MARSSIM methods.

SE International Inspector
DETECTION LIMITS--**SCAN SURVEY**
Background Count = 441 cpm
Time Constant = 0.17 minutes
Background and Sample Counting Time = 0.34 minutes
Detector Efficiency = 5 %
Detector Area = 15.55 cm^2
RESULTS:
Minimum Detectable Activity (MDA) = 1,051 dpm/detector
Minimum Detectable Activity (MDA) = 6,756 dpm/100 cm^2

Pratt & Whitney
A United Technologies Company

400 Main Street
East Hartford, Connecticut 06108

April 15, 2004

License Number: 06-07522-02

Mr. John R. McGraph
Senior Health Physicist
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. McGraph

As we discussed on March 4 of this year, please terminate license number 06-07522-02 as the devices covered by the license were removed from the Pratt & Whitney facility in 1996 and 1999. The devices were returned to the original manufacturer i.e. United Technologies Research Center (UTRC) 411 Silver Lane East Hartford, 06108.

Attached are decommissioning area surveys and transportation records for the devices. These records indicate that the levels of the final area swipe surveys performed were within NRC's recommended levels, and the required shipping papers conformed to the proper condition for transportation according to the applicable regulations of the Department of Transportation.

One of the licensed devices, density gage s/n 3327LN, was first returned to UTRC to be refurbished through the installation of a new source. UTRC then shipped the gage to Pratt & Whitney's facility in North Berwick, Maine.

Please do not hesitate to contact me at (860) 565-9728 should you have any questions.

Sincerely,

Carlos Rivera, RSO
Sr. EH&S Engineer

UNITED TECHNOLOGIES RESEARCH CENTER

This package conforms to the conditions and limitations specified in 49 CFR 173.421 for radioactive material, excepted package - limited quantity of material, UN2910.

This is to certify that this package conforms to all packaging requirements of the U.S. Department of Transportation rules and regulations regarding the shipment of excepted radioactive material, limited quantity.

The radiation level on the surface of this package is less than 0.5 mr/hr. The non-fixed (removable) radioactive surface contamination on the external surface of this package is less than 0.00001 microcuries per square centimeter.

No other labels required.

This document pertains to: Gd-153

Source S/N: 3327LN

This equipment will be shipped from:

Pratt & Whitney, 400 Main Street, East Hartford, CT

This equipment will be shipped to:

United Technologies Research Center
411 Silver Lane
East Hartford, CT

Date shipped: 5/6/96

Signed:

Date: 5/6/96

Dept. 432
Density Gage (automated)
Isotope: Gd-153

SN: 33274

Date: 5/6/96

Log Sheet for Verifying the Acceptability of Gage Transportation According to
49 CFR 173.421 (Limited Quantities of Class 7 (radioactive) materials)

Gage Type (LTG, PFG, DG):	**DG**
Gage S/N:	**N/A**
Isotope:	**Gd-153**
Source S/N:	**3327LN**
Source Activity:	**72 mCi**
Location:	**Dept. 432, PWA/East Hartford**
Dose Rate Meter Used:	**Victoreen 450 (Latest Cal. 3/20/96)**
Wipe Counter Used:	**PCC-11TC**
Wipe Counter Efficiency:	**1.92%**

1)

Sample	Wipe Location	Gross Counts	Gross CPM	Activity µCi
Standard	N/A	(Gd-153)	**1246**	N/A
Background	N/A		**38**	N/A
1	Source Housing		**34**	**<8.7E-4**
2	Beneath Gage		**43**	**<8.7E-4**
3	Package Surface		**36**	**<8.7E-4**
4				
5				

2) Maximum dose rate measured on the surface of the packaged device:
0.10 mR/hr

For a package to conform to the conditions and limitations specified in 49 CFR 173.421 the following conditions must be met:

1) Maximum activity of the wipe taken on the external surface of the packaged device is less than 0.005 µCi (wipe #3). NO gage can be transported if the removable surface contamination on the external surface of the package is greater than 1E-5 µCi /sq. cm. (1E-5 µCi /sq.cm. • 500 sq. cm. = 0.005 µCi).
2) Maximum dose rate at package surface is less than 0.5 mR/hr (item #2).

Are all of the above conditions met:

YES X NO ____

Prepared by: G. Janowsky

AREA SURVEY

Surveyor: G. Janowsky
Location: PWA/E.H./D.432
Background: 38cpm
Remarks: **Final survey - Gage being relocated to PWA/N. Berwick, ME**

Date: 5/6/96
Instrument: PCC-11TC
Efficiency: 1.92%

SWIPE	CPM	SWIPE	CPM	ADDITIONAL SWIPES
1	47	16		
2	40	17		
3	42	18		
4	35	19		
5	33	20		
6	35	21		
7	40	22		
8	37	23		
9		24		
10		25		
11		26		
12		27		
13		28		ACTIVITY OF HIGHEST
14		29		SWIPE: < 8.7E-4 uCi
15		30		

PHYSICAL SURVEY

AREA	READING (CPM)
Bkg	25-50
1	25-50
2	25-50
3	< 25
4	25-50
5	< 25
6	< 25
7	< 25
8	
9	

INSTRUMENT USED: **Minimonitor 125**