Robert Evans

From: Richard Kayser [kayser@nist.gov]
Sent: Friday, January 09, 2009 10:37 AM
To: Jackie Cook; James Clark
Cc: Jack Whitten; Art Howell; Robert Evans; Robin Shult; Richard Leonardi; Mike Carr; Vivian Campbell; Stephen Willett
Subject: REQUEST FOR ADDITIONAL INFORMATION FOR THE DECEMBER 16, 2008 AMENDMENT REQUEST
Attachments: NRC Work Plan Questions 1-9-091.doc

Importance: High

Dear Jackie –

Please find attached our response to your RAI of January 7, 2009. Please contact me or James Clark if you have any questions.

Thank you for your prompt attention to this matter and best wishes for 2009.

Sincerely,

Rich Kayser
Chief Scientist, NIST

301-975-2300 (office / Gaithersburg, MD)
301-873-6539 (cell)
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Contact information for James Clark
303-497-4447 (office / Boulder, CO)
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From: Jackie Cook [mailto:Jackie.Cook@nrc.gov]
Sent: Wednesday, January 07, 2009 1:52 PM
To: James Clark
Cc: Jack Whitten; Art Howell; Richard Kayser; Robert Evans; Robin Shult; Richard Leonardi; Mike Carr; Vivian Campbell
Subject: ACT: REQUEST FOR ADDITIONAL INFORMATION FOR THE DECEMBER 16, 2008 AMENDMENT REQUEST

Good Afternoon Mr. Clark:

Attached you will find the request for additional information (RAI) for your December 16, 2008, amendment request to revise your work plan. Please respond to this e-mail as soon as practical but no later than close of business Friday, January 9, 2008. If an extension date is needed or if you have additional questions, please don't hesitate to contact me at the phone numbers and/or e-mail address listed below.

Thanking you in advanced for your cooperation and assistance in expediting this matter,

Jacqueline "Jackie" D. Cook
Senior Health Physicist
Nuclear Materials Safety Branch B
U.S. Nuclear Regulatory Commission, Region 4
612 E. Lamar Blvd., Suite 400

472075

FACSIMLE

To: Jacqueline D. Cook
Senior Health Physicist

Subject: License Amendment dated December 16, 2008

Reference: FACSIMILE dated January 7, 2009, same subject as above
License No. 05-03166-05
Docket No. 030-03732
Control No. 472075

Our responses to the referenced letter are provided on the following pages.

1. You proposed to add a new classification of worker to your organization structure. This change revises Section 4.1, Organization and Responsibilities, to the work plan. We must review the proposed change using the guidance provided in NUREG-1757, 'Consolidated Decommissioning Guidance."(go to the following website link http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1757/). NUREG-1757, Volume 1, Revision 2, page 17-14 states that the information supplied by the licensee should be sufficient to allow us to fully understand the responsibilities and minimum qualifications required for each of the management and safety-related positions within the licensee's decommissioning project organization. Our review should verify that the following information is included in the description of decommissioning positions and qualifications:

   A. A description of the duties and responsibilities of each chemical, radiological, physical, and occupational safety-related position in the decommissioning organization, and the reporting responsibility of the position (i.e., what are the duties, responsibilities, and reporting responsibilities for the field technicians?)

      Response:

      The addition of the Field Technician category is requested to provide general labor support to the project and to the Radiation Protection Technicians. The Field Technicians report to the Radiation Protection Supervisor. The Field Technicians may be directly assigned tasks by the Radiation Protection Supervisor or directed to support the Radiation Protection Technicians by performing manual labor or decontamination activities.

      Examples of tasks that the Field Technicians may be assigned include: stocking and movement of supplies and consumables, operation of decontamination equipment, assisting in movement and relocation of contaminated and non-contaminated components, transport and delivery of samples, and providing labor during soil excavations. They will not be providing unsupervised Radiation Protection functions.

   B. The minimum qualifications for each of the positions described above, and the qualifications of the individuals currently occupying the positions (the licensee should also commit to providing the staff with the qualifications of any newly hired employees or replacements for these positions).

      Response:

      All Field Technicians, current and future, assigned to the project will be qualified as Radiation Workers and required to follow the EnergySolutions license requirements, the Project Work Plan, and EnergySolutions radiation program requirements. In addition to NRC requirements they are also qualified per 29 CFR 1910.120 standards. They satisfy the OSHA medical surveillance requirements and are qualified to wear respirators.

Once we receive the requested information above, we can review the proposed change using the evaluation criteria specified in NUREG-1757.

2. Regarding new task 5B, excavation and remediation of the sink drain pipe, please specify the following:

A. What type of radiological survey will be conducted prior to release of the areas for trenching?

Response:

After the floor tile has been removed, survey protocols for release of areas to allow removal of concrete floor, soil and drain pipe will follow the criteria in the Final Status Survey Plan (FSSP). The FSSP building surface $DCGL_W$ is 696 dpm/100 cm^2 or 44 cpm/100 cm^2 using a total instrument efficiency of 5%. The COMPASS program Site Report and Building Surface Survey Plan from the FSSP are included as Attachment 1.

Surveys will include direct surface measurements and surveys for loose contamination. The MDA requirement of 50% of the FSSP limit as specified in the existing work plan will be followed.

Surface surveys will include 100% of the floor, wall and ceiling surfaces.

B. What type of radiological controls will be in place during trenching operations?

Response:

After the room satisfies the release criteria above, the room will be de-posted as a Radiological Controlled Area for concrete removal activities with the exception of contaminated pipe openings. The open pipe from the sink drain will have a secure cover placed over it, with radiological posting, to prevent unauthorized access during the concrete cutting. Any other potentially contaminated connections will also have secure covers with posting installed. Access to contaminated connections will be limited to qualified radiation workers working under an approved Radiation Work Permit (RWP).

Removal of the concrete floor may be conducted by non-radiation workers. During concrete removal operations, a Radiation Protection Technician will be physically present or observe with cameras.

As concrete is removed and gravel and/or soils are exposed, samples will be collected and analyzed onsite for americium 241by gamma spectroscopy. Periodic air samples will also be obtained and analyzed for total alpha activity and for americium 241 by gamma spectroscopy (in order to separate out activity due to dust and radon). It should be noted that the air being exhausted through the existing HEPA air system will remain on to provide ventilation.

As pieces of flooring are removed they will be spot checked for possible contamination. Particular attention will be given to any cracks that may be revealed after the floor tile is removed.

Radiation Protection Technicians will also conduct discretionary biased surveys. If contamination is encountered above the release criteria, excavation activities

will stop and the project Radiation Protection Supervisor and Project Manger will be promptly notified.

3. Section 6.2 states that a "release survey" will be performed for the affected rooms. This survey will apparently be conducted prior to trenching operations because Section 6.2.3 (Task 5B) states that cutting operations will occur after decontamination of the rooms and after all radiological postings will be removed. Further, the final status survey will be conducted AFTER the drain has been removed, according to Section 6.2.4 (Task 6). In summary, you propose to free-release the room surfaces prior to cutting operations.

   A. Please specify the type of survey (characterization, operation, final) that will be conducted to verify the room can be free-released?

      Response:

      After the floor tile has been removed, survey protocols for release of areas to allow removal of concrete floor, soil and drain pipe will follow the criteria in the Final Status Survey Plan (FSSP). The FSSP building surface $DCGL_W$ is 696 dpm/100 cm^2 or 44 cpm/100 cm^2 using a total instrument efficiency of 5%. The COMPASS program Site Report and Building Surface Survey Plan from the FSSP are included as Attachment 1.

      Surveys will include direct surface measurements and surveys for loose contamination. The MDA requirement of 50% of the FSSP limit as specified in the existing work plan will be followed.

      Surface surveys will include 100% of the floor, wall and ceiling surfaces.

   B. Please specify the instructions to be used to direct this survey.

      Response:

      The release of the room prior to trenching is being considered similar to the Final Status Survey. The technicians performing the survey will follow the guidance provided in the FSSP as well as directions in a survey package for this area. In addition, daily briefings will address any unique challenges and specific task sequencing.

      In addition, please describe how the survey will be documented.

      Response:

      Documentation of the surveys will be similar to protocols in use for equipment surveys. The surveys will be collected in a data base that links the instrument information to the item or area surveyed. The data will be tabulated and reviewed similar to a Final Status Survey (FSS) but not provided as a partial FSS report for submittal to the NRC. This data will be incorporated at a later time into the FSS Report that will be submitted to the NRC.

4. Section 6.2.3 (Task 5B) states that cutting operations will be conducted without radiological controls in place.

   A. Please specify the controls and/or personnel that will be available, if any, if the cutters unexpectedly encounter subsurface contamination.

      Response:

      The concrete cutting crew will not excavate subsurface gravel and/or soil. That work will be performed by EnergySolutions personnel. As concrete is removed and gravel and/or soils are exposed, samples will be collected by EnergySolutions personnel and analyzed onsite for americium 241 by gamma spectroscopy. Periodic air samples will also be obtained and analyzed for total alpha activity and for americium 241 by gamma spectroscopy (in order to separate out activity due to dust and radon). It should be noted that the air being exhausted through the existing HEPA air system will remain on to provide controlled ventilation.

      As pieces of flooring are removed they will be spot checked for possible contamination. Particular attention will be given to any cracks in the concrete that may be revealed after the floor tile is removed.

      The Radiation Protection Technician will also conduct discretionary biased surveys. If contamination is encountered above the release criteria, excavation activities will stop and the project Radiation Protection Supervisor and Project Manger will be promptly notified.

   B. Please confirm who will be constantly present during cutting operations (NIST or EnergySolutions staff).

      Response:

      An EnergySolutions Radiation Protection Technician or Supervisor will be physically present or observe with cameras during cutting operations. In addition to EnergySolutions personnel NIST personnel may be present on an intermittent basis.

5. Please confirm if you will include Room 2124A in the discussion of pipe excavation as discussed in the following sections:

   Section 5.4.3.5 (Contamination during Soils Excavation)
   Section 6.2.3 (Exterior Excavation)
   Section 6.2.3 (Interior Excavation)

   Response:

   Room 2124A will be included in the activities referenced in Work Plan sections 5.4.3.5, 6.2.3 Exterior Excavation and 6.2.3 Interior Excavation.

№ 472075

6. Regarding Section 5.4.3.5 (Contamination during Soils Excavation), please specify the provisions to be made during any breach of the 1.25 inch drain line for the collection of any residual water in the drain line.

   Response:

   The provisions to collect water include the use of glove bag style enclosures at cut locations with drain tubes leading to a collection container. In addition a waterproof barrier will be placed between the glove bag and the soil. A wet/dry HEPA vacuum may also be used to remove water accumulated on the waterproof barrier.

7. Under Section 5.4.3.5 (Contamination during Soils Excavation), please specify the provisions made during the period the drain system (outside the building) is exposed to adverse weather conditions to minimize water intrusion into the excavated area.

   Response:

   The potential for water intrusion will be minimized by performing the excavation during a period without a rain or snow forecast, a shallow berm (6 to 12 inches tall) will surround the excavation and a temporary structure with roof will be placed over the excavated area.

Attachment 1

SITE REPORT

Site Summary

Site Name: NIST Boulder Campus
Planner(s): p ely

Contaminant Summary

NOTE: Surface soil DCGLw units are pCi/g.
Building surface DCGLw units are dpm/100 cm².

Contaminant	DCGLw Type	DCGLw	Screening Value Used?	Area (m²)	Area Factor
Am-241	Building Surface	358	No	36	1.99
				25	2.49
				16	3.16
				9	3.99
				4	4.9
				1	5.68
Am-241	Surface Soil	2.1	Yes	1	109
				3	40.2
				10	13.4
				30	4.99
				100	1.86
				300	1.2
				1,000	1.01
				3,000	1.01
				10,000	1
Pu-238	Building Surface	407	No	36	1.98
				25	2.5
				16	3.16
				9	3.99
				4	4.9
				1	5.69
Pu-238	Surface Soil	2.5	Yes	1	8.88
				3	6.01
				10	4.24
				30	3.26
				100	2.5
				300	1.82
				1,000	1.04
				3,000	1.02
				10,000	1
Pu-239	Building Surface	370	No	36	1.98
				25	2.5
				16	3.17
				9	3.99
				4	4.89
				1	5.67

Attachment 1

Contaminant	DCGLw Type	DCGLw	Screening Value Used?	Area (m²)	Area Factor
Pu-239	Surface Soil	2.2	No	1	8.94
				3	6.07
				10	4.26
				30	3.28
				100	2.51
				300	1.83
				1,000	1.03
				3,000	1.02
				10,000	1
Pu-240	Building Surface	370	No	36	1.98
				25	2.5
				16	3.17
				9	3.99
				4	4.9
				1	5.67
Pu-240	Surface Soil	2.3	No	N/A	N/A
Pu-241	Building Surface	18,939	No	36	1.98
				25	2.48
				16	3.13
				9	3.94
				4	4.82
				1	5.57
Pu-241	Surface Soil	73	No	N/A	N/A

Report Created 12/03/2008 1623 (*COMPASS v1.1.0*)

Attachment 1

BUILDING SURFACE SURVEY PLAN

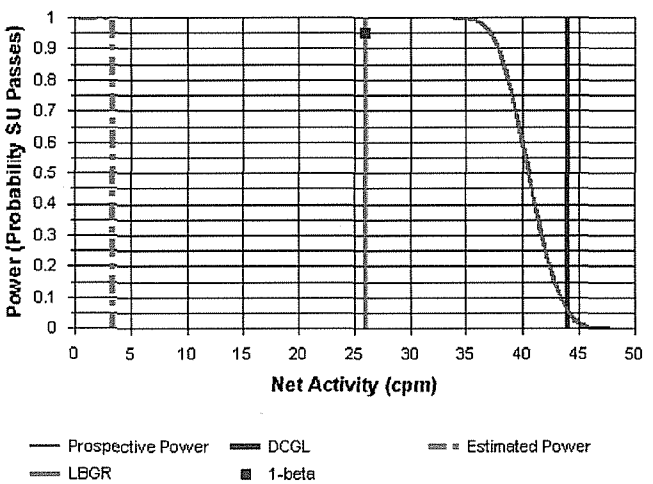
Survey Plan Summary

Site Name:	NIST Boulder Campus
Planner(s):	p ely
Survey Unit Name:	Room 2124 Floor
Comments:	N/A

Statistical Design Details

Area (m²):	89	Classification:	1
Selected Test:	Sign	Estimated Sigma (cpm/100 cm²):	6.2
DCGL (cpm/100 cm²):	44	Sample Size (N):	**14**
LBGR (cpm/100 cm²):	26	Estimated Conc. (cpm/100 cm²):	3.4
Alpha:	0.050	Estimated Power:	1.0
Beta:	0.050	Post-EMC Sample Size (N):	**14**

Prospective Power Curve



Attachment 1

Gross Activity Efficiency Data

Instrument Description: Ludlum 43-68 Gas Flow Proportional
Physical Detector Area (cm²): 126
DCGLw (dpm/100 cm²): 696
Total Efficiency: 0.05
DCGLw (cpm/100 cm²): 44

Contaminant	HTDC[a]	Energy[b]	Fract[c]	Inst. Eff.	Surf. Eff.	Total Eff.
Am-241	No	N/A	0.10	0.36	0.25	0.01
Pu-238	No	N/A	0.01	0.36	0.25	0.00
Pu-239	No	N/A	0.31	0.36	0.25	0.03
Pu-240	No	N/A	0.10	0.36	0.25	0.01
Pu-241	Yes	5.23	0.48	0.00	0.00	0.00

[a]Hard-to-detect contaminant [b]Average beta energy (keV) [N/A indicates alpha emission] [c]Activity fraction

Gross Activity Mean and Sigma Data

Count Time (min): 1
Sign Test Sigma (cpm/100 cm²): 6.2

Data/Material	Mean (cpm/100 cm²)	Std. Dev. (cpm/100 cm²)	MDC (dpm/100 cm²)
SU	3.4	6.2	184

Elevated Measurement Comparison (EMC) for Gross Activity

Scanning Instrumentation Description: Ludlum 43-68 Gas Flow Proportional
Background (cpm/100 cm²): 2.0
Total Scanning Efficiency: 0.04
True Positive Proportion: 0.85
False Positive Proportion: 0.35
Index of Sensitivity (d'): 1.42
Observation Interval (sec): 1.0
Surveyor Efficiency: 0.50
Area Factor Table Interpolation Method: Linear

Statistical Design

N: 14
Bounded Area (m²): 6.4
Area Factor: 4.5
DCGLw*: 358
Scan MDC Required*: 1,597

Hot Spot Design

Actual Scan MDC*: 550
Area Factor: N/A
Bounded Area (m²): N/A
Post-EMC N: 14

Contaminant	Energy[a]	Fract[b]	Inst. Eff.	Surf. Eff.	Total Eff.
Am-241	N/A	0.10	0.20	0.25	0.01
Pu-238	N/A	0.01	0.20	0.25	0.00
Pu-239	N/A	0.31	0.20	0.25	0.02
Pu-240	N/A	0.10	0.20	0.25	0.01

[a]Average beta energy (keV) [N/A indicates alpha emission] [b]Activity fraction

Contaminant	DCGLw*	Area Factor	Scan MDC Req'd*
Am-241	358	4.5	1,597
Pu-238	407	4.5	1,815
Pu-239	370	4.5	1,650
Pu-240	370	4.5	1,650

Attachment 1

• dpm/100 cm²

Report Created 12/03/2008 1638 (*COMPASS v1.1.0*)

Attachment 1

SURFACE SOIL SURVEY PLAN

Survey Plan Summary

Site Name:	NIST Boulder Campus
Planner(s):	p ely
Survey Unit Name:	Room 2124 Soil
Comments:	N/A

Statistical Design Details

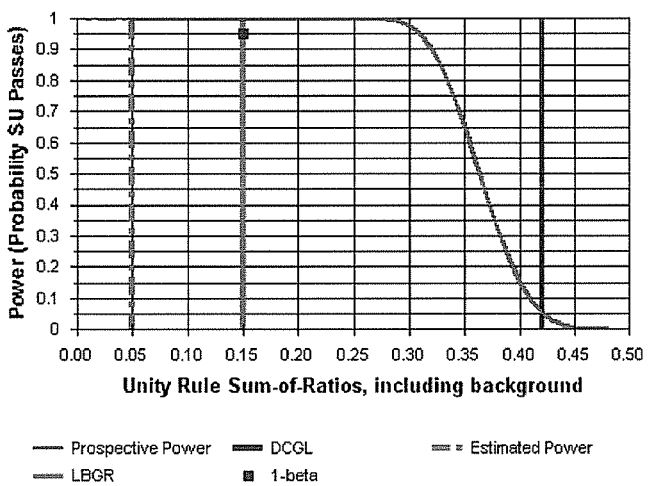
Area (m²):	28	Classification:	1
Selected Test:	Sign	Estimated Sigma (SOR):	0.10
DCGL (SOR):	0.42	Sample Size (N):	14
LBGR (SOR):	0.15	Average Area Bounded by Samples (m²):	2.0
Alpha:	0.050	Estimated Conc. (SOR):	0.05
Beta:	0.050	Estimated Power:	1.0

NOTE: SOR = Sum-of-Ratios

Elevated Measurement Comparison Summary

Scanning Instrumentation:	2"x2" NaI
Post-EMC Sample Size N:	15

Prospective Power Curve



Attachment 1

Measured Contaminant Details

Contaminant	DCGLw (pCi/g)	Modified DCGLw (pCi/g)	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Am-241	2.1	0.42	0.05 ± 0.10	0.01 ± 0.05

Inferred Contaminant Details (DCGL Modification)

Contaminant	DCGLw (pCi/g)	Surrogate Contaminant (pCi/g)	Ratio (Inferred/Surrogate)
Pu-238	2.5	Am-241	0.08
Pu-239	2.2	Am-241	3.1
Pu-240	2.3	Am-241	0.98
Pu-241	73	Am-241	4.7

Elevated Measurement Comparison Details

Contaminant	DCGL (pCi/g)	Actual Scan MDC	Area Factor	Required Scan MDC	New Area Factor	Area (m^2)	Post-EMC N	Comment
Am-241	0.42	32	75	31	76.19	2.0	15	<< Most Restrictive Contaminant >>

Selected Area Factor Table Interpolation Method: Linear

Report Created 12/03/2008 1658 (*COMPASS v1.1.0*)

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