

REGION I TECHNICAL ASSISTANCE REQUEST				
Date:	February 2, 2000	Package Accession No.	ML003681399	
ADAMS Send to:	Donald A. Cool, Director Division of Industrial and Medical Nuclear Safety, NMSS (Copy to Charlotte L Estep)			
From:	George Pangburn, Director Division of Nuclear Materials Safety			
<b>Original signed by: /RA/George Pangburn 2/7/2000</b>				
Licensee:	VA Medical Center in Brooklyn, NY			
License No.	31-02892-06	Docket No.	030-34751	Control No. 127749
Letter Dated:	12/16/99 (most recent letter)	ADAMS Accession No.	ML003681428	
Enforcement Action being held in abeyance:		Yes	<input checked="" type="checkbox"/>	No
<b>Problem or Issue:</b>  Evaluate licensee-proposed Derived Concentration Guideline (DCGL) for soil at site to be decontaminated and decommissioned. Approve licensee proposal, submitted by the US Army Corps of Engineers (which is responsible for performing the decommissioning for the Brooklyn VA). If the proposed soil DCGL is not approved, provide an acceptable alternative soil DCGL based upon the licensee's submitted data. Detailed information and analysis is attached.				
<b>Action Requested:</b>  Review and approve the proposed DCGLs for the D&D of the St. Albans Extended Care Center in Queens, NY. The proposed soil DCGL for <sup>90</sup> Sr of 35 pCi/g is greater than the default DCGL of 17 pCi/g, published by NRC in the Federal Register on Dec. 7, 1999. The licensee's basis for the proposed DCGLs is described in the attached documents, and includes use of the RESRAD code, v. 5.91, with default parameter values defined by the NRC in the "Preliminary Guidelines for Evaluating Dose Assessments in Support of Decommissioning". Site-specific parameter values that deviate from the NRC-defined defaults are identified and justified by the licensee.				
Recommended Action and Alternatives	<input checked="" type="checkbox"/>	Accept	<input type="checkbox"/>	Reject
Approve the proposed DCGLs.				
TARs addressing similar issues (subject, date and location):				
Background Documents (Include date and ADAMS Accession Number):				

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<p>Reference Documents ("attachments"):</p> <ol style="list-style-type: none"> <li>1. Discussion summary of Region I analysis of the proposed DCGLs, included as part of this TAR document file.</li> <li>2. Printout of Region I RESRAD run to duplicate licensee's 10/14/99 run [ML003681428].</li> <li>3. Data file used to produce attachment 2, available from T. Jackson (tjj).</li> <li>4. Draft final decommissioning plan, dated 12/16/99, which includes discussion of the use of DCGL for concrete (App A to Plan) submitted in response to comments [ML003681435].</li> <li>5. Letter, dated 12/6/99, titled "Addendum to Justification for DCGLs" [ML003681439].</li> <li>6. Addendum to Justification for DCGLs, dated 10/18/99 [ML003681444].</li> <li>7. Justification for Modified DCGLs, dated 6/24/99 [ML003681445].</li> <li>8. Copy of current NRC materials license for the St. Albans facility [ML003681447].</li> </ol>		
<p>Remarks:</p> <p>Note that the US Army Corps of Engineers has funding authorized to perform this work. NRC review of the proposed DCGLs is requested expeditiously in order to not jeopardize authorized funding for the current fiscal year.</p>		
Reviewer: Todd J. Jackson CHP	(610) 337- 5308	Reviewer Code: Q9
<p>Needed By (date): <b>March 3, 2000</b></p>		

DOCUMENT NAME: C:\st.albans.TAR.wpd

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OFFICE	DNMS/RI	N	DNMS/RI	N	DNMS/RI			
NAME	TJackson/tjj		RBellamy/RRB1		GPangburn/GCP			
DATE	2/7/00		2/7/00		2/7/00			

**SUMMARY FOR ST. ALBANS Derived Concentration GuideLines (DCGLs):  
ATTACHMENT 1 TO TECHNICAL ASSISTANCE REQUEST**

**Overview**

The present St. Albans Extended Care Center is a former Navy Hospital, located in Queens, NY. Contamination at the site is essentially all  $^{90}\text{Sr}$ , with some trace  $^3\text{H}$  in discrete spots. The DCGLs proposed for release of equipment and materials are based on NRC's 1993 Guidelines for the Decon of Equip and Materials Prior to Release..., and therefore are considered acceptable. The DCGLs proposed for release of building surfaces are based on the NRC's criteria published in the Federal Register on November 18, 1998, and therefore are also considered acceptable. The DCGL proposed for  $^{90}\text{Sr}$  in soil/bulk material is 35 pCi/g, which is greater than the 17 pCi/g acceptable default value published by the NRC in the Federal Register on December 7, 1999. In response to NRC Region I comments, the licensee has clarified how they define "bulk material" (contained in Attachments 4 and 5).

The scope of this TAR is to evaluate the proposed soil/bulk material DCGL and its basis. Approval of the soil/bulk material DCGL is recommended.

**Background**

- St. Albans was a Navy Hospital in the 1960s.
- The facilities being decommissioned were the former hospital's rad lab
- Contamination is  $^{90}\text{Sr}$  from a spilled solution circa 1962 (Some  $^3\text{H}$  in a former bathroom, very limited extent)
- Navy license was terminated in 1973, property later transferred to VA (which is the current owner)
- NRC's ORNL review of terminated licenses identified potential problems; NRC followup confirmed that significant contamination remained
- Early 1990s: some remediation, sewer line isolated
- July 98 NRC licensed VA Brooklyn for decommissioning of site, confirmed US ARMY Corps of Engineers (COE) responsible for cleanup under Formerly Utilized Defense Sites (FUDS) program.
- Detailed characterization survey was performed in 1999
- June 1999 - COE proposed DCGLs for site D&D.

**Proposed DCGLs**

In Oct 1999 the COE, contractor for VA, proposed revised DCGLs as follows:

	<b>Release of Equip &amp; Materials (Surfaces)</b>	<b>Building Surfaces</b>	<b>Soil/Bulk Materials</b>
Value	200 /1000 /3000 dpm/100 cm2 removable/total/max  <i>[Acceptable, Based on Reference]</i>	<sup>90</sup> Sr: 8700 dpm/100 cm2 <sup>3</sup> H: 1.2 E8 dpm/100 cm2  <i>[Acceptable, Based on Reference]</i>	<b>35 pCi/g <sup>90</sup>Sr to produce 25 mrem/y</b> (vs. 17 pCi/g default in the 12/7/99 FR Notice)  <b>[To Be Evaluated in TAR]</b>
Reference	1993, <u>NRC Guidelines for Decon of Facilities and Equipment Prior to Release....</u> (also RG 1.86)	NRC in FR, Nov 21, 1998 (derived with DandD)	RESRAD with limited site-specific mods, using NRC default parameter values specified in "Preliminary Guidelines for Evaluating Dose Assessments in Support of Decommissioning"

The scope of this TAR is to evaluate the proposed soil/bulk material DCGL for <sup>90</sup>Sr.

**Licensee Calculation of Proposed Soil/Bulk Material DCGLs**

COE used RESRAD v. 5.91 with NRC default parameter values (published in "Preliminary Guidelines for Evaluating Dose Assessments in Support of Decommissioning") with input modifications as follows:

- Data: Soil contam is limited mostly to 6" depth, 2200 pCi/g max sample value
- Resident farmer scenario used.
- Parameter differences from the NRC defaults:
  - K<sub>d</sub> of 30 used. Representative soil in Region, based on Brookhaven study, indicates actual K<sub>d</sub> is probably about 10. Value used is conservative, resulting in calculated 20.5 mrem/y at t<sub>0</sub>.
  - Contaminated area used is 90 m<sup>2</sup>, depth 15 cm (vs 10,000 m<sup>2</sup> default)
  - Plant ingestion pathway is included (and is the limiting pathway), although it is considered highly unlikely in high pop density metro area.
    - Fraction of diet provided by this pathway is set at 0.5 (vs NRC default of 1) because the contaminated area is small and food grown on-site would have to be supplemented (by 50%). Using 0.5 is still considered to be conservative.
    - Fraction of diet from onsite livestock is set at 0.25 (vs. NRC default of 1) because affected area is a small fraction of that required to raise livestock. This is conservative because actual value is realistically more likely to be 0 due to the size of the affected property and the dense metro area population.
  - Groundwater included, but very little groundwater use remains in Queens
  - Erosion rate changed from 0.001 to 0.00001 m/y based on area rainfall
  - Distance to drinking water aquifer changed from 100 to 10 m
  - Assumes the building will be intact for at least 20 years, delaying introduction of contamination into the modeled ecosystem, delaying the start of potential farming, and allowing additional radioactive decay (<sup>90</sup>Sr half life is 29.1 y).

**NRC Region I Evaluation of Licensee Proposed Soil/bulk material DCGL**

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The DandD soil default values, published by NRC in the Fed Register on December 7, 1999, included Sr-90. For Sr-90, 17 pCi/g produces 25 mrem/y per the Fed Register table. It is our understanding that the table values are based upon conservative, "worst-case" assumptions. Use of the table is permissible for simple conditions in which licensees do not want to perform a detailed site-specific evaluation and calculation.

The licensee-proposed DCGL value of 35 pCi/g is approximately two times the default value. The proposed parameter modifications used by the licensee's contractor (US Army COE) in RESRAD version 5.91 are reasonable and logical, and produce a calculated dose of 20.5 mrem/y peak. Additionally, per licensee's plan ALARA principles will also be applied and are also expected to result in remaining soil concentrations lower than 35 pCi/g.

The NRC Region I license reviewer (T. Jackson) re-ran RESRAD, v. 5.91 using the parameter values provided in the RESRAD output submitted by the COE to verify the model's output. Results of the COE's model runs were duplicated and confirmed that parameter values were utilized as stated.

### **Discussion of NRC review of the Proposed DCGLs**

The Corps of Engineers (COE) had asked early in 1999 if RESRAD could be used instead of DandD to model the site and calculate DCGLs. As a result of that request to NRC Region I Todd Jackson contacted Bobby Eid in NRC/HQ. Bobby replied that use of RESRAD was acceptable.

In July 1999 the COE submitted an initial draft decommissioning plan including proposed DCGLs (345 pCi/g for <sup>90</sup>Sr in soil/bulk materials) based on RESRAD, version 5.82. This proposed DCGL was viewed as too high, and was significantly different than previously acceptable DCGLs. Region I became aware of a March 16, 1999 memo from John Hickey/HQ that required the Region to obtain HQ participation on the DCGLs. Bob Nelson was contacted in HQ (8/18/99) to determine the NRC procedure for internal review, and he indicated the way to proceed was to discuss the technical details of the calculation with Mark Thaggard. Once any issues noted by Mark were resolved, the next step Nelson described was to convene by conference call Nelson, Camper, Bellamy, Thaggard and Jackson to efficiently reach concurrence on the licensee's proposal.

Mark Thaggard was first contacted in Aug 99 to discuss the proposed DCGL, and based on his comments the licensee was asked to revise their calculations. Specifically Mark stated that the RESRAD published default parameter values were not acceptable to NRC and the values published in the March 16, 1999 Hickey memo (default values published as part of "Preliminary Guidelines for Evaluating Dose Assessments in Support of Decommissioning") must be used by the licensee.

A conference call was set up for October 1, 1999. Mark Thaggard was the HQ DWM representative on the call (Nelson informed Region I that he was diverted to another meeting at last minute). On Oct. 1, Bellamy and Jackson discussed with Thaggard the course of action for RESRAD calculations to be revised by licensee. The Corps of Engineers was informed of the necessary changes to the calculations by letter from Todd Jackson, dated October 7, 1999. Revised calcs using the NRC default parameters were received on or about October 20, 1999,

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which included the proposed Sr-90 DCGL of 35 pCi/g, calculated using the NRC-required parameter defaults and explaining the justification for all site-specific data used. Based on continuing discussions with DWM staff, in January 2000 it was determined that submittal of the licensee's proposed DCGLs to HQ as a Technical Assistance Request (TAR) was necessary, and the TAR was immediately prepared.

**Current Project Schedule**

Review of the proposed DCGL is necessary as soon as possible. The COE has funds currently available and further delay may jeopardize funding. Funding has been difficult to secure, and has taken about four years of effort to date. As of February 3, 2000, the COE stated they were prepared to authorize a contract by February 8, 2000, to perform the D&D work at St. Albans. Per the project schedule, if work begins in February the site remediation could be complete by summer 2000. The COE may decide to begin the project using 17 pCi/g as an interim DCGL, pending review and approval of this TAR.