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September 29, 1994
Fort St. Vrain
P-94084

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

ATTN: Mr. John H. Austin, Chief
Decommissioning and
Regulatory Issues Branch

Docket No. 50-267

SUBJECT: **Proposed Modification of Removable Surface Contamination Release Criteria for Tritium and Iron-55**

REFERENCES:
1. NRC Letter, Pittiglio to Crawford, dated June 15, 1994 (G-94113)
2. PSC Letter, Warembourg to Austin, dated September 21, 1994 (P-94080)

Dear Mr. Austin:

This letter submits a proposed modification to the facility release criteria in Regulatory Guide 1.86 for use during decommissioning of the Fort St. Vrain Nuclear Station (FSV). During preparations for the final site survey, Public Service Company of Colorado (PSC) has evaluated samples from various facility surfaces and has determined that the Regulatory Guide 1.86 acceptance criteria for removable surface contamination, when adjusted to account for the hard to detect nuclides tritium and iron-55, would result in extensive sampling, analysis, and decontamination efforts that are not justified by the low risk associated with tritium and iron-55. PSC proposes that the release criteria for tritium and iron-55 removable surface contamination be increased in a manner similar to that previously approved for total surface contamination (Reference 1).

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Using the current limits of Regulatory Guide 1.86 for removable surface contamination and taking into account the presence of hard to detect nuclides, PSC would have to demonstrate that the sum of the activities from tritium, iron-55, and the typical readily detectable beta-gamma emitting nuclides is less than 1000 dpm/100 cm^2. PSC does not have the capability to directly measure iron-55 at the activity levels present and it is not feasible to analyze all samples for these three distinct types of nuclides for all affected plant areas. Therefore, site specific guideline values (i.e., activity limits) for affected areas must be determined by reducing the acceptance criteria for those nuclides which can be detected by instrumentation that will be used during the final survey, based on known tritium and iron-55 activities in selected samples.

To illustrate the impact of tritium and iron-55 on removable activity limits at Fort St. Vrain, PSC has determined site specific removable activity limits for eight representative FSV samples, using the guidance of Appendix A to Draft NUREG/CR-5849. Samples were taken from the reactor building and radioactive waste processing areas and are considered representative of contamination that was deposited during power operation and decommissioning, and are representative of conditions expected at the time of final survey. The samples were analyzed in accordance with 10 CFR 61, and were decay corrected through December 1995. The resulting removable activity limits for typical beta-gamma emitters, after adjusting for the presence of tritium and iron-55, are as follows:

	Sample Source	Removable β-γ Activity Limit (dpm/100cm^2)
1.	PCRV Smear	138
2.	Hot Service Facility Smear	561
3.	Fuel Handling Machine Smear	142
4.	Liquid Waste Resin Sample	820
5.	PCRV Activated Concrete	78
6.	Graphite Dust	359
7.	PCRV Access Flange	112
8.	PCRV Shield Plug	228

The average of the above limits is 305 dpm/100 cm^2, which would be used as the site-specific guideline value for removable activity for beta-gamma emitting nuclides in affected surfaces and structures within the FSV reactor building and radioactive waste processing areas. PSC considers that the reduction of the removable beta-gamma activity limit from 1000 dpm/100 cm^2 to 305 dpm/100 cm^2, along with action levels set at an appropriate fraction of the limit (as low as 50% or 153 dpm/100 cm^2), would result in

significantly more extensive investigation surveys, more extensive decontamination activities, and would also result in greater need for laboratory counting equipment for routine surveys to monitor the effectiveness of decontamination. In light of the reduced risk from tritium and iron-55 cited in SECY-94-145, PSC does not consider these efforts warranted.

PSC proposes that the acceptable levels of removable surface activity for tritium and iron-55 in affected areas be increased to 20,000 dpm/100 cm^2, and that allowable activities be determined using a unity equation and the guidance of Appendix A to Draft NUREG/CR-5849. Using the above samples, this would result in a site specific guideline value for removable activity for beta-gamma emitting nuclides of 750 dpm/100 cm^2. PSC considers that this modification to the removable activity limits is consistent with ALARA principles, as follows:

- From a dose standpoint, the total dose that could result from 750 dpm/100 cm^2 beta-gamma emitters plus the maximum activity of tritium and iron-55 that satisfies the unity equation, is less than the dose from 1000 dpm/100 cm^2 of cobalt-60, which would be allowed by Regulatory Guide 1.86.

- PSC estimates that raising the site specific guideline value from 305 dpm/100 cm^2 to 750 dpm/100 cm^2 would decrease the areas requiring further investigation by greater than 50% and would almost eliminate the areas requiring remediation. Although it is almost impossible to quantify the economic savings that would result from this modification of the limit, it clearly reduces resource requirements for decontamination with no reduction in public health and safety.

- This factor of 20 increase from the Regulatory Guide 1.86 limit is conservative with respect to that approved for total surface contamination, in Reference 1.

For unaffected structures and plant systems outside of the reactor building and radioactive waste processing areas, tritium and iron-55 are not considered to be nuclides of concern. No measurable beta-gamma emitters have been found in these areas during operational and decommissioning surveys, and it is reasonable to assume that there are no measurable levels of tritium or iron-55 nuclides present either. Therefore, for these surfaces, the acceptance criteria for average total activity and removable contamination will not be adjusted to account for hard to detect nuclides. In the event that beta-gamma contamination is verified in excess of 25% of the guideline, the surface will be reclassified as affected ("suspect" for building surfaces and structures) and resurveyed as required.

PSC requests that the limits for removable surface activity for tritium and iron-55 be modified as discussed above, and that these revised limits be approved as part of the Final Survey Plan for Site Release. Although approval of this request is not required to support release of the FSV repowering area, as described in Reference 2, PSC requests approval of this request by December 1, 1994, to support procedure development, training, and planning efforts for the final survey. In addition, timely approval of the modified removable surface activity limits is requested to support our ongoing efforts to decontaminate plant piping systems and equipment.

If you have any questions regarding this submittal, please contact Mr. M. H. Holmes at (303) 620-1701.

Sincerely,

Don W. Warembourg by J. Borst
Don W. Warembourg
Decommissioning Program Director

DWW/SWC

cc: Regional Administrator, Region IV

Mr. Robert M. Quillin, Director
Radiation Control Division
Colorado Department of Health