



**Public Service**

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Public Service  
Company of Colorado

May 23, 1995  
Fort St. Vrain  
P-95059

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

ATTN: Mr. Michael F. Weber, Chief  
Decommissioning and  
Regulatory Issues Branch

Docket No. 50-267

**SUBJECT: Final Survey Plan for Site Release, Proposed Modification to  
Classification and Investigation Criteria**

**REFERENCE:** NRC Letter, Pittiglio to Crawford, dated January 26, 1995  
(G-95020)

Dear Mr. Weber:

This letter submits proposed modifications to the criteria to be used for initial classification and for investigation/reclassification of surface and structure survey units during the final radiological survey of the Fort St. Vrain (FSV) Nuclear Station. Public Service Company of Colorado (PSCo) considers that these modifications to the criteria in the approved FSV Final Survey Plan (see referenced letter) provide a reasonable degree of assurance that residual contamination will be detected and, as discussed with Messrs. Fauver and Pittiglio of your staff, will reduce survey requirements that we consider unnecessarily burdensome.

The final survey of the Repower Area was conducted using the site release and action level criteria identified in the approved Final Survey Plan. The Repower Area represents a very small portion of the FSV restricted area and served as an excellent test case for the site survey criteria. Although all requirements were adequately implemented for the rather limited conditions and scope encountered in the final survey of the Repower Area, PSCo considers that several of the action level criteria currently contained in the Plan will require an unnecessary level of effort when implemented on a much larger scale.

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The attached proposed modifications include:

- 1) Surface activity criteria to be used for initial classification of surface and structure survey units, and
- 2) Surface activity action levels to be used for investigation/reclassification of surface and structure survey units.

The proposed modifications are a direct result of the information obtained and lessons learned during the Repower Area survey. These modifications are proposed to enhance the current criteria provided in the FSV Final Survey Plan, and do not alter the site release criteria. Implementation of the proposed modifications will streamline the implementation of the final survey and allow more flexibility in the use of engineering analysis. These modifications will ensure more efficient use of decommissioning resources, while providing assurance that final survey criteria meet the intent of Draft NUREG/CR-5849 and the data obtained is representative of the radiological status of the site.

Based on information and experience gathered during and after the Repower Area survey, other requests to modify the Plan may be submitted. For example, the methods to assess background exposure rates, as described in Draft NUREG/CR-5849 and the Fort St. Vrain Final Survey Plan, are being evaluated. Preliminary results suggest that in unaffected areas such as the Turbine Building, background exposure rates are significant and highly variable, making it difficult to select one representative background value. Once this evaluation is complete, the results and any alternate method for determining background exposure rates may be submitted to the NRC.

PSCo requests NRC approval of the attached proposed modifications by June 15, 1995, to support our final survey schedule. We plan to start final survey activities in unaffected areas on June 1, 1995, and would appreciate your timely review.

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

Sincerely,



Mary J. Fisher  
Decommissioning Program Director

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MJF/SWC

Attachment

cc: w/attachments

Regional Administrator, Region IV

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

**ATTACHMENT 1**  
**PROPOSED MODIFICATIONS TO FSV FINAL SURVEY PLAN**

**Initial Classification Criteria for Unaffected Surface and Structure Survey Units -  
Current and Proposed**

As described in the approved Fort St. Vrain Final Survey Plan (Reference 1), initial classification of unaffected surface and structure survey units is based upon an engineering evaluation, in consideration of operating or utilization history, and the results of previous characterization and recent decommissioning surveys. In the absence of specific survey data, the classification will be based primarily upon engineering judgement in consideration of survey data from similar or adjacent locations.

The current surface activity criteria for initial classification of unaffected surface and structure survey units are as follows:

"A survey unit may be initially classified as unaffected if there is little or no potential for the presence of licensed material based upon operational history, characterization data, and routine surveillances. The presence of licensed material (in excess of MDA), or previous remediation would preclude a survey unit from being classified as unaffected." (*Reference 2, Response to Comment 3, paragraph 2*)

The following is a comparison of the current and the proposed surface activity criteria for initial classification of surface and structure survey units. The following criteria will typically be used to classify a survey unit as unaffected.

**Initial Classification Criteria**  
**Unaffected Surface and Structure Survey Units**

Measurement	Current Criteria	Proposed Criteria
Total Surface Activity	Unaffected if low potential for radioactive contamination.	Unaffected if low potential for radioactive contamination.
	Unaffected if licensed material is expected to be < MDA.	Unaffected if individual measurements are expected to be < 25% of the GLV; or < MDA, whichever is larger.
Removable Surface Activity	Unaffected if low potential for radioactive contamination.	Unaffected if low potential for radioactive contamination.
	Unaffected if licensed material is expected to be < MDA.	Unaffected if individual measurements are expected to be < 10% of the GLV; or < MDA, whichever is larger.

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**Investigation/Reclassification Action Levels for Unaffected Surface and Structure Survey Units - Current and Proposed**

An investigation will be performed for instances where the results of the initial final survey measurements exceed the proposed action levels. The intent of the investigation is to identify instances where licensed material is the cause of final survey measurements in excess of the actions levels. The investigation, which is typically performed by a final survey engineer, will consider such factors as the background values applied, the instrument parameters used, local influences other than licensed material, the distribution of positive results within the survey unit, and/or additional scans and fixed-point measurements. In the event that the investigation, or the additional measurements collected, verify residual activity in excess of the following action levels, the survey unit, or newly defined subunit, will be reclassified as affected.

The current surface activity action levels for investigation/reclassification of unaffected surface and structure survey units are as follows:

"Investigation surveys will be performed within an unaffected survey unit if an individual final survey measurement for removable or total surface activity indicates the presence of licensed material (in excess of MDA). If during the investigation survey, measurements for removable or total surface activity are verified to exceed 25% of the unrestricted use criteria, the survey unit will be reclassified." (*Reference 2, Response to Comment 4, paragraph 2*)

The following is a comparison of the current and the proposed surface activity action levels for investigation/reclassification of surface and structure survey units. Measurement results in excess of the following action levels will require investigation.

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**Investigation/Reclassification Action Levels**  
**Unaffected Surface and Structure Survey Units**

Measurement	Current Action Levels	Proposed Action Levels
Total Surface Activity	Investigate an individual measurement >MDA.  Reclassify if an individual measurement >25% of the GLV.	Investigate an individual measurement >50% of the GLV.  Reclassify if verified.
		Investigate if >10% of the individual measurements are >25% of the GLV.  Reclassify if the survey unit mean is >25% of the GLV. <sup>1</sup>
Removable Surface Activity	Investigate an individual measurement >MDA.  Reclassify if an individual measurement >25% of the GLV.	Investigate an individual measurement >50% of the GLV.  Reclassify if verified.
		Investigate if >10% of the individual measurements are >25% of the GLV.  Reclassify if the survey unit mean is >10% of the GLV.

<sup>1</sup> The upper confidence interval about the mean (at the 95% confidence level) for the measurement values within a survey unit is used for purposes of comparison to the action levels.

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**Initial Classification Criteria for Non-suspect Affected Surface and Structure Survey Units - Current and Proposed**

There are no proposed changes to the initial classification criteria for non-suspect affected surface and structure survey units. The classification is based upon an engineering evaluation, in consideration of operating or utilization history, and the results of previous characterization and recent decommissioning surveys. In the absence of specific survey data, the non-suspect classification will be based primarily upon engineering judgement in consideration of survey data from similar or adjacent locations.

A summary of the criteria that will typically be used to classify a survey unit as non-suspect affected is provided in the following table.

**Initial Classification Criteria**  
**Non-suspect Affected Surface and Structure Survey Units**

Measurement	Current Criteria	Proposed Criteria
Total Surface Activity	Non-suspect affected if individual measurements expected to be <50% of the GLV; or <MDA, whichever is larger.	No change.
	Non-suspect affected if average of the measurements expected to be <25% of the GLV; or <MDA, whichever is larger.	No change.
Removable Surface Activity	Non-suspect affected if individual measurements expected to be <50% of the GLV; or <MDA, whichever is larger.	No change.
	Non-suspect affected if average of the measurements expected to be <25% of the GLV; or <MDA, whichever is larger.	No change.



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**Investigation/Reclassification Action Levels for Non-Suspect Affected Surface and Structure Survey Units - Current and Proposed**

An investigation will be performed for instances where the results of the initial final survey measurements exceed the proposed action levels. The intent of the investigation is to identify instances where licensed material is the cause of final survey measurements in excess of the actions levels. The investigation, which is typically performed by a final survey engineer, will consider such factors as the background values applied, the instrument parameters used, local influences other than licensed material, the distribution of positive results within the survey unit, and/or additional scans and fixed-point measurements. For instances where additional measurements are collected as a part of the investigation within non-suspect affected survey units, it is expected that for the area of concern, the measurement frequency will exceed that which is typically required for suspect affected survey units. In the event that the investigation, or the additional measurements collected, verify residual activity in excess of the following action levels, the survey unit, or newly defined subunit, will be reclassified as suspect affected.

The current surface activity action levels for investigation/reclassification of non-suspect affected surface and structure survey units are as follows:

"The action levels to initiate investigation surveys within non-suspect affected survey units are individual final survey measurements for removable or total surface activity in excess of 50% of the unrestricted use criteria. If greater than 10% of the initial final survey measurements within a non-suspect affected survey unit are verified to exceed this action level, or if an individual measurement exceeds the guideline values, then the survey unit will be reclassified as suspect affected and resurveyed. Conversely, if less than or equal to 10% of the initial final survey measurements within a non-suspect affected survey unit are verified to exceed this action level, and none of the individual measurements exceed the guideline values, then an investigation survey and/or reclassification will *(not)* be performed." (*Reference 2, Response to Comment 4, paragraph 3*)

The following is a comparison of the current and the proposed surface activity action levels for investigation/reclassification of non-suspect affected surface and structure survey units. Measurement results in excess of the following action levels will require investigation.



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## **Investigation/Reclassification Action Levels** **Non-suspect Affected Surface and Structure Survey Units**

Measurement	Current Action Levels	Proposed Action Levels
Total Surface Activity	Investigate an individual measurement > 50% of the GLV.  Reclassify if > 10% of the individual measurements are verified to exceed 50% of the GLV, or an individual measurement is > GLV.	Investigate an individual measurement > 75% of the GLV.  Reclassify if verified.
		Investigate if > 10% of the individual measurements are > 50% of the GLV.  Reclassify if the survey unit mean is > 50% of the GLV.
Removable Surface Activity	Investigate an individual measurement > 50% of the GLV.  Reclassify if > 10% of the individual measurements are verified to exceed 50% of the GLV, or an individual measurement is > GLV.	Investigate an individual measurement > 75% of the GLV.  Reclassify if verified.
		Investigate if > 10% of the individual measurements are > 50% of the GLV.  Reclassify if the survey unit mean is > 50% of the GLV.

### **Investigation Action Levels for Suspect-Affected Surface and Structure Survey Units - Current and Proposed**

An investigation will be performed for instances where the results of the initial final survey measurements exceed the proposed action levels. The intent of the investigation is to identify instances where licensed material is the cause of final survey measurements in excess of the actions levels. The investigation, which is typically performed by a final survey engineer, will consider such factors as the background values applied, the instrument parameters used, local influences other than licensed material, the distribution of positive results within the survey unit, and/or additional scans and fixed-point measurements.

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The current surface activity action levels for investigation of suspect affected surface and structure survey units are as follows:

"The action levels to initiate investigation surveys within suspect affected survey units are individual final survey measurements for removable and total surface activity in excess of 75% of the unrestricted use criteria." (*Reference 2, Response to Comment 4, paragraph 4*)

The following is a comparison of the current and the proposed surface activity action levels for investigation of suspect affected surface and structure survey units. Measurement results in excess of the following action levels will require investigation.

**Investigation Action Levels  
Suspect-Affected Surface and Structure Survey Units**

Measurement	Current Action Levels	Proposed Action Levels
Total Surface Activity	Investigate an individual measurement > 75% of the GLV.	Investigate an individual measurement > GLV.  Collect additional measurements, remediate as appropriate.
		Investigate if > 10% of the individual measurements are > 75% of the GLV.  Collect additional measurements, remediate as appropriate.
Removable Surface Activity	Investigate an individual measurement > 75% of the GLV.	Investigate an individual measurement > GLV.  Collect additional measurements, remediate as appropriate.
		Investigate if > 10% of the individual measurements are > 75% of the GLV.  Collect additional measurements, remediate as appropriate.

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### **PROPOSED MODIFICATIONS TO FSV FINAL SURVEY PLAN**

#### **Justification for Modifying Initial Classification Criteria and Investigation/Reclassification Action Levels**

The proposed modification to the initial classification and investigation/reclassification action levels for unaffected survey units meets the intent of the recommendations in Draft NUREG/CR-5849. These changes will significantly streamline the implementation of the final survey while ensuring that the facility meets the requirements for release for unrestricted use.

During the performance of final survey for the Repower Area, a significant number of investigations, which included additional field measurements, were required due to use of the MDA as the action level for investigation within these unaffected survey units. Of the 230 total surface activity measurements included in the final report for the repower area, approximately 60 measurements (26%) were investigation measurements collected as a result of using MDA as the action level for investigation. The result of these investigations did not identify the presence of licensed material. It is apparent that the use of MDA as an action level would result in a substantial use of decommissioning resources if implemented during a large scale final survey due to false-positive results while providing little or no benefit.

Each investigation triggered by this action level will require a significant effort to resolve. Typically it will require additional data analysis, a revision to the survey package, and more likely than not, additional measurements. In most, if not all cases, it is believed these investigations will fail to identify the presence of licensed material above the applicable release criteria.

The modifications to the investigation/reclassification action levels for non-suspect affected survey units which require an investigation if 10% of the measurements exceed 50% of the GLV, or if an individual measurement exceeds 75% of the GLV, are designed to allow for a small fraction of the measurement results to exceed 50% of the GLV. For affected survey units, the minimum detectable activity will typically be set at slightly less than 50% of the GLV. Allowing a small fraction of the measurement results to exceed 50% of the GLV is intended to account for statistical variation in counting, and for slight variations in the natural background of the material being surveyed which could bias the measurement results.

The mean (at the 95% confidence interval) for the set of measurements within the non-suspect affected survey unit is also compared to 50% of the GLV to evaluate the variability of the set of measurements, and to provide an additional level of confidence that the mean for the survey unit does not exceed the GLV. For instances where additional measurements are collected as a part of the investigation within non-suspect affected survey units, it is expected that for the area of concern, the measurement frequency will exceed that which is typically required for suspect affected survey units.

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For suspect affected survey units, the investigation action level for investigation was modified to allow for a small fraction of the measurements to exceed 75% of the GLV without warranting an investigation. Since these survey units are expected to contain residual activity, it is possible that individual measurements may exceed 75% of the GLV, however it is not expected that the frequency should exceed 10% of the measurements. This action level for suspect affected survey units is in addition to the recommendations contained in Draft NUREG/CR-5849.

The proposed modifications have been developed in the interest of focusing final survey efforts on those surfaces most likely to contain residual activity, and to make the most efficient use of decommissioning resources. The modifications are intended to allow for a small fraction of the measurement results to exceed an applicable action level, to serve as an initiator for investigation in the event that a more significant number of measurements exceed an action level, and to limit the number of investigations due to factors other than residual licensed material.

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**REFERENCES**

1. NRC Letter, Pittiglio to Crawford, "Response to NRC Comments on the Final Survey Plan for Site Release for Fort St. Vrain Nuclear Generating Station", dated January 26, 1995.
2. PSC Letter, Warembourg to Austin, "Response to Comments Regarding the Final Survey Plan for Site Release", dated January 20, 1995.