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Revision 1
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Mr. Mr. P. A. Polk, Director
Waste Disposition Program Division
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29808

Dear Mr. Polk:

CLASSIFICATION OF WASTE LARGE BLACK BOXES, OTHER WASTE CONTAINERS AND THEIR CONTENTS AS LOW LEVEL WASTE (LLW)

Ref: Letter, J. L. Stevens to D. E. Hintze, Classification of Waste Large Black Boxes, Other Waste Containers and Their Contents as Low Level Waste (LLW), CBU-WMAP-2006-00073, 8/1/06

The referenced letter attached the subject "white paper" that describes the classification of contaminated black boxes and other containers containing radioactive wastes. As described before, a comparison with DOE Order 435.1 "Radioactive Waste Management" requirements and guidance, the paper demonstrates that upon discard of contaminated containers and their contents, they must be characterized as waste to determine the appropriate classification and disposal path. The discarded waste matrix subject to classification (as LLW or TRU) will then be the container and the container contents. If the contaminated, discarded container and contents are below 100 nCi/g, then the waste form would be classified as LLW or Mixed LLW and be disposed in a disposal unit based on the unit's Waste Acceptance Criteria. Revision 1 is provided to clarify the application of DOE 435.1 to discarded contaminated containers as they are combined into a waste matrix.

We will include the attached "white paper" in the next revision of the Radioactive Waste Management Basis (RWMB). Should you have any questions please feel free to contact W. T. Goldston of my staff.

Sincerely,

Jeffrey L. Stevens, Manager
Waste Management Area Project

wtg/cc

Att.

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WASHINGTON SAVANNAH RIVER COMPANY

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Disposal of Waste Large Black Boxes, other Waste Containers and their Contents as Low-Level Waste (LLW)

Black boxes and other containers including 55 and 85 gallon drums, intermodal boxes and casks containing radioactive waste have been stored in E-Area as TRU and LLW for many years. As the TRU and LLW program has matured, the boxes and other containers have been used as storage containers of radioactive waste and stored, once empty, for reuse if appropriate. Many of the boxes and other containers are contaminated on the inside, and upon evaluation will not be decontaminated and reused. Boxes that have been used for TRU storage and as part of the F-Canyon or E-Area program to repackage TRU waste have not been able to be cleared for free release and, therefore, have been determined to be waste and must be discarded. Some of the boxes have been found to be contaminated on the inside after repackaging activities in F-Canyon. The boxes involved in E-Area repackaging have not been able to be cleared for free release even though there is not evidence that the inside of the container was contaminated before repackaging activities. Drums and boxes that have stored radioactive waste managed as TRU and LLW have been found to be contaminated and unable to be released.

If the boxes or other containers, and their contents will not be reused and will no longer be needed as storage containers, they will be discarded as waste. At that time they must be characterized as waste to determine the appropriate classification and disposal path.

The discarded waste form subject to classification (as LLW vs. TRU) will then be the container and the container contents. The waste form consisting of the discarded contaminated container and contents must then be characterized to determine if the waste form is above 100 nCi/g. If the contaminated, discarded container and contents are below 100 nCi/g, then the waste form would be classified as LLW or mixed LLW and be disposed in a LLW disposal unit based on the unit's Waste Acceptance Criteria.

As an additional factor, when released from the generator, TRU waste was packaged in black boxes for ultimate transport to WIPP. It was the intention of the generator to ship the black boxes to WIPP for possible treatment, repackaging and disposal. Subsequent to this process, it has transpired that in order for a black box and its contents to meet the WIPP waste acceptance criteria for disposal, the black box and its contents must be containerized in a WIPP acceptable container for certification, transport and disposal in WIPP. Therefore, the contaminated black box and its contents would be the waste form to be classified, and the total mass of the black box waste form would be used to determine the curies per gram to determine if the waste form is LLW or TRU.

It is recognized in the DOE Order 435.1 Guidance on III. A, page III-3, that actions taken to process a waste stream for safety or technological reasons that are justified, may result in the waste being reclassified after processing as LLW. This is the case with the contaminated black box waste form. If a black box is emptied of its contents as part of the TRU repackaging campaign and then the contaminated box is determined to be discarded, the box will be a radioactive waste and must be classified as LLW or TRU.

The black box (if determined to be no longer of use and is to be discarded) was then an integral part of the waste form before its contents are removed. There are a number of boxes which when using the entire weight of the waste form (the box and its contents are the waste form since the box is determined to be discarded as waste), may be classified as LLW instead of TRU once the weight calculation takes into account the entire waste form. Therefore, emptying the black box and generating a separate TRU waste stream does not reduce the volume of black box waste to be disposed and the repackaging processing will generate both radiological and industrial risk that would be avoided by not repackaging. Rather, risk would be significantly reduced if the waste form were not repackaged and was disposed as LLW if it can be demonstrated that the waste form is below 100 nCi/g and it meets the LLW disposal waste acceptance criteria as derived from the DOE Order 435.1 Performance Assessment for LLW disposal. Avoiding the segregation not only reduces the risk of handling the waste form, it also reduces the total cost of waste disposition by avoiding the unnecessary creation of a TRU waste stream. The same logic is correctly applied to 55 and 85 gallon drum containers. If the drum is contaminated and determined to be discarded to waste then the entire waste matrix including the drum must be characterized to determine if the waste matrix is LLW or TRU. This is especially important if the 85 gallon drum is an overpack for a 55 gallon drum with suspect integrity. In addition 55 gallon drums that were emptied as a result of TRU drum remediation are contaminated and in some cases are determined to need over packing in boxes to reduce the contamination potential during handling for characterization and disposal. Contaminated black boxes and Intermodals located in E-area have been determined to be waste (no longer needed) and are planned to be combined with the empty contaminated 55 gallon drums for characterization, classification, and disposal. As with the black boxes discussed above, the contaminated box used to overpack the contaminated drums is an integral part of the waste form and the entire weight of the waste form can be used to determine if the waste is LLW or TRU. These are specific examples of combining wastes including waste containers as a processing step for safety or technical reasons.

This is consistent with DOE Order 435.1, Guidance III, A, Definition of TRU Waste. On page III-2, the guidance states that the mass of added shielding, the container, or any rigid liners is not included in the TRU curie per gram calculation. In the case of the black boxes or other containers, the containers were used for storage and were expected to be used to ship the contents to WIPP, however, if the container is determined to be no longer useful, is contaminated, and is to be discarded as waste, the container is now a part of the entire waste form to be disposed. It is no longer the container that would be used to ship the waste to WIPP or NTS for example, in fact it is waste that will be disposed. On page II-2, it also states that the determination of TRU waste should be made at the time of waste certification, that is, each time the waste is transferred to another person or facility. Therefore, at the time of certification of the discarded container and its contents, the determination of TRU waste should be made and the weight used in the TRU calculation should be the entire weight of the waste form included the container and its contents. In fact the determination of a container as waste that must be disposed as radioactive waste is not specifically addressed by the Guidance.