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TITLE

DISPOSITION OF PLUTONIUM TO BURIAL 234-5 BUILDING

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By Authority of DOC MAY 1973

By J E Savely 2-24-00

Verified By J Miles 4-4-00

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BY JP Desovin DATE 3-3-82

BY AE Basher DATE 3-4-82

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Doc. no. obtained by C. J. Shortess, Jr. 3 18-59

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DISPOSITION OF PLUTONIUM TO BURIAL
234-5 BUILDING

The following information is presented to clarify recent plutonium disposals from 234-5 Building. Safety to the personnel and radiation and special hazards control, as deemed necessary for protection of property and personnel throughout the Hanford Works, was the basis for the decision to dispose of this material. Corrective action has been taken on an emergency basis to provide suitable containers for this material to preclude disposal of further quantities unless unforeseen emergencies occur.

Since last summer, the Finished Products Operation has been making an attempt to resolve unexplained S-PID's in Pu accountability at the 234-5 Building. Development of neutron counters for monitoring Pu content of waste cartons led to the conclusion that appreciable amounts of this material were being discarded, along with hood wastes, to the burial grounds without property accountability, and that this situation had existed since start up of the plant. As a result of this information, immediate action was taken to eliminate this unmeasured loss. As a result of this fact, the program at 234-5 was enlarged to include the installation of necessary facilities for leaching and/or burning combustible materials which are contaminated with Pu, thus making this material recoverable. This facility is being provided by Capital Expenditure action. Since the inception of the latter program, waste of this type has been accumulated with estimates made with neutron count of its Pu content. At this time, there are 125 waste boxes in storage (approximately 4 cu. ft. per box) in the Cable Mountain vaults, plus an additional 24 in the 234-5 Waste Hutment. The Cable Mountain storage vaults are being used for this purpose due to the possibility of fire or other type destruction of these packages and resultant contamination spread that could occur. The isolation of Cable Mountain makes it ideal for this purpose. All personnel aware of the program being undertaken were aware of the comparative fragility of the waste packages themselves.

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Throughout the program of waste accumulation and storage, care is being exercised to prevent the storage of rags, which may have been in contact with nitric acid, from material being stored. Certain materials from Recuplex hoods, rubber gloves, plastic, and to a lesser degree, paper cartons, etc., are often removed which may be damp with organic (carbon tetrachloride and/or tri butyl phosphate) and, to a lesser extent, with nitric and hydrofluoric acid. As a result, this material creates an impossible storage situation using current methods and therefore, steps are being taken to minimize packaging this material by standard methods. Unfortunately, we can not be 100 percent certain that this material is always handled in this manner, and as a result routine inspection is made of the Gable Mountain vaults to determine the condition of the boxes in storage. During the course of these inspections, boxes are sometimes found badly decomposed and falling apart due to the reaction of the organic material on the polyethylene plastic and cardboard boxes. The inspection team has had no recourse but to quickly wrap the material in plastic and dispose of it to burial.

During the past two months when maintenance problems were particularly acute in Recuplex as a result of, and immediately following, a serious contamination incident, a considerable number of waste boxes have been sent to storage. These boxes contain failed valves and tools, as well as considerable quantities of semi-solid plasticized rubber gloves and plastic which has been in contact with organic solvents and their degradation products, all of which are highly contaminated with Pu. Existing facilities are not available to leach or wash these materials, nor is the current Recuplex process compatible with this material in the feed stream. Even short-term storage of this material in triple plastic lined storage boxes was recognized as being unpractical, but became necessary in some cases, and steps were taken to provide other containers such as stainless steel, even though a serious question exists on its long-term storage characteristics, due to the fire hazard considerations and pressurization.

As an overall result of the conditions as outlined above, special request numbers 034, 035, 036, 038, 039 and 041 have been issued to cover disposition to burial of the following total materials from 234-5 since July 1, 1958:

4 Boxes (Blanket Authorization No. 020)	16.3	Grams
Box #7	119.6	Grams
Box #61	34.5	Grams
Box #70	42.5	Grams
Box #71	36.8	Grams
Box #80	48.3	Grams
Box #81	48.3	Grams
Box #84	96.6	Grams
Box #88	253.00	Grams
Box #89	99.0	Grams
Total	794.9	Grams

It should again be re-emphasized that the above totals are approximations as made by neutron count which has an estimated precision factor of + or - 50%.

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In order to prevent a continuation of disposals of this type, containers are being procured which can withstand the chemical reaction of the organic-acid combinations with which this material may have been in contact. Light gauge stainless steel liners for waste storage boxes are being procured as an immediate corrective measure. This method is expensive and constant vigil is necessary to check for possible fires or undue pressurizations while in long storage. Procurement of a plastic material (teflon) which can resist reactions of the chemicals appears feasible. Material of this type will be delivered within the next few days, which will be fabricated into boxes or bags (if possible with existing equipment). It may ultimately be possible to procure bags or boxes made of teflon from an outside vendor. This latter feature is being investigated by Purchasing.

Destruction of the organic complexes formed by reaction of the TBP-CCl_4 mixtures on rubber gloves, plastic, rags, etc., will be possible by incineration. This should greatly simplify the current processing problem. Long-term storage, however, is another area of grave concern. Cable Mountain's caverns have a predicted capacity of 192 storage boxes; this compared to the accumulation of 150 boxes during the first 8 months and the incinerator another 13 months away, exemplifies the problem as well as possible at this time. Additional storage space is being investigated and will be made available.

Please convey this information to the Commission and secure proper authorization for the disposal of the material in question. There will be no further disposals of this type except in case of emergencies, wherein immediate safety of personnel or property is threatened.

ORIGINAL SIGNED BY
J. J. COURTNEY

J. J. Courtney, Manager
Finished Products Processing Operation
Finished Products Operation

JJ Courtney:bdt

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