

46-000177

 ENTERED

TO: File
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FROM: Roy Michelotti *RAM*
Project Leader OU-1140
George Erlckson: CLS-6
GTE
MAIL STOP/TELEPHONE: E525/5-7444
MAIL STOP/TELEPHONE: EJ564/7-7102

SYMBOL: CLS-ER-RM-004

SUBJECT: DOCUMENTATION OF CESIUM-DITCH WASTE PRACTICES

On 17 March 1992 Jim Roberts and Roy Michelotti met with George Erlckson; George is a recently retired Laboratory Associate who worked primarily at TA-46 during his tenure at the Lab. He was hired into N Division in 1958, and retired in 1991. Our discussion was focused on SWMU 46-007, other topics that were discussed will be revisited later with George, and will be detailed in a later memo(s) to file.

When George first came to Los Alamos he worked on the cesium plasma diode referred to in document 46-00018. All of the cesium used in this effort was of a natural isotopic mixture; cesium 137 was not used. George said that the procedure described in the memo did not work for most of the plasma-diode equipment; the cesium-water reaction was much too violent and would destroy the equipment. They therefore developed an alternate procedure. They used a mixture of butanol and kerosene (1/4 to 1/3 kerosene by volume) to react with the cesium that was left inside the equipment. The residual was then discarded into the ditch. Water would then be used to react with any residual cesium that remained in reentrant sections of the equipment. Again, the residual was discarded into the ditch. If there were a solid piece of cesium in an apparatus it would be discarded in the alkali-metal pit, a 2-ft x 2-ft x 15-ft hole-in-the-tuff immediately west of the south-bay entrance of building 1.

Each time the cleaning operation was used approximately 200-300 cc of butanol was used. A maximum of 10g of cesium would be cleaned from an apparatus. As a worst case assumption, this operation was conducted approximately every other month for a period of nominally three years. (180 grams of cesium, 6L of butanol, 2L of kerosene)

After the cesium plasma diode effort ended the ditch was used for waste from heat-pipe research. The residuals of dissolving copper tubing in nitric acid were discarded in the ditch. Sodium bicarbonate (baking soda) was sometimes

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added to partially neutralize the mixture. Potassium and sodium waste from the heat-pipe program were also discarded into the ditch and the pit. Ethanol was used to clean these materials from equipment; residuals were discarded as described above. The quantities of these residuals far exceeded the cesium and other solvents described above.

George also suggested that the pit, ditch, and downslope areas should be checked for contamination with a variety of chlorinated and hydrocarbon solvents. He also advised that the area be checked for mercury.

The alkali metals which were dissolved in alcohols (including butanol) form an "alcoholate". The "alcoholate" will react with water to form the original alcohol and an alkali-metal hydroxide. The alkali-metal hydroxide will eventually react with CO_2 in the air, forming alkali-metal carbonates.

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Roberts; CLS-5 E525
OU-1140 Paper Records

CLS-ER Files

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