Boston file

719878

INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Office Box P OAK RIDGE, TENN.

TO E. G. Struxness
LOCATION 9202

DATE November 25, 1953

ANSWERING LETTER DATE

ATTENTION

COPY TO R. F. Hibbs, Y-12 RC
F. E. Clark
L. A. Stephens (File)

SUBJECT Preparation of Uranium Solutions

As per your memorandum of November 25, this laboratory has prepared two uranium solutions. The U^{233} solution was made with a calculated value of .00050 g/U/ml. After preparation the solution was analyzed by the ascorbic acid colorimetric method with the analyses exactly equivalent to the calculated value.

The U^{238} solution was made with a calculated value of .00100 g/U/ml and was analyzed after preparation by the ascorbic acid colorimetric method and the analysis was identical with the calculated value.

The solutions were prepared identically except for the uranium concentration. In each case the starting material was U_3O_8. The oxide was dissolved in a slight excess of nitric acid and evaporated to dry nitrate crystals to remove the excess acid. The crystals were dissolved in water and were evaporated to dryness twice to remove any final traces of nitric acid. The resulting crystals were then dissolved in approximately 200 ml water. At this point the pH of both uranium solutions was 3.5. A standard solution of sodium bicarbonate was prepared so that 1 ml of the solution contained sodium equivalent to .01 grams of sodium chloride. Twenty-five milliliters of the sodium bicarbonate solution was added to each of the uranium solutions. The pH of the U^{238} solution was then measured to be 6.1; the pH of the U^{233} solution was measured to be 6.6. Two grams of sodium chloride was then added to each solution and the volume made to 250 ml. This addition adjusted the sodium in the solutions to the equivalent of 0.9 percent in sodium chloride. The pH of the U^{238} solution was measured to be 5.9 while the pH of the U^{233} was measured to be 6.4.

After sitting 24 hours the solutions give no indication of precipitation.

L. A. Stephens
L. A. Stephens

REPOSITORY ORNL/X-10
COLLECTION Health Sci. Research Div.
BOX No. 1060 Commerce Park
FOLDER Fm 253

ab
1147214

A-00327
Human Studies Project