ABSTRACTS OF MISCELLANEOUS REPORTS
April 1941 to Sept. 1944

CF-36 April 17, 1942 - Princeton University

The specific heat of Tu₃O₈ was determined accurately. The reaction of tuballoy with six ceramic materials at specified high temperatures is indicated.

CF-92 May 23, 1942 - New York University

The specific heat and thermal conductivity of tuballoy at room temperature are given.

CF-92 May 23, 1942 - Princeton University

Thermal conductivity measurements of graphite, BeO, Tu₃O₈, and TuO₂ were made.

CF-124 June 13, 1942 - Princeton University

Young's modulus, Shear modulus, Poisson's ratio, compressibility, and elastic limit for work hardened and annealed tuballoy were obtained. The electrical and thermal conductivity of the metal, and thermal conductivity and density of black dioxide and sintered carbide were measured.

CT-192 No date - Princeton University

The determination of a number of physical constants, primarily those connected with the heat transfer in an atomic power plant, were carried out. The thermal conductivity of a number of tuballoy-containing materials was investigated and the electrical conductivity of the metal was measured. The thermal conductivities of graphite, beryllia, and lampblack were determined. Experiments on thermal transfer coefficients between a variety of different materials were conducted. The thermal coefficient of expansion, elastic constants and ultimate strength of tuballoy were measured and the conditions for rupture under differential thermal expansion determined. Several other properties such as hardness, density, and machineability are discussed.
Experiments were conducted to determine the efficiency with which tuballoy metal can be heated and recast in air.

The emissivity of vacuum heated tuballoy between 1180° and 1370°K was determined. A sudden change in emissivity between the temperatures 1321° and 1323°K, suggesting a third crystal structure change, was noted.

The changes in the breaking strength of tuballoy produced by irradiation are summarized.

The breaking properties of artificial graphite were determined.

The preparation of tuballoy by the reduction of \( \text{TuCl}_4 \) by calcium is described.

Corrosion studies on stainless steel, cast iron, and mild carbon steels were performed.
CCA-721 May 28, 1943 Columbia University

The corrosion of aluminum in the presence of fluorides was investigated.

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A-753 x CC - July 1, 1943 - Columbia

A detailed report on the physical and thermodynamic properties of tiballloy tetrafluoride with bibliography.

A-1034 (CT) February 19, 1944 - Mallinckrodt Chem. Works

The ignition temperature of a green salt-magnesium mixture was measured, and factors which may affect it investigated.

A-1035 (CT) April 27, 1944 - Mallinckrodt Chem. Works

Factors affecting biscuit operation in 4-inch graphite crucibles were quantitatively investigated.

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A 1045 (cc) Manhattan District July 30, 1944

This monthly information report contains information and recommendations on the production of black oxide, class. and brown oxides and green salt, classification tests on C-2 slag, production of crude and finished metal, and processing of ore, and analytical report.
An investigation was undertaken to develop some control method for predicting magnesium performance in the reduction reaction.

A155 (CC) Manhattan  August 31, 1944

These topics covered in this monthly information report are: the production of brown oxide, green salt, crude and finished metal; casting in metal molds; density determinations of tukkallon; improvements in casting furnace; processing of ores; and analytical reports.

A1061 (CC-An) Nov. 17, 1944 - Princeton

Studies on the quantitative reduction of Te by saturated mercury-give liquid amalgam sand-in-the-stone are discussed. A method of determining Te, 08 in high and low grade ores using this reduction method is described.
A 1228X (CC-G) Columbia Aug 29, 1944

The heats of formation, free energies, and entropies of tetrabutyll fluoride are calculated.

A 1235 II (CC-G) Aug. 28, 1944 Columbia

Methods of electropolishing thin films of uranium oxide on platinum for use in the counting method of isotopic analysis of uranium were developed.

Beta CD 471 (CC-G) Oct 10, 1944 Clinton Eng. Works

A process for converting tetrabutyl trichloride to anhydrous tetrabutyl tetrafluoride is described.

CD 477 (CC-G) Clinton Eng. Wks. Nov 9, 1944

The preparation and properties of various tetrabutyl fluoride isomers is described.
The Westinghouse vacuum casting apparatus is described.

The impressions gained during visits to B. and T. Metals Company and Battelle Institute at Columbus to witness and discuss extrusion, and to the Copperweld Steel Corporation of Warren, Ohio, to cover degassing and straightening, are summarized.

The anodizing of aluminum tanks meant to contain distilled water is discussed.

The influence of heat (300°) on weight of aluminum is reported.

The recovery of tuballoy values from by-product scrap material is described in detail.

Monthly reports for May, June, July, August, and September, 1944, cover the progress made in the preparation of tuballoy castings by the "lost wax" technique for making molds coupled with centrifugal casting, carried out in vacuum.

A collection of weekly progress reports from all Project sites in which coating work was being carried on.
N 1661 (CE-C) Sept 7, 1944 Du Pont

The preparation of the nitrides of titanium, zirconium, and silicon is described.

N-1742 (CP-C) June 21, 1944 Du Pont

The effects of various temperature factors on the properties of X-ray film are explained.

N 1761 (CT-C) Dec 9, 1944 R. B. Briggs

The effects of radiation and corrosive conditions on iron slugs with a special treated sodium-aluminum silicate coating base on were determined.