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R. L. Karp

C. L. Karl, Area Manager,
Fernald Area

DEC 21 1955

During the recent visit to the Fernald Division, Mr. C. L. Karl, Mr. W. T. Warner, Operations Branch, and Mr. R. L. Karp, Area Manager, Fernald Area, were present to observe the development of the facilities.

TRIP REPORT - CURTISS-WRIGHT CORPORATION - DECEMBER 15, 1955

Mr. C. L. Karl, Area Manager, Fernald Area, and Mr. W. T. Warner, Operations Branch, Fernald Area, were present to observe the development of the facilities.

SYMBOL: CWTR - Curtiss-Wright Corporation - Buffalo, New York
The symbol CWTR is used throughout this report to denote the Curtiss-Wright Corporation - Buffalo, New York.

Site Visited: CURTISS-WRIGHT CORPORATION - BUFFALO, NEW YORK

Metals Processing Division, Buffalo, New York. The Buffalo plant consists of three (3) divisions, Casting, Forging and Extrusion. The Extrusion Division was visited.

Personnel Contacted:

Mr. D. R. Underwood, Technical Sales Engineer

Mr. J. Blum, Plant Manager

Mr. Titus, Engineer

All of the Extrusion Division personnel were present.

Conclusions:

The Curtiss-Wright extrusion facility is admirably equipped to carry on a production development effort for the extrusion of uranium heavy walled tubing. Since the press is housed separately and is attended by a small staff, accountability, security and health problems are amenable to close control.

The successful development of an extruded steel propeller blade is thought indicative of the technical skill available.

Description of Equipment:

The Curtiss-Wright Corporation is the operator of a 12,000 ton steel extrusion press, financed by the U.S. Air Force, as a part of the national heavy press program. The heavy press was specifically designed to extrude steel propeller blades, and is the largest extrusion press of its kind in the world. It is capable of close tolerances because of its special design.

The press may be operated on a 4,000 ton, 8,000 ton, or 12,000 ton cycle and can extrude steel billets 26 inches in diameter by 67 inches

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long. The smallest container, to be on hand January 1, 1956, is 8 inches in diameter. One (1) 14 inch and one (1) 16 inch container are available, with 20 and 26 inch containers scheduled for delivery within the next 6 - 8 months. Partition of the extrusion butt from the die is accomplished with a band saw, without coolant. The run-out table is 47 ft. long, however a 60 ft. length can be accommodated.

Auxiliary equipment includes electrically heated salt bath and atmosphere furnaces. An induction billet furnace is available from the Casting Division.

Availability of Equipment:

Since the completion of the extrusion facility the jet aircraft age has made inroads in the propeller business, thus the facility is available for other work.

Discussion:

Mr. John Stanley of NIO and the writer met with Messrs. Blum, Titus and Underwood for preliminary unclassified conversations regarding the extrusion of heavy walled uranium tubing. We expressed interest in a tube of indeterminate length 1-1/8 in. O.D. with a 31/64 in. I.D., and stated that a precise concentricity and smooth surface suitable for machining would be required. We stated that the uranium ingots were 7 inches in diameter by 42 inches long, weighed approximately 1100 pounds, and should be worked at 1200°F. We also stated that heavy walled tubing had been successfully extruded, but concentricity was a major problem.

Mr. Blum said that previous size restrictions (minimum cross sectional area of 3 square inches) had been based upon steel extrusion work, where the high working temperatures (2600°F) made die and mandrel life limiting factors. He said that the smallest section thus far produced at Curtiss-Wright had been 15/32 in. bar stock, extruded from a large billet through a 20 port die.

Mr. Underwood said that contacts had been made for the extrusion of titanium tubes for Watertown Arsenal and zirconium shapes for G.E. Arrangements are now being made with the Climax Molybdenum Corporation for a joint study leading to the extrusion of molybdenum shapes. He stated that his management was solidly behind the titanium work which will start early in 1956 and will be the first production order work on the press. The press was formally accepted on November 1, 1955. Curtiss-Wright contracts independently for extrusion work.

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Mr. Underwood recalled that he had discussed uranium extrusion work in a general way with Dr. John Fellows of MCW on Friday, December 9, 1955. He pointed out that although the MCW product may vary dimensionally, the basic problems of security, accountability, and health would be common to both projects.

Mr. Blum stated that he would need some appreciation of the plastic behavior of uranium before making commitments, however, he expressed his willingness to engage in the work. Mr. Underwood said that he would take immediate steps to get an AEC Access Permit, and suggested that full consideration be given to a joint NLO - Curtiss-Wright extrusion program.

W. T. Warner

cc: F. R. Dowling, ORDO ✓
G. W. Wunder, NLO