

OH. 25-1

CENTRAL FILES

OH. 25

NATIONAL LEAD COMPANY
OF OHIO
CINCINNATI 39, OHIO

NLO

B4-1-3W
72

October 7, 1963

SUBJECT: TRIP REPORT TO CINCINNATI MILLING MACHINE COMPANY, CINCINNATI, OHIO
ON NOVEMBER 27, 1963
TO: J. A. Quigley, N.E.
FROM: R. L. Rubie

OBJECTIVE OF TRIP

The purpose of this trip was to provide health and safety coverage during a test of the feasibility of electro-chemical machining uranium at the Cincinnati Milling Machine Company, Cincinnati, Ohio.

CONCLUSIONS AND RECOMMENDATIONS

The process of electro-chemical machining uranium at the Cincinnati Milling Machine Company, Cincinnati, Ohio appears to have no large health and safety problems at this time.

If a return trip to the Cincinnati Milling Machine Company is made, a representative of Health & Safety should be present to further evaluate the process and supervise the decontamination.

PERSONS VISITED

W. A. Haggerty - Research Supervisor
C. R. Allison - Research Associate
C. E. Foerstmeier - Research Associate
L. W. Nelson - Laboratory Technician

NLO PERSONNEL

E. Sallain - Process Engineering
W. Stephens - Metallurgical Department
H. Davis - Metallurgical Department
J. MacNeill - Metallurgical Department
C. Turmelle - CAO-AEC

BACKGROUND OF TRIP

The present methods of producing hollow extrusion billets are either directly casting a hollow ingot or casting a solid ingot and drilling it to the proper core dimension. In the hollow casting route, low dimensional yields are experienced and high cost graphite parts are expended after each casting. In the drilling of solid castings, chips are produced. The reprocessing of these chips is a potential source of exposure to airborne uranium dust. In theory electro-chemical machining of solid billets would produce either a sludge of fine uranium particles or uranium in solution or both. Health and Safety aspects of reprocessing this material is, at present, unknown.

TRIP REPORT TO CINCINNATI MILLING MACHINE COMPANY, CINCINNATI, OHIO
ON SEPTEMBER 17, 1963
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This test was arranged to investigate the feasibility of electro-chemical machining of uranium. The Cincinnati Milling Machine Company builds electro-chemical machining units and has an extensive research and development program in this field.

DESCRIPTION OF TRIP

Sight small solid cylinders of normal uranium 1" diameter x 1" long were electro-chemically machined. Each sample took less than 5 minutes to machine. Much time was spent in inspecting the finished product, setting up different electrolytes and temperatures, and altering power controls. Three different electrolytes were used 1) sodium nitrate, 2) sodium chloride and 3) potassium chloride. The uranium stayed in solution and/or was filtered onto a fiber glass filter. The Milling Machine personnel involved wore NLO smocks and rubber gloves while performing their duties.

DECONTAMINATION

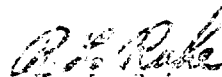
Decontamination commenced by removing the filter and connecting a by-pass line to the equipment and running solvent through the machinery. This apparently flushed all loose contamination (if any) into a plastic container. The flushing solution was dumped into a 30-gallon drum and returned to NLO along with the electrolytes and contaminated filters. Contact measurements of radiation from the cleaned equipment and floor were taken with a low range GS-3 beta-gamma survey instrument and with an alpha survey instrument. These measurements showed no alpha, beta, or gamma radiation above background. All equipment in the room was wiped with solvent soaked rags as was the floor.

MISCELLANEOUS COMMENTS

The personnel at the Cincinnati Milling Machine Company were most cooperative regarding prescribed health and safety precautions. All persons concerned were receptive to suggestions and assisted by making suggestions themselves.

COMMITMENTS

None


R. L. Rube

RLR/bjm

cc: H. Davis
J. H. Moyes (cc)
C. E. Polson
R. H. Starkey
W. E. Stephens (cc)