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NATIONAL LEAD COMPANY
OF OHIO
Cincinnati 39, Ohio

NLO

September 25, 1961

SUBJECT: TRIP REPORT TO LEBLOND MACHINE TOOL COMPANY, CINCINNATI, OHIO ON AUGUST 21, 23, AND 25, AND SEPTEMBER 1, 8, AND 11, 1961

TO: J. A. Quigley, M.D.

FROM: B. D. Leininger, A. D. Workum

CENTRAL FILES

OBJECTIVE OF TRIP

The purpose of this trip was to (1) observe the health and safety aspects during a simulated production run on the LeBlond Carlstedt Rapid Boring Machine while drilling solid cast uranium billets, and (2) insure the adequate decontamination of the machinery, tools, equipment, and test area.

CONCLUSIONS AND RECOMMENDATIONS

During the operation there was no noticeable smoke or fumes expelled from the machine. Since the coolant and chips were carried through the drill and thence into a coolant tank, there was also very little external contamination. Although there was no designed ventilation on the machine, air dust samples reveal no significant release of uranium to the atmosphere during the operation. If this machine is to be used in NLO production operations it is expected that only a minimum amount of ventilation will be required.

BACKGROUND FOR TRIP

Because of the low yield which results from the casting of hollow billets it has become increasingly important to determine whether billets could be machined.

Previous visits had been made by representatives of the NLO Technical and Health & Safety Divisions to view the machine in operation on other types of material. The first test with uranium was conducted on January 16 through 20, 1961. The purpose was to demonstrate the ability of the machine to drill holes through solid uranium billets. The above test was considered successful and arrangements were made for this second test which simulated a production run.

PERSONS VISITED

Mr. H. Bruck - Sales Manager, Rapid Borer
Mr. F. Stoffregen - Assistant Sales Manager, Rapid Borer
Mr. W. Kinsey - Project Engineer, Boring Machines
Mr. J. Ladendorf - President, American Heller Corporation
Mr. J. Schoofs - Chief Engineer, American Heller Corporation
Additional NLO personnel present were:

Mr. R. J. Jansen - Technical Division
Mr. R. F. Bauer - Technical Division
Mr. W. E. Stephens - Technical Division

DESCRIPTION OF TRIP

The NLO representatives arrived on Monday, August 21, 1961. Testing was begun the afternoon of this day and continued through Friday morning, September 8, 1961, when the last billet was machined. A total of 56 billets were bored.

The boring machine and coolant tank occupied an area of approximately 400 square feet, 40 feet long, and 10 feet wide. The coolant tank itself was approximately 5 feet wide, 8 feet long, and 3 feet deep, and sat directly on the floor. The chips and coolant passed through the drill and thence down a pipe to the coolant tank. A high-low level float had been set up on the tank whereby when the coolant reached a certain level it would be pumped out of the tank and through a "Full-Flow" filter supplied by NLO. Thus all uranium fines above 10μ in size were removed from the coolant in order that it could be recycled.

After every billet the drill was examined for wear. If regrinding was necessary, the drill was first cleaned to background radiation levels. Breathing zone and general air samples were taken before and during several runs to determine the air-borne uranium concentration. The results are shown in the attached appendix, Table I, and indicate extremely low levels of activity - well below prescribed limits.

On Friday of the first and second weeks (August 25, and September 1, 1961) chips and turnings were removed from the coolant tank. These chips were packed and shipped to NLO according to methods prescribed in a letter dated December 16, 1959 from J. A. Quigley to F. L. Cuthbert, subject, Handling Residues at Off-Site Tests. On Friday of the third week, (September 8, 1961) complete decontamination begun and was completed on Monday, September 11, 1961. Chips and turnings were removed and drummed as stated above. The excess contaminated coolant was drained from the tank and drummed. The coolant tank and associated filter and piping were cleaned of surface contamination and returned to NLO.

Since a sample of the filtered coolant showed only 29 mg/l uranium or 0.002%, LeBlond personnel were informed that they could use the coolant for any purpose they desired.

No significant contamination of personnel or clothing was found. The tools, equipment, test area, and the coolant tank, were decontaminated to background radiation levels. All possible chips, turnings, and fines were removed with a portable vacuum cleaner. Any remaining contamination was wiped up with NLO-supplied rags. These were returned to NLO in sealed drums. Several pieces of wood (on which the billets were placed while hooking the hoist to the billets) and the rope (which served as the hoist) were confiscated due to the inability to decontaminate them. These items were drummed and returned to NLO.

MISCELLANEOUS COMMENTS

The cooperation of the LeBlond and NLO personnel was very good. They were all receptive to any health and safety recommendations made.

COMMITMENTS

None

E D Leininger
B. D. Leininger

EDL/zp

Attach.

cc: J. A. Quigley, M.D. (2x)
J. H. Noyes (2x)
R. H. Starkey
F. L. Cuthbert
R. J. Jansen
C. E. Polsen

Central Files ✓

A P P E N D I X

Table I

Type	Sample Description	Concentration α d/m/M^3 High	Low	Average	%MAC*
GA	Background samples - before any testing.	.6	.2	.3	<0.1
GA	Operations in progress Samples taken during boring operation.	2	ND	.7	<0.1
BZ	Operator hooking hoist to billet and placing billet into position on machine.	9	ND	3	<.1
BZ	Operating removing billet from machine after billet had been bored and placing billet on scale.	15	ND	5	.1

Type: GA - General Air
BZ - Breathing Zone

ND - Non-detectable
*MAC (Maximum Allowable Concentration) - 70 α d/m/M^3