MA.15-1

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NLO F2 CB4-1

NATIONAL LEAD COMPANY
OF OHIO
Cincinnati 39, Ohio

May 25, 1960

SUBJECT TRIP REPORT TO HEALD MACHINE COMPANY, WORCESTER, MASSACHUSETTS, ON MAY 16 TO MAY 21, 1960

TO J. A. Quigley, M.D.

FROM K. N. Ross

CENTRAL FILES

OBJECTIVE OF TRIP

The objective of this trip was to evaluate the health and safety aspects of testing a machine for drilling uranium slugs and to supervise the decontamination of this machine and the test area.

CONCLUSIONS AND RECOMMENDATIONS

During the previous trips it was noticed that the flushing of the chip troughs was inadequate. A coolant supply line to flush these troughs was added after the final tests were completed. Although no operating tests of this new flushing line could be made it appears to be an improvement and should provide enough flushing action to prevent the piling up of chips in the chip troughs.

Ventilation of this machine should be no problem. If possible, a slight delay should be made between the withdrawing of the slugs from the chuck and the opening of the loading door to allow the oil mist and fumes to be drawn away from the operator. Very heavy oil mists were observed during these tests when the doors were opened.

The possibility of a greater-than-safe mass of enriched uranium fines and chips collecting in the coolant sump should be investigated if this machine is to be used for enriched material.

BACKGROUND FOR TRIP

Due to increased production orders it becomes necessary for Plant 6 to install added equipment in order to fulfill their obligation. The Heald Machine Company was contacted to build for NLO a "multi-bore" drilling machine, which will drill four slugs simultaneously. This trip was actually an engineering acceptance test of that machine.

PERSONS VISITED

Mr. Leo St. John, Sales Engineering Division, Heald Machine Company
Mr. R. Bradeur, Sales Manager, Borematic Division
Mr. J. McCabe, Manager, Engineering Division
Mr. E. Johnson, Safety Engineer, Heald Machine Company

DESCRIPTION OF TRIP

On Monday, May 16, a representative of NLO cnecked the drilling operation using cast iron slugs and found the machine was ready for final acceptance tests using uranium slugs.

On Tuesday, May 17, tests of drilling uranium slugs were commenced and continued until noon on Thursday, May 19. Air dust samples of the operation were taken during the test drilling of uranium. The results of these samples are summarized in the attached table and are compared with background samples taken on a previous trip. The average air dust activity during the drilling of uranium slugs was approximately the same as the background before any uranium was drilled.

The machine was partially decontaminated each day at the end of the working period. The floor in the immediate area of the machine was monitored frequently and vacuumed when any signs of radioactivity were noticed and at the end of each working period. This effectively limited the spread of contamination. Personnel working in the area wore rubbers and protective clothing, which were removed before leaving the area.

At noon on Thursday, May 19, tests were completed and complete decontamination of the machine was started. This was completed at about 3:00 P.M. on Friday, May 20. A survey of the machine and area at this time showed no contamination above normal background.

Chips from the test drillings were loaded into 30-gallon drums under oil, which in turn were loaded into 55-gallon drums filled with Merco-Dri. Coolant, solvent, and rags were handled in the same manner. All materials used in the testing of this machine and the subsequent decontamination were returned to Fernald via NLO truck.

MISCELLANEOUS COMMENTS

The machine operator, a Heald Machine Company employee, who operated the machine during the final tests was not the same employee who had operated it during the previous tests. This, we were told, was due to the previous operator's fear of uranium radioactivity.

It was necessary to reassure other Heald Machine Company employees, who were required to work on the machine during the tests, that the work would not harm them.

Difficulties like this could be alleviated by proper advance information given by qualified NLO representatives.

COMMITMENTS

None

Keith N Ross

K. N. Ross

KNR:bg

Attach.

cc: J. H. Noves (2x)
J. A. Quigley, M.D.
R. H. Starkey
C. A. Konkle
P. E. Sallada
R. J. Jansen

Central File

TABLE I

AIR DUST SAMPLE RESULTS

Sample Description	No. of Samples	Concentration-α d/m/M³ High	Low	Average	% MAC*
Over coolant tank before any uranium was drilled on the machine	4	4	0	2	0.0
Over coolant tank during the drilling of four uranium slugs	4	4	1	2	0.0
Left side of machine before any uranium was drilled on the machine	3	3	0	2	0.0
Left side of machine during the drilling of four uranium slugs	4	4	1	2	0.0
Center of machine before any uranium was drilled on the machine	3	13	1	6	0.1
Center of machine during the drilling of four uranium slugs	4	11	2	5	0.1

*Maximum Allowable Concentration (MAC) - 70 α d/m/M³