OH.38-4 NLO

B4-1-3W 72

NATIONAL LEAD COMPANY
OF OHIO
Cincinnati 39, Ohio

February 3, 1961

SUBJECT TRIP REPORT TO LEBLOND MACHINE TOOL COMPANY, CINCINNATI, OHIO, ON JANUARY 16 TO 20, 1961

TO J. A. Quigley, M.D.

FROM A. D. Workum

CENTRAL FILES

OBJECTIVE OF TRIP

The purpose of this trip was to (1) observe the health and safety aspects of determining if a LeBlond Carlstedt Rapid Boring Machine can drill a hole through the center of a 17-18" solid cast uranium billet, 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. There was no ventilation on the machine and there does not appear to be a need for any if further testing is required. Air dust samples reveal no significant release of uranium to the atmosphere during this trial operation. If this machine is to be used in NLO 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 hollow billets could be machined.

This was the first test conducted at LeBlond although 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 and to arrange this test.

PERSONS VISITED

Mr. H. Bruck - Sales Manager
Mr. F. Stoffregen - Assistant Sales Manager
Mr. W. Kimsey - Project Engineer, Boring Machines
Mr. B. Brockman - Vice President, Sales
Mr. R. Auge' - Technical Equipment Sales Representative

Additional NLO personnel present were:

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

DESCRIPTION OF TRIP

The NLO representatives arrived on Monday, January 16, 1961. Testing was begun the afternoon of this day and continued through Thursday morning, January 19, 1961, when the last billet was machined.

The boring machine and coolant tank enclosed an area of approximately 400 square feet, 40 feet long, and 10 feet wide. The coolant tank itself was 5 feet x 8 feet x 3 feet, 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 10 μ in size were removed from the coolant so it could be recycled.

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

Draining the coolant tank, monitoring and decontaminating machinery, tools, equipment, personnel, and test area started on Thursday afternoon and was completed on Friday afternoon. The chips were placed in four vented 30-gallon drums and filled two-thirds full with the coolant remaining in the bottom of the tank. The 30-gallon drums were sealed, placed in 55-gallon drums which were in turn filled with a dry powder, and returned to NLO. Since the coolant tank and associated filter and piping are the property of NLO and are to be returned to Fernald after the completion of any further tests, only loose surface contamination was removed. Fixed contamination was not removed for economic and practical reasons. This NLO equipment is stored at LeBlond pending further tests and will not be used by them.

Since a sample of the filtered coolant showed 2.4 mg/l uranium or 0.00024%, 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, and test area, excluding the coolant tank, were decontaminated to background levels. All chips, turnings, and fines were removed with a portable vacuum cleaner. Only NLO rags were used for the cleanup and these were returned to NLO in drums.

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

A D Workum/K Ross

A. D. Workum

ADW:bg

Attach.

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

Central File ✓

A P P E N D I X

Table I

Type	Sample Description	Concentration-α d/m/M³ High	Low	Average	X MAC*
GA	Background samples - First day before any testing.	2	ND	1	<0.1
GA	Samples taken during boring operation, first day. Two billets machined.	ND	ND	ND	-
GA	Background samples - Second day. No operations in progress on uranium material.	21	12	16	0.2
BZ	Operator operating controls of machine 2 feet from rotating billet, second day.	9	1	6	0.1
GA	Operations in progress - Second day of operation.	1	ND	0.5	<0.1
GA	Same as above - third day of operation.	1	ND	0.5	<0.1
BZ	Same as above - third day of operation.	15	ND	5	0.1

Type: GA - General Air
BZ - Breathing Zone

ND - Non-detectable

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

OUTPLANT 796

PLEASE RUSH

NATIONAL LEAD COMPANY OF OHIO

HEALTH AND SAFETY DIVISION – ANALYTICAL DEPT.

ANALYTICAL DATA SHEET

NLO

INDUSTRIAL HYGIENE AND RADIATION DEPT.					ANALYTICAL CHEMISTRY SECTION	
I. H. NO.	SAMPLE NOS.:	DATE COLLECTED: 10/13/61	BY: EL	ROUTE TO: KR & EL	DATE RECEIVED: 10/13/61	BY:
LOCATION:		TYPE OF SAMPLE: Oil			DATE REPORTED: 10/24/61	BY:
REMARKS: LeBlond cutting oil					METHOD OF ANALYSIS: Fluorimetric	
Analyze for % of U						BY:
					COUNTING DATA: BKGD	GEO

ANALYZED FOR			
	F		Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th
	Cl		TSS

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	U Conc.
1		from drum #1				52 µg/ml
2		from drum #2				500 µg/ml
3		from drum #3				220 µg/ml
4		from drum #4				1180 µg/ml
5		from drum #5				300 µg/ml

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ANALYTICAL DATA SHEET

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
849	1	9/11/61	EL	EL

LOCATION: LeBlond

TYPE OF SAMPLE: Oil

REMARKS: Analyze for % of U

ANALYZED FOR			
	F		Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th
	Cl		TSS

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: BY:

DATE REPORTED: 9/21/61 BY:

METHOD OF ANALYSIS:

BY:

COUNTING DATA: BKGD GEO

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q				
1		Taken from clean side of filter tank.				29 mg/liter		(Average of two results)	

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*8/23/61

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
775	8	8/22/61	EL	EL

LOCATION: LeBlond

TYPE OF SAMPLE: Air Dust

REMARKS:

LeBlond Cardstedt Rapid Boreing Machine
Boreing Billets - no ventilation on machine very little air movement in area.

ANALYZED FOR

	F	x	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th
	Cl		TSS

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 8/25/61 BY:

DATE REPORTED: 9/8/61 BY:

METHOD OF ANALYSIS: MAC#1 4/15 9/1

BY:

COUNTING DATA: BKGD .29 c/m GEO 39%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	C	T	c/m	d/m/M³
4310	3:00	GA Pump located on control panel approx 5' in back of boreing area.	.03	20	.60	1	10	nd	nd
	1.45								
*4313	9:00	GA Same as 4310	.03	20	.60	6	16	.09	.5
*4315	2:30	GA same as 4310	.03	20	.60	10	17	.30	2
*4317	3:45	GA same as 4310	.03	20	.60	10	30	nd	nd
4311	3:00	GA pump located approx. 6' ~~mk~~ in back of machine and approx. 8' left of cooling tank.	.03	20	.60	13	30	.14	.9
	1.45								
*4314	9:00	GA same as 4311	.03	20	.60	4	20	nd	nd
*4316	2:30	GA same as 4311	.03	20	.60	3	13	nd	nd
*4318	3:20	GA same as 4311	.03	20	.60	6	10	.31	2

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ANALYTICAL DATA SHEET

*8/23/61

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
774	6	8/22/61	EL	EL

LOCATION: LeBlond

TYPE OF SAMPLE: Air dust

REMARKS:
:LeBlond Carlstedt Rapid Borring Machine
Borring Billets - No ventilation on machine -
very little air movement in areas.

ANALYZED FOR

	F	x	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th
	Cl		TSS

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 8/25/61 BY:

DATE REPORTED: 9/1/61 BY:

METHOD OF ANALYSIS: MAC#1 1:30 9/1

BY:

COUNTING DATA: BKGD .29 c/m GEO 39%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	count	time	c/m	$d/m/M^3$
4305	10:30	BZ Operator hooking hoist to billet and placing billet into position on machine.	.03	3	.09	14	28	.21	9
						~~x~~	~~x9~~	~~nd~~	~~nd~~
4306	1:15	BZ same as 4305	.03	2	.06	6 ~~x~~	19 ~~x9x5~~	nd	nd
4308	2:05	BZ same as 4305	.03	2.2	.066	4 ~~x6~~	17.5 ~~x9~~	nd ~~x9x~~	nd ~~x5~~
4307	1:30	BZ Operator removing billet from machine after billet had been bored and placing billet on scale.	.03	2	.06	16 ~~x~~	30 ~~x5~~	.24 ~~nd~~	15 ~~nd~~
4309	2:20	BZ same as 4307	.03	2	.06	4 ~~8~~	15 ~~x9~~	nd	nd
4312	9:00	BZ same as 4305	.03	2	.06	0	10	nd	nd

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ANALYTICAL DATA SHEET

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
773	4	8/21/61	EL & AW	EL & AW

LOCATION: LeBlond

TYPE OF SAMPLE: Air Dust

REMARKS:
Carlstedt rapid borring machine
Background samples - machine not operating

ANALYZED FOR			
	F	x	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th
	Cl		TSS

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 8/25/61 BY:

DATE REPORTED: 9/1/61 BY:

METHOD OF ANALYSIS: MAC#2 2:30 9/1

BY:

COUNTING DATA: BKGD .17 c/m GEO 40%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	count	time	c/m	$d/m/M^3$
4301	10:00	GA Pump located on control panel approx 5' in back of boreing area.	.03	20	.60	5	10	.33	2
4303	10:20	GA same as 4301	.03	15	.45	2	10	.03	.2
4302	10:00	GA pump located approx 6' in back of machine and approx 8' left of cooling tank.	.035	20	.70	7	30	.06	.3
4304	10:20	GA Same as 4302	.03	15	.45	4	16	.08	.6

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INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
	1	1-20-61	AW	AW

LOCATION: LeBlond

TYPE OF SAMPLE: Grab

REMARKS: Analyze for per cent of Uranium

ANALYZED FOR			
	F		Alpha
X	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th
	Cl		TSS

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED:	BY:
1-23-61	
DATE REPORTED:	BY:
1-24-61	

METHOD OF ANALYSIS:

BY:

COUNTING DATA: BKGD GEO

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	Uranium mg/l
	1000	Oil Sample				2.4
						0.00024% (WEIGHT-TO-VOLUME

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INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
26	2	1-18-61	AW	AW

LOCATION: LE BLOND COMPANY

TYPE OF SAMPLE: Air Dust

REMARKS: 3rd day of operation

ANALYZED FOR			
	F	X	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 1-19-61 BY:

DATE REPORTED: 1-25-61 BY:

METHOD OF ANALYSIS: ASC # 2 1/25

BY:

COUNTING DATA: BKGD .23 c/m GEO 42%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	Count	Time	c/m	d/m/m3
975	1345	GA-Same as 961	.03	15	.45	6	24.00	.02	nd
976	1345	GA-Same as 962	.03	15	.45	11	36.00	.08	1

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HEALTH AND SAFETY DIVISION – ANALYTICAL DEPT.

ANALYTICAL DATA SHEET

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
25	5	1-17-61	AW	AW

LOCATION: LE BLOND

TYPE OF SAMPLE: Air Dust

REMARKS: Machines in operation - no unusual conditions noted

ANALYZED FOR			
	F	X	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 1-18-61 BY:

DATE REPORTED: 1-25-61 BY:

METHOD OF ANALYSIS: ASC # 2 11:15 1/25 BY:

COUNTING DATA: BKGD .23 c/m GEO 42%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	Count	Time	c/m	d/m/m3
970	1050	GA-Same as 961	.03	20	.60	14	34.00	.18	1
971	1050	GA-Same as 962	.03	20	.60	2	13.00	nd	nd
972	1335	BZ-Same as 967	.03	2	.06	0	10.00	nd	nd
973	1337	BZ-Same as 967	.03	2	.06	4	20.00	nd	nd
974	1339	BZ-Same as 967	.03	2	.06	5	10.00	.27	15

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ANALYTICAL DATA SHEET

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
24	5	1-17-61	AW	AW

LOCATION: LE BLOND

TYPE OF SAMPLE: Air Dust

REMARKS: 2nd day of operation

ANALYZED FOR

	F	X	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 1-18-61 BY:

DATE REPORTED: 1-25-61 BY:

METHOD OF ANALYSIS: ASC # 3 11:30 1/25 BY:

COUNTING DATA: BKGD GEO

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	Count	Time	c/m	d/m/m3
965	0910	GA-Background sample-same as 955	.03	10	.30	7	28.00	.10	12
966	0910	GA-Background sample-same as 956	.03	10	.30	4	12.00	.18	21
967	0920	BZ- Operator operating controls of machine. No visible dust or fumes - oil splatters near end of operation.	.03	2.5	.075	4	12.00	.18	9
968	0933	BZ-Same as 967	.03	2.5	.075	5	15.00	.18	9
969	0936	BZ-Same as 967	.03	1.5	.045	2	9.00	.07	1

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HEALTH AND SAFETY DIVISION – ANALYTICAL DEPT.

ANALYTICAL DATA SHEET

INDUSTRIAL HYGIENE AND RADIATION DEPT.

I. H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
23	4	1-16-61	AW	AW

LOCATION: LEBLOND COMPANY

TYPE OF SAMPLE: air dust

REMARKS: Complete drilling of one billet (per set of samples) including set-up and take-down.

ANALYZED FOR			
	F	X	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 1-17-61 BY:

DATE REPORTED: 1-26-61 BY:

METHOD OF ANALYSIS: ASC # 2 1/25 2:30 BY:

COUNTING DATA: BKGD .23 c/m GEO 42%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	Count	Time	c/m	d/m/m3
961	1420	GA Directly behind billet being drilled.	.03	10	.3	7	27.00	.03	nd
962	1420	GA 6' behind machine and 12' to right of billet being drilled.	.03	10	.3	1	10.00	nd	nd
963	1455	GA Same as 961	.03	15	.45	2	16.00	nd	nd
964	1455	GA Same as 962	.03	15	.45	1	8.00	nd	nd

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INDUSTRIAL HYGIENE AND RADIATION DEPT.

I.H. NO.	SAMPLE NOS.:	DATE COLLECTED:	BY:	ROUTE TO:
22	6	1-16-61	AW	AW

LOCATION: LEBLOND COMPANY

TYPE OF SAMPLE: air dust

REMARKS:

Background samples

Outfitting machine previous to operation.

ANALYZED FOR			
	F	x	Alpha
	U		Beta
	NO_3		Ra
	Oil		pH
	Be		Th

ANALYTICAL CHEMISTRY SECTION

DATE RECEIVED: 1-17-61 BY:

DATE REPORTED: 1-26-61 BY:

METHOD OF ANALYSIS: ASC # 3 1/25 BY:

COUNTING DATA: BKGD .15 c/m GEO 40%

SAMPLE NO.	HOUR	SAMPLE DESCRIPTION	R	T	Q	Count	Time	c/m	d/m/m3
955	0855	GA Pump 6' behind and 12' to right of location where drilling will take place.	.02	25	.5	64	15.73	3.92	28
957	0920	GA Same as 955	.02	25	.75	2	10.00	.05	nd
959	0945	GA Same as 955	.03	25	.75	8	17.00	.32	2
956	0855	GA Pump 4' directly behind billet location.	.03	25	.75	4	9.00	.29	1
958	0920	GA Same as 956	.03	25	.75	15	24.00	.48	2
960	0945	GA Same as 956	.03	25	.75	3	8.00	.23	1

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