License No. SUB-1452 040-0886
Docket No. ~~[illegible]~~
MLER-RI - 92-71

NUCLEAR METALS, INC.

10 March 1992

U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Attn: Mr. John Kinneman

Reference: License Nos. SMB-179, SUB-1452 and 20-02217-05
Inspection 12-13 September 1990, No. 90-001

Dear Mr. Kinneman:

This correspondence is a supplemental response to your letter of inspection findings dated 14 November 1990 and our initial response dated 20 December 1990.

This letter will address the situation involving the uranium uptake evaluation of an individual who was placed on work restriction based on elevated concentrations of uranium measured in his urine in June 1990.

The subject individual's work assignment was that of a technician in our melting/casting (foundry) department. On 1 June 1990, the date of the assumed intake, the subject had performed a uranium melt at his usual work station. The personal air monitor he had worn during the work indicated a potential internal exposure of approximately double that of our daily MPC-Hr guideline. Per Health Physics Department policy, the subject was placed on work restriction (removal from all work with radioactive materials) pending the uranium analysis results of urine samples requested of the individual. Based on the elevated results obtained, he was restricted indefinitely until future results fell within acceptable guidelines. On 21 June 1990, he incurred a shoulder injury and was out on medical leave until mid-July. On 16 July 1990, he participated in our annual lung counting operation. Based on his result, which was in the bottom half of the one hundred one results obtained, the subject individual was allowed to return to foundry work on a limited basis (routine work only; no work which would require a Special Radiological Work Permit).

In late August 1990, the Health Physicist responsible for this continuing investigation left the company and the assignment was transferred to another member of the Health Physics staff. During an interview on 14 September 1990, the subject was asked to submit urine samples in order to update the record. On 17 September 1990, we were notified by our outside analyst that the result of the subject's 27 August 1990 routine urine sample (foundry workers are normally on a monthly sample submission schedule) exceeded our work restriction guide. He was then placed on full work restriction and was requested to submit daily urine samples for a two-week period. The sample results for 14-18 September 1990 were found to be elevated, then dropped immediately (next day) to levels well below our investigation action point. Since that time through calendar year 1991, all results for urine samples submitted by the subject have been well below (under one-fourth) our investigative action point. A listing of pertinent urinalysis results is attached.

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On 5 November 1990, based on this continuing string of very acceptable urine sample results, the subject individual was returned to the workfloor on a limited restriction capacity (routine work only, weekly urine samples and specific working hours). On 26 December 1990, the subject was allowed to continue his work with no further restrictions. The subject has since left the company (January 1992).

In late November 1990, we sought the expert assistance of a Certified Health Physicist at Battelle Pacific Northwest Laboratories. Preliminary intake estimates of the early June 1990 and mid-September 1990 situations, submitted to us on 12 December 1990, indicated the potential internal exposure to the subject to be within regulatory limits.

In mid-January 1991, under the guidance of Battelle, an area air sample was collected for solubility classification. Due to the amount of sample material required by Battelle and the very low uranium-in-air concentration levels normally observed in the foundry area, it became necessary to take the sample inside the Crucible Cleaner. Several attempts to obtain further samples from worker locations within the foundry area proved to be not possible with the equipment available. Due to personnel movement within Battelle, the dissolution study of the one sample obtained began on 18 June 1991. In late August and early September 1991, we collected two particle size samples in the Crucible Cleaner and forwarded the pertinent information to Battelle for analysis.

On 4 February 1992, we received Battelle's solubility and particle size analysis of the Crucible Cleaner samples. Upon review of this report, we asked that the parameters be used for an intermediate set of intake estimates using the method employed for the 12 December 1990 preliminary estimates. Battelle acknowledged that the new parameters did not fit the subject's urinalysis data very well and that we were being more realistic with the 12 December 1990 estimates. We then asked Battelle to use a set of solubility and particle size parameters for foundry area air which were determined by an in-house analysis performed in 1984. This set of parameters did fit the urinalysis results as well as the initial parameters resulting in intake estimates higher than the preliminary estimates but also within regulatory limits.

At this point, we have two sets of solubility and particle size parameters which may be employed and which will result in analysis which gives an acceptable statistical fit. We will use the more conservative set of parameters which will allow for a higher estimated intake. Based on our consultant's findings, the estimated intakes for June 1990 and September 1990 were 146 and 391 MPC-Hrs, respectively. These findings are both below the regulatory limit of 520 MPC-Hrs per calendar quarter.

Subsequent to your review of this correspondence, please address any questions to the undersigned.

Sincerely,

Frank J. Vumbaco

Frank J. Vumbaco, Manager
Health/Safety

Tony Carpenito

Tony Carpenito, Supervisor DM
Health Physics Department

TC24

Attachment

CC: A. R. Gilman, Vice President, Health/Safety

NMI - HEALTH PHYSICS URINALYSIS DATA LISTING DATE 26-FEB-92
SORTED

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EMPLOYEE NUMBER: NAME: SOCIAL SECURITY
JOB TITLE: TECHNICIAN DEPARTMENT: 531 NEXT URINALYSIS DATE

DATE	TIME	usm/li	DATE	TIME	usm/li	DATE	TIME	usm/li
1/18/90	8:00	5.00	9/19/90	3:30	25.00	12/17/90	7:55	0.00
1/22/90	15:45	1.00	9/21/90	7:00	24.00	1/15/91	5:00	12.00
1/23/90	22:00	1.00	9/23/90	0:00	1.00	2/12/91	5:00	1.00
2/20/90	9:00	5.00	9/25/90	23:30	1.00	3/11/91	5:00	1.00
3/16/90	7:00	1.00	9/26/90	4:00	10.00	3/20/91	11:30	5.00
3/29/90	8:00	8.00	10/01/90	8:00	8.00	4/03/91	0:00	2.00
3/29/90	13:30	3.00	10/02/90	10:00	1.00	4/24/91	3:00	1.00
4/04/90	8:00	1.00	10/03/90	7:30	1.00	5/07/91	5:00	1.00
5/14/90	15:00	1.00	10/04/90	9:00	2.00	6/03/91	9:00	3.00
6/06/90	9:00	96.00<<	10/06/90	0:00	0.00	6/24/91	5:00	3.00
6/07/90	4:30	47.00<<	10/07/90	0:00	2.00	8/26/91	14:00	2.00
6/07/90	8:00	17.00	10/12/90	15:30	1.00	9/12/91	0:00	1.00
6/12/90	2:30	10.00	10/15/90	11:30	0.00	9/13/91	0:00	8.00
6/12/90	9:00	80.00<<	10/24/90	11:00	0.00	9/16/91	14:00	2.00
6/13/90	8:00	304.00<<	11/05/90	8:00	0.00	9/18/91	0:00	2.00
6/14/90	10:00	28.00	11/13/90	8:00	1.00	10/15/91	0:00	1.00
8/27/90	9:00	120.00<<	11/19/90	8:00	6.00	11/12/91	5:00	3.00
9/14/90	15:00	638.00<<	11/26/90	12:15	0.00	12/08/91	5:00	1.00
9/15/90	10:00	496.00<<	12/05/90	8:00	0.00	1/07/92	5:00	1.00
9/18/90	5:00	352.00<<	12/10/90	8:00	0.00			
						6/04/90	9:00	1324.00 **

** ENTRIES FOR EMPLOYEE 59 AVERAGE RESULT 39.77

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** Computer will not accept
four-digit results.

REGION I

NMSS LICENSEE EVENT REPORT

License No. SMB-179 SUB-1452

Docket No. 040-00672 040-08866

MLER-RI-92-71

I. ACTION CONTROL DATA

Licensee Nuclear Metals, Inc

Event Description Overexposure

Event Date 10/90 Report Date 3-10-92

II. REPORTING REQUIREMENT

[ ] 10 CFR 20.402 - theft or loss

[✓] 10 CFR 20.403(a)(b) overexposure/release

[ ] 10 CFR 20.405 - 30 day report

[ ] Other

[ ] 10 CFR 35.33 Therapeutic Misadministration

[ ] 10 CFR 35.33 Diagnostic Misadministration

[ ]-License Condition

III. REGION I RESPONSE

[ ] Immediate Site Inspection Inspector Date

[ ] Special Inspection Inspector Date

[ ] Telephone Inquiry Inspector Date

Licensee Representative and Title

[ ] PM [ ] Daily Report ✓

[ ] Information entered - Region I log and Outstanding Items List

[✓] Review at next routine inspection

IV. REPORT EVALUATION

[✓] Description of Event

[✓] Levels of R/M involved

[✓] Cause of Event

[✓] Corrective Actions

[ ] Calculation Adequate

[ ] Letter to Licensee requesting additional information

Completed by: J Nedrow Date 5-4-92

Reviewed by: D Costello Date 5/7/92

V. SPECIAL INSTRUCTIONS OR COMMENTS