



NUCLEAR METALS INC

October 14, 1983

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U. S. Nuclear Regulatory Commission
Region I
Attention: Thomas T. Martin, Director
Division of Engineering and
Technical Programs
631 Park Avenue
King of Prussia, PA 19409

Reference: Docket No. 40-00672
Cal No. 83-08 dated 5 August 1983

Gentlemen:

In response to Item No. 8 listed in your Confirmatory Action Letter (CAL No. 83-08) dated 5 August 1983, we have re-evaluated extremity exposures received by our Foundry personnel. This was done for the last quarter of 1982, the first, second and third quarters of 1983 as well as all quarters previous where an individual was performing depleted uranium (DU) processing in the Foundry area.

Attachment 1

This is a list of individuals that have been and are presently involved with DU processing in the Foundry area.

Attachment 2

The first two columns of this Attachment represent our re-evaluation of palm skin doses to individuals during the last quarter of 1982 and the first quarter of 1983. The method used to determine these dose values was outlined in our July 20, 1983 letter. Basically, we have taken this one step further and modified the daily dose rates by the dosimeter response correction factor recently discussed in our letter of September 28, 1983.

The third column is a re-evaluation of palm doses received during the second quarter of 1983. It should be noted that all the quarterly totals during this time period were below the 18.75 Rem/quarter as reported by our vendor. Only upon modification of the doses by the response correction factor do we realize exposures in excess of 18.75 Rem. For the majority of this quarter, monitoring of the skin of the palm was direct. However, during the first two weeks, the extremity monitoring was on the wrist. The dose to the palm was re-evaluated based on daily dose rates observed when the dosimeter was moved to the palm. A number of individuals were work-restricted during this period after exceeding our in-house limit of 12.5 Rem/quarter.

Information in this record was deleted in accordance with the Freedom of Information Act, exemptions

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The last two columns of this Attachment represent palm skin doses received during this past quarter. These are vendor-reported doses that have been modified by the response correction factor. No individual was work-restricted during this quarter. In addition, only after modification of vendor-reported doses did one individual slightly exceed our in-house limit.

Attachment 3

Rather than delay the re-evaluation of past palm skin doses to 1984, we have performed what we believe to be a conservative estimate of doses up to October 1, 1982. We believe it is conservative in that we are using daily dose rates observed when the dosimeters were moved to the palm area in April of 1983, and the men were instructed to perform operations as they did in the recent past (i.e., infrequent glove changes). These individual dose rates were multiplied by sixty-five days to obtain the quarterly dose rates in the first column. (Note: It is the opinion of most individuals in the area that glove issuance became restrictive around the Fall of 1982). Through interviews with the individuals and Personnel Department records, the number of quarters an individual processed DU in the area was determined. These are shown in the second column. An accumulated dose to the skin of the palm was then estimated from this information.

Attachment 4

The sum of the calculated and recently observed skin of the palm doses is presented in this Attachment.

We are currently evaluating any possible biological significance of these dose estimates. This evaluation is being conducted by one of our staff Health Physicists who's expertise is in the field of radiobiology and our Company Physician. A copy of this report will also be mailed directly to your consultant, Dr. Wald for his review.

Lastly, we have approximate depth dose data obtained with an extrapolation chamber and tissue equivalent absorbing material in contact with the back side of a Foundry-contaminated leather glove palm. The results are as follows: 100% at 7 mg/cm², 83% at 40 mg/cm² and 51% at 140 mg/cm². All dose values in this report are at a depth of 7 mg/cm².

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Thomas T. Martin
U.S. Nuclear Regulatory Commission

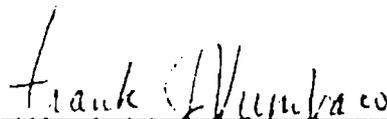
October 14, 1983
Page 3

If you or your staff have any questions regarding this report, please feel free to contact us.

Sincerely,



David J. Allard
Supervisor of Health Physics



Frank J. Vunbaco, Manager
Health and Radiation Safety

DJA:aj

Attachments

CC: Mr. John Kinneman, Chief
Materials Radiological Protection Section
Region I, USNRC

Dr. Neil Wald
University of Pittsburg
Schaife Hall, RC-510
Pittsburg, PA 15261

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FOUNDRY EMPLOYEES

<u>Name</u>	<u>SS#</u>	<u>DOB</u>	<u>Report Individual No.</u>
(b)(6)			1
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Individual Number	Calculated Palm Dose For The 4th Quarter 1982 (Rem)	Calculated Palm Dose For The 1st Quarter 1983 (Rem)	Observed Palm Dose For The 2nd Quarter 1983 (Rem)	Observed Palm Dose For The 3rd Quarter 1983 (Rem)	
				Right	Left
1	79.2	84.5	40.4	5.52	10.60
2	38.1	42.2	36.3	8.80	9.33
3	2.4	2.6	4.2	0.90	0.79
4	61.4	68.0	27.8	7.02	8.89
5	60.9	57.0	28.7	5.85	6.73
6	7.9	7.9	8.6	1.85	1.69
7	27.3	30.4	21.1	5.61	5.68
8	127	143	23.8	9.42	9.06
9	39.6	40.9	28.4	8.01	8.49
10	46.4	49.7	29.4	4.84	3.23
11	33.9	37.0	29.4	10.32	11.59
12	20.9	24.6	21.5	3.52	3.98
13	47.7	47.7	36.4	12.17	9.79
14	-	2.0	4.3	3.08	3.78
15	-	-	14.2	3.37	2.44
16	30.4	33.7	12.3	-	-
17	12.5	15.0	11.0	-	-
18	19.8	20.9	20.0	8.18	6.36
19	11.9	32.1	31.9	13.07	10.12
20	4.2	5.7	2.9	2.33	2.24
21*	36.1	-	0.9	-	-
22*	4.8	-	-	-	-
23*	36.1	-	-	-	-
24*	3.1	-	-	-	-
25	-	-	-	0.88	0.84
26	-	-	-	1.89	2.35
27	-	-	-	1.96	1.78
28	-	-	-	-	-

Key: - No DU operations performed in the Foundry area during the respective quarter.

* Dose rate used to calculate palm dose based on average of individuals performing similar operations.



<u>Individual No.</u>	<u>Dose Rate (Rem/Quarter)</u>	<u>Number of Quarters Processing DU in Foundry as of 10/01/82</u>	<u>Accumulated Dose as of 10/01/82 (Rem)</u>
1	88.7	22	1951
2	45.8	10	458
3	2.9	30	87
4	70.1	11	771
5	67.2	18	1210
6	8.6	19	163
7	32.9	8	263
8	147	12	1764
9	42.9	9	386
10	52.9	6	317
11	40	6	240
12	25.7	4	103
13	58.6	4	234
14	0	0	0
15*	55.8	15	837
16	35.8	8	286
17	15.7	3	47
18	21.5	3	65
19	0	0	0
20	0	0	0
21*	55.8	1	56
22*	40.0	2	80
23*	55.8	2	112
24*	7.2	1	7.2
25	0	0	0
26	0	0	0
27	0	0	0
28*	55.8	5	279

* Dose rate estimated based on average of individuals performing similar operations.



Individual Number

Accumulated Dose As Of 10/01/83 (Rem)

1	2170
2	584
3	96.2
4	937
5	1360
6	189
7	347
8	2070
9	503
10	447
11	352
12	174
13	378
14	10.1
15	855
16	362
17	85.5
18	134
19	89.0
20	15.1
21	93.0
22	84.8
23	148
24	10.3
25	0.88
26	2.35
27	1.96
28	279

