

POST-INSPECTION COVER SHEET
(Region I Work Form)

From: Principal Inspector P. C. JERMAN

To : Senior P. J. Knapp

Subj: INSPECTION OF Nuclear Metals, Inc ON 12/27-28/73
(Facility or License #) 1/8-9/74
Concord, Mass (Dates)
SNM-65 SMB-174

Draft inspection report completed and attached.

~~Field notes completed and attached. PJ~~

~~Feeder field notes completed and attached. - List:
1. _____
2. _____
3. _____~~

Draft documentation letter completed and attached (a standard form with new or modified paragraphs desired)

List of updated outstanding items completed and attached. ~~For Materials, license folder attached.~~ (list will be with it).

Inspector's evaluation memo attached with assist inspector's evaluation memo attached thereto.

Standard Data Sheet

Additional Comments: _____

Phillip C. Jerman
(Principal Inspector)

File:
Senior's File (Cover Sheet Only)

NOTE: Cross out and initial sections not applicable.

A168

yellow

FEB 15 1974

Nuclear Metals, Inc.
Attention: Mr. W. B. Tuffin
President
2229 Main Street
Concord, Massachusetts 01742

License No. SMM-65
SMB-179
Inspection No. 70-82/73-05
40-672/73-02

Gentlemen:

This refers to the inspection conducted by Mr. Jerman of this office on December 27-28, 1973 and January 8-9, 1974 of activities authorized by AEC License Nos. SMM-65 and SMB-179 and to the discussions of our findings held by Mr. Jerman with Mr. Tuffin and to subsequent telephone discussions between Mr. Knapp and Mr. Gilman on January 18, 1974 and between Mr. Jerman and Mr. Tuffin on January 21, 1974.

Areas examined during this inspection are described in the Regulatory Operations Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, measurements made by the inspector, and observations by the inspector. In addition, your activities in response to telephone conversations on January 4 and 7 as confirmed by our letter to you dated January 7, 1974, were reviewed.

Our inspector also verified the steps you had taken to correct the violations brought to your attention in our letters dated April 23, 1973 and December 12, 1973. We have no further questions regarding Items 1.a, 1.b, 1.c, and 1.e of Enclosure 1 and Items 1.c, 2, 3, and 4 of Enclosure 2 to the April 23, 1973 letter; and Item 2 of the Enclosure to the December 12, 1973 letter. With regard to Items 1.b, 1.c, 1.d and 2 of Enclosure 1 to this letter, we note that you had taken steps to correct these violations but your evaluations were inadequate in that they failed to include provisions to cover beta and gamma radiation.

During this inspection, it was found that certain of your activities appeared to be in violation of AEC requirements, and another activity appeared to raise a question concerning the safety of operations. The items and references to the pertinent requirements and to generally accepted guidance are listed in the enclosure to this letter. This letter constitutes a notice sent to you pursuant to the provisions of Section 2.201 of the AEC's "Rules of Practice", Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office within 20 days of your receipt of this notice, a written statement of explanation in reply, including: (1) steps which have

| | | | | |
|--------|--------|---------|--------|----------|
| Knapp | Jerman | Crocker | Nelson | O'Reilly |
| 2/ /74 | 2/ /74 | 2/ /74 | 2/ /74 | 2/ /74 |

been or will be taken by you to correct the violations, and the results achieved; (2) steps which will be taken to avoid further violations; and (3) the date when full compliance will be achieved. With respect to the question concerning safety of operations, please include in your response your comments concerning this item, a description of any steps that have been or will be taken to correct it, a description of any steps that have been or will be taken to prevent recurrence, and the date all corrective actions or preventive measures were or will be completed.

During the management meeting with you on February 13, Mr. Nelson and Mr. Knapp detailed our enforcement policies and expressed our concern about the implementation of your management control systems that permitted these deficiencies to occur. Consequently, in your reply, you should describe in particular these actions taken or planned to improve the effectiveness of your management control systems as you described during the meeting.

In accordance with Section 2.790 of the AEC's "Rules of Practice", Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the AEC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

James P. O'Reilly
Director

Enclosure:

Description of Violations

RO Inspection Report No. 70-82/73-05 and
40-672/73-02

RAM
Knapp
2/15 174

Morgan
Herman
2/15 174

Kroe
Crocker
2/15 174

Nelson
Nelson
2/15 174

O'Reilly
O'Reilly
2/15 174

DESCRIPTION OF VIOLATIONS

Nuclear Metals, Incorporated
2229 Main Street
Concord, Massachusetts 01781
Docket No. 40-672

Certain activities under your license appear to be in violation with AEC regulations. The following apparent violations are considered to be of Category II severity.

1. 10 CFR 20.201(b), "Surveys", requires that surveys be conducted as may be necessary to comply with the regulations contained in each section of Part 20. A "survey", as defined in Paragraph 20.201(a), means "an evaluation of the radiation hazards incident to production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive materials present".
 - a. Contrary to this requirement, you failed to make such surveys as were necessary to assure compliance with 10 CFR 20.101(a), "Exposure of individuals to radiation in restricted areas", a regulation which, in part, establishes a quarterly limit for dose to the hands. Specifically, you failed to conduct adequate evaluations of the hand exposures to all forms of radiation incurred by your employees through use of gloves contaminated with beta-gamma emitting material and through direct handling of uranium-238.
 - b. Contrary to this requirement, you failed to make such surveys as were necessary to assure that employees exposed to airborne uranium-238 and associated alpha, beta and gamma emitting daughters were not exposed to concentrations exceeding those specified in 10 CFR 20.103, "Exposure of individuals to concentrations of radioactive material in restricted areas". Specifically, the surveys you conducted did not measure alpha and beta-gamma concentrations in workers' breathing zones. This is an uncorrected violation.
 - c. Contrary to this requirement, you failed to make such surveys as were necessary to assure that effluents released from your stacks did not contain concentrations exceeding those specified in 10 CFR 20, 106, "Concentrations in effluents to unrestricted areas". Specifically, the surveys you conducted did not include analysis for beta-gamma emitting materials resulting from your process. This is an uncorrected violation.

- d. Contrary to this requirement, you failed to make such surveys as were necessary to assure compliance with 10 CFR 20.106, "Concentrations in effluents to unrestricted areas", a regulation that in part, limits the yearly average concentration of radioactive material contained in liquids discharged from your plant to the unrestricted areas. Specifically, the surveys which you did conduct of your liquid waste, resulting from the dissolution of copper from uranium-238, prior to its disposal to a bag on your property, did not include measurement of beta-gamma emitting materials which may have been present. This is an uncorrected violation.
2. Condition 8 of the license requires that material possessed and used in accordance with procedures submitted with your license application dated February 26, 1969. Section II of these procedures is entitled "Health and Safety". It specifies, among others, the requirement shown below:

Environmental water and soil samples will be collected and analyzed annually.

Contrary to this requirement, the environmental water and soil samples collected were not analyzed for the concentration of beta-gamma emitting materials which may have been present.

This is an uncorrected violation.

ENCLOSURE NO. 2

DESCRIPTION OF SAFETY ITEM

Nuclear Metals, Inc.
2229 Main Street
Concord, Massachusetts 01742
Docket No. 40-672

Accepted radiological safety practices dictate that radioactive contamination be controlled to the lowest level practicable. For example, the National Council on Radiation Protection and Measurements in its Report 30 "Safe Handling of Radioactive Materials", clearly advocates this principle.

Contrary to this generally accepted practice, you failed to identify and control contamination and particularly that due to beta and gamma emitting radionuclides associated with your depleted uranium operation. This failure led to the spread of contamination outside the confines of the immediate work area into office and other non-manufacturing areas. In a few cases, contamination was carried out of the plant on the personal clothing of employees.

Among other things, you failed to routinely survey individuals to determine that they were free of alpha, beta and gamma contamination upon leaving the work area and before undertaking such activities as eating or smoking. This situation was noted on our last inspection.

To assure an acceptable contamination control program, one must:

1. Establish an area of control.
2. Implement procedures (including the use of protective clothing and instruments) for entering, conducting operations, and exiting from the controlled area.
3. Routinely monitor uncontrolled areas at a frequency adequate to detect significant contamination spread.
4. Monitor by appropriate methods and frequency to assure that employee ingestion is not occurring.

FEB 15 1974

P. J. Knapp, Senior, Facilities Radiation Protection Section, RO:I

INSPECTOR EVALUATION

Nuclear Metals, Inc.
2229 Main Street
Concord, Massachusetts 01742
License Nos. SNM-65 and SMB-179

The licensee's SNM program is being deactivated. It may be reactivated in about seven years. No significant problems were apparent.

An inspection conducted in March 1973 indicated a beta-gamma contamination problem in association with the depleted uranium program. Apparently, we failed to impress the licensee concerning the problem and it was not brought under control. Consequently, the licensee is again being cited for the whole gamut of survey violations.

I blame the safety office (Franks) primarily for the deplorable situation of this plant. He was made well aware of beta-gamma contamination problems on the previous inspection. Either he ignored it or he didn't get the message. Until about a year ago he was a technician with no knowledge of health physics and he doesn't appear to have improved his knowledge since he was made Safety Officer. A. Gilman appears to be quite knowledgeable but was not directly involved in the previous inspection. He is now Manager, Health and Safety and also Manager, Quality Control. I get the impression he doesn't want to be bothered with radiation safety. Both he and Sam Levin, Consultant from MIT, were aware that uranium-238 daughter products were concentrated in the impurities resulting from melting the uranium.

It will take more than Franks to straighten out this operation. He can't conduct a decent survey. Let's give the licensee a month to straighten things out and then inspect them again to see how well they have done.


Phillip C. Jerman
Radiation Specialist