

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

B-I

<b>1. LICENSEE</b> Nuclear Metals and Equipment Corporation 609 WARREN AVENUE APOLLO, PENNSYLVANIA 15613	<b>2. REGIONAL OFFICE</b> Region I, Division of Compliance U.S. Atomic Energy Commission 970 BROAD STREET, NEWARK, NEW JERSEY 07102
<b>3. LICENSE NUMBER(S)</b> 37-04456-08	<b>4. DATE OF INSPECTION</b> Dec. 11, 12, 1969 <i>R/H</i>

**5. INSPECTION FINDINGS**

- A. No item of noncompliance was found.
- B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA. 10 CFR 20.203(b) or 34.42
- C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA. 10 CFR 20.203(c) (1) or 34.42
- D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA. 10 CFR 20.203(d)
- E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(e)
- F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(f) (1) or (f) (2)
- G. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)
- H. Form AEC-3 was not properly posted. 10 CFR 20.206(e)
- I. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a) or 34.33(b)
- J. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b) or 34.43(d)
- K. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained. 10 CFR 30.51, 40.61 or 70.51
- L. Records of leak tests were not maintained as prescribed in your license, or 10 CFR 34.25(c)
- M. Records of inventories were not maintained. 10 CFR 34.26
- N. Utilization logs were not maintained. 10 CFR 34.27

*Eugene Epstein*  
AEC Compliance Inspector

**6. LICENSEE'S ACKNOWLEDGMENT**

The AEC Compliance Inspector has explained and I understand the items of noncompliance listed above. The items of noncompliance will be corrected within the next 30 days.

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Licensee Representative — Title or Position)

ORIGINAL: LICENSEE. COPIES:  CO REGION  CO HEADQUARTERS  CO ENFORCEMENT

Information in this report was deleted in accordance with the Freedom of Information Act, exemptions 6  
EOIA-2004-171

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11/11/54

To Paul R Nelson Sr. Radiation Specialist C.O.T.  
From Eugene Epstein Radiation Specialist C.O.T.

Subject: News Is File Re Nuclear Metals  
and Equipment Corporation Lic 37-04456-08

Inspection revealed no signs of noncompliance.  
Licensee appears to strictly control use of materials  
in a safe manner. Although large  
quantities of material are present, no  
hazard appears to exist. Licensee  
personnel appear well trained and take  
proper precautions to minimize exposure.

The license is properly categorized as  
B with Priority I and will be suspended  
on a Priority I basis.

Nuclear Metals & Equipment Corporation,

609 Warren Avenue

Appollo, Pennsylvania 15613

Place of use Quehanna Pa.

LIC No 37-04456-08

B-I

Announced - reinspection

Pts 20-30

INSPECT. DATES - Dec 11, 12, 1969.

Persons Accompanying - None

Persons Contacted - -

Mr. E. Reiter - Resident, R.S.O

Mr. Winston Buckhardt - Site Manager

~~Mr.~~ George Emsminger - Hot Cell Supervisor

L. Schwartz - Hot Cell Operator

Report details

Background Information

- 1) The license was last inspected July 23-25, 1969 and the results of that inspection were reported using form AEC-591 (clear).

## Organization and Administration:

2. There has been no change in organization and administration. E. Reitter, R.S.O. has two technical assistants and reports directly to the Site Plant Manager Mr. V. Buchburt as well as to ~~Orshanna~~ H. Appello, Pa. Health Physics group, which makes <sup>quarterly</sup> ~~monthly~~ visits to Orshanna to audit Reitter's records and observe operations.

## Facilities & Uses of Materials

3. Material on hand was noted to be as follows according to records of receipt & inventory.

by item form with amt on hand.

A. $C^{60}$	pellets 100000 Ci	in decontamination Em -	8,461 Ci
	wafers		
	strips & sealed sources	high specific activity sealed source radiography source as Pencils in Cell I	462 Ci
			14,527 Ci
C. $C^{60}$	sealed sources 500,000 Ci	doubly encapsulated in small pool -	301,994 Ci
	Clad as per Nucor Div.		<del>41,421 Ci</del>
		as two source plaques Nucor 10C-935	41,421 Ci
E. $C^{60}$	sealed sources - 1,500,000 Ci	Nucor 10C-935 or NPI New clad sources	558,453 Ci
			in large pool
			266,530 Ci
			in vacuum pool.

B  $\text{Sr}^{90}$  Residual Contamination 200 mci

from predecessor's  
 $\text{Sr}^{90}$  encapsulation

Reitler stated

this was a generous  
figure and based  
upon area of duct work  
and since it was  
closed to source.

F  $\text{Co}^{60}$  Sealed source 50 mci

50 mci

as a calibration  
source

Reitler stated that no iodine has been received  
or used to date.

4 Facilities here not changed since the last  
inspection.

5 The large pool is currently used to  
irradiate wood products on a 24 hour  
basis to produce a commercial product known as  
"Permagrain".

6 The small pool is used under item C  
of the license to irradiate surgical instruments  
'Impe Hades' to produce sterility. Cell # 3  
contains 2  <sup>$\text{Co}^{60}$  source</sup> plaques where sterility studies are  
being conducted.

7 The gamma pool in the rear of the  
hot cell is used to store sources to be  
placed in commercial irradiators for sale.  
No irradiators have been loaded, used or  
loaded since the last previous inspection.

8 Cell entries have markedly decreased since the last inspection with approximately only 8 entries a month as noted in a cell entry log. All sources are removed prior to entry. Entries have decreased by a factor of 3 since the last inspection because the large pool has been built up to full activity with active production of wood products.

### Radiological Safety Precautions and Procedures

9. All Radiological Committee meetings are convened for each experiment or procedure to consider the safest way of proceeding. At the time of the inspection the committee was reviewing submitted written procedures for examining some of the older  $Co^{60}$  sources in the large pool to determine leakage and integrity of seal. A work permit has to be issued by the committee for each process or experiment.

### Surveys:

10. Area surveys are taken daily of all areas. Limits are 50 dpm/100 cm<sup>2</sup> for unrestricted areas and 500 dpm/100 cm<sup>2</sup> for

restricted areas outside hot cells. Records are maintained showing that on other any area exceeds this limit immediate cleanup is instituted and the area restricted to access until removable contamination is below the plant limit. Unrestricted areas have never exceeded the  $50 \text{ dpm}/100 \text{ cm}^2$  limit. The area giving the most trouble in the past ground floor rooms where some  $\text{Se}^{90}$  lews out of ductwork but this never exceeds  $1000 \text{ dpm}/100 \text{ cm}^2$  and is immediately cleaned up.

11 Air surveys are taken at the entrance to hot cells prior to entry and the results of are evaluated before any entry is permitted. The lowest limit that for  $\text{Se}^{90}$  (usd) is used ( $5 \times 10^{-9} \text{ uc}/\text{ml}$ ) air. Maximum cell air concentrations occur during filter changes and were noted to be  $3.57 \times 10^{-10} \text{ uc}/\text{ml}$  air without waiting for decay: Manipulator being pulled.  $8.9 \times 10^{-11} \text{ uc}/\text{ml}$  air. Personnel are not being exposed to excessive air concentrations.

Boothside areas in rear of cells and decontamination room air averages  $2 \times 10^{-11} \text{ uc}/\text{ml}$  air.

12. Stack air is also monitored and rarely exceeds  
detectable limits  $1 \times 10^{-12}$  rad/m<sup>3</sup> air. Air samples  
are collected on filter paper and counted daily by  
a pulsed Geiger Com detector in a shielded cell

Personnel Monitoring:

13. Berkeley film badges ~~were~~ worn on the  
whole body and are processed monthly and self  
reading pocket dosimeters are worn.

Records were examined since the date of the  
last previous inspection and maximum exposure  
was obtained during the second quarter of 1969  
during the week of May 4, 1969 [redacted] b  
[redacted] painted cell #1 and received  
250 - 255 mrem whole body exposure. All  
other calendar quarters whole body exposures  
did not exceed 150 mrem for all persons

Uranium Exposure:

Bioassay:

14. Urines are taken every calendar quarter  
and sent to Berkeley for counting. Sr<sup>90</sup> Pu  
and Uranium are determined. No Pu in U has  
ever been noted.



Trace amounts of Sr<sup>90</sup> have been found in  
samples of [redacted]

[redacted]

4.6 ± .5 pCi Sr<sup>90</sup>/liter

29 pCi gross beta

[redacted]

3.1 ± 0.7 pCi pCi Sr<sup>90</sup>/liter

15 pCi gross beta

**"CONTAINS INFORMATION PROTECTED  
BY THE PRIVACY ACT"**

### Direct Physical Surveys

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Direct Physical surveys are taken and recorded daily. On 12/19/69 55,000 Ci C<sup>60</sup> were in cell #1. On the operators side 2 ft above the top of the slab unit enters the cell radiation readings of 200 mR/hr were noted. At the operators level radiation levels of <sup>1.8</sup> mR/hr were noted.

16

Sky shine from the above was noted outside the restricted area on 12/19/69 and did not exceed 0.45 mR/hr. Neither had recorded this in records.

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Pool area readings indicate radiation levels are generally less than 0.1 mR/hr.

18

2 mR/hr was noted at the window of Cell #3 where two C<sup>60</sup> source plaques were located.

## Waste Disposal

19. Survey was made daily to determine activity in the large evaporation pool. 200 ml samples are taken and analyzed and only background on a pulse height counter. 12-14 cpm has been noted. This water passes through a resin column before being discharged to Mosquito Creek along with plant water.

20. Solid waste has not been disposed since the last inspection, according to records.

## Posting and Labeling

21. The restricted areas were posted with signs reading Contam High Radiation Area, Contam Radiation Area, and Contam Radioactive Materials w symbol. All cells and pools had tags attached containing the latter legend and symbol together with an indication of kind and quantity of contained material.

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## License Conditions

(10) Material was noted used only at the location listed in the license condition.

(12) Materials was noted to be under the direct supervision of persons named in the license condition. Records also reflect this supervision.

(13) Sealed sources on hand were noted to be tested for leakage remotely using wet wraps and counting actively on the source using a shielded GM counter and scales. The results were reported in minutes and no source had leakage in excess of 0.001 curies. Tests were noted performed at intervals which did not exceed six months.

(14) Access to hot cells is controlled by the supervisor Ensigner. Each cell has a double lock to its rear entrance. Keys are sealed by a locked ring and a person needing to enter must come to Ensigner for the key to unlock the key ring. Ensigner makes a physical inspection and consults

records to ensure no material is in the cell before issuing the ~~papers~~ key-tag key.

15. Use of material was noted to be in accordance with listed documents with respect to item A, B + G.

16. Use under sub item C + D of the license is used according to listed documents.

17. Use under sub items E + F was noted to be used according to listed documents.

### Management Review:

23. A conference immediately following the inspection was held with Mr. W Burkhardt, Plant Manager and form REC-591 clear was issued.