MEMO ROUTE SLIP
Form AEC-93 (Rev. May 14, 1947)

☐ See me about this. ☐ For concurrence. ☐ For action.
☐ Note and return. ☐ For signature. ☐ For information. S-2

TO (Name and unit)	INITIALS	REMARKS
DR. CHARLES D. LUKE LR C-058	DATE	SUBJECT: ENGELHARD INDUSTRIES, INC. BAKER PLATINUM DIVISION NEWARK, NEW JERSEY LICENSE NO. SNM-98, DOCKET NO. 70-90
TO (Name and unit)	INITIALS	REMARKS
	DATE	Attached is the report of an inspection conducted at subject licensee's facilities on July 12, 1961. We request that you review the inspector's comments on nuclear safety since it appears that criticality control depends, in part, on adherence to operational procedures.
TO (Name and unit)	INITIALS	REMARKS
	DATE	We are also transmitting the licensee's Docket No. 70-90 to you.
FROM (Name and unit)		REMARKS
R. E. Cunningham LR C-058 REC		Attachments: Inspection Report Docket 70-90
PHONE NO. 3668	DATE JAN 8 1962	

USE OTHER SIDE FOR ADDITIONAL REMARKS

U. S. GOVERNMENT PRINTING OFFICE : 1957—O-422007

4/29

DMB

Form AEC-617 (4-58)

UNITED STATES ATOMIC ENERGY COMMISSION

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee

ENGELHARD INDUSTRIES, INC.
Baker Platinum Division
113 Astor Street
Newark 2, New Jersey

2. Date of inspection: July 12, 1961

3. Type of inspection: Reinspection

4. 10 CFR Part(s) applicable: 20 - 70

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

License No.	Docket No.	Date	Exp. Date
SNM-98 as amended	70 - 90	5/31/61	7/31/62

SCOPE: Up to (b)(4) in uranium enriched in the U-235 isotope, and 0.002 g Pu and the byproduct material described in the 1/5/61 applications for use in scrap recovery operation and as isotopic standards in accordance with the procedures described in the licensee's applications of 12/27/57, 1/14 & 27, 5/9 & 28, 6/24, 7/8 & 15, 8/27, 9/12 & 12/8/58, 2/9 & 3/25/59, & 1/5/61, (Authorization for Receipt of Plutonium); 1/5/61, (Application for License-Byproduct Material); and 1/5/61, (Application for Additional Spectrographic Standards).

CONDITIONS: Place of use: Licensee's chemical refinery area at 149 Murray Street, Newark 5, New Jersey. Non-exceptional.

6. Inspection findings (and items of noncompliance)

Inspection of the licensee's facility under SNM-98 as amended revealed that no licensed materials were in process at the time of inspection. Only contract materials were being processed. All licensed material was in storage. At the time of the inspection, the licensee possessed approximately (b)(4) kgs total uranium (b)(4) Contract material stored or in process in the refinery area totalled (b)(4) kgs uranium (b)(4) Criticality and administrative control procedures, procurement, waste disposal, processing and storage of special nuclear material were reviewed, as were the security, fire protection, medical and health physics programs. Records of procurement, inventory, accountability, disposal, transfers, air samples, bioassays, film badges and direct radiation surveys are maintained. The only items of non-compliance noted during the course of this inspection are as follows:

Ex 4
Ex 4
Ex 4

Condition 10 of the license
- in that the U-235 isotopic standards were noted to be used in the Spectrographic Lab located at 113 Astor Street, and not at the place of use designated by this condition. (See item 14 of report details.)

pg 3

(CONT'D)

7. Date of last previous inspection: February 17, 1959

8. Is "Company Confidential" information contained in this report? Yes ☐ No ☒ (Specify page(s) and paragraph(s))

DISTRIBUTION:
1 cy - CO-RD.
1 cy - DLAR
2 cys - CO-NY

Paul B. Klevin - John R. Sears
(Inspector)

Approved by: Robert W. Kirkman, Director
New York Compliance Area
(Operations office)

August 16, 1961
(Date report prepared)

pg. 9

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of for appropriate item.

16—73214-2 U. S. GOVERNMENT P

RECOMMENDATIONS SHOULD BE SET FORTH IN A SEPARATE COVERING MEMORANDUM

ITEM 6 (CONT'D)

20.203 "Caution signs, labels, and signals"
(f) "Containers" (1) and (4) - in that stored drums, containers, etc., containing special nuclear materials in excess of the limits specified in Appendix C of 10 CFR 20, were not labeled with either the proper radiation caution sign or symbol or, in some cases, were not labeled with a notation of the type and quantity of material. (See item 17 of report details.)

20.401 "Records of surveys, radiation monitoring and disposal"
(b) - in that records of waste disposals to the sanitary sewer system were maintained in grams/liter and not in uc/ml. (See items 16B and 20 of report details.)

PART 70 INSPECTION

ENGELHARD INDUSTRIES, INC.
Baker Platinum Division
113 Astor Street
Newark 2, New Jersey

Date of Inspection: July 12, 1961 (Announced)

Persons Accompanying Inspector:

None.

Persons Contacted:

Dr. Holger Anderson, Assistant to Dr. Rosenblatt, the Senior Vice President
Eugene Nurmi, Chemical Engineer in charge of Refinery Section, Radiation Safety Officer

DETAILS

9. Background Information

An initial inspection of License SNM-98 was made on February 17, 1959. The inspection report was transmitted to Headquarters on April 3, 1959, together with the items of noncompliance. In a letter dated May 28, 1959, DL&R (Lyall Johnson) informed Engelhard Industries (N.C.R. Bergherm) of the New York inspection of February 17, and the items of noncompliance. The items of noncompliance noted in this letter were:

a. The signs used to post the refinery facility did not meet the wording requirements of Section 20.203(e)(1), "Caution signs, labels and signals."

b. The storage drums, containers and jars containing special nuclear material were not labeled as required by Section 20.203(f)(1) and (f)(4), "Caution signs, labels and signals."

c. Records of waste disposal were not recorded in the units specified by Section 20.401(c), "Records of surveys, radiation monitoring and disposal."

On July 7, 1959, Dr. E. F. Rosenblatt, Senior Vice President, informed DL&R (L. Johnson) that they had posted signs in plastic on all doors leading to the refinery as required in Section 20.203 (e)(1), that storage tanks and containers were labeled with radiation symbols and labels stating uranium content where known, and that waste disposal records had been converted to units specified by the AEC.

In a letter dated August 4, 1959, DL&R (L. Johnson) acknowledged receipt of the licensee's letter of July 7, 1959, and stated that these matters would be reviewed during the next inspection of the licensee.

10. Organization and Administration

Dr. Holger Anderson stated that he has been with Baker for six years and is presently Assistant to Dr. Rosenblatt. Anderson stated that he is, at present, in training to head up the administration of the Refinery Division. Anderson also noted that at present, the key men in the organization of Engelhard Industries with respect to the SNM license are:

Charles Engelhard, President
Dr. Rosenblatt, Senior Vice President in charge of Research and Development - Chemical and Reprocessing Division
Dr. Holger Anderson, Assistant to Dr. Rosenblatt
Dr. Pappademetriou, Technical Director - Refinery Section
Lawrence Burman, in charge of Sales and Negotiation
Eugene Nurmi, Chemical Engineer in charge of Refinery Section

Nurmi stated that at present, the total complement of the personnel in the Refinery Section consists of four operators and himself. These operators work on a two-shift basis, and on each shift, there is an A operator and B operator. Nurmi stated that the A operator more or less is the director of the operation, while the B operator is the worker, and that the A operator does the dissolving while the B operator does the concentration of the product and precipitation operations. These operators perform reprocessing operations at Engelhard's Commercial Pilot Plant, which is located at 149 Murray Street, which is approximately 3 blocks from the main office at 113 Astor Place, Newark 2, New Jersey.

The training of Eugene Nurmi, Chemical Engineer, is the same as reported in the initial inspection report, dated April 2, 1959. Since that inspection, Nurmi has taken the Nuclear Safety Course at Oak Ridge, which was given in October, 1959. Nurmi stated that he has lectured and instructed both the two A and two B operators in radiation and nuclear safety.

11. Nuclear Safety and Criticality Control

The principal operation involving special nuclear material performed in this plant is the reprocessing of highly enriched scrap. Nurmi stated that the majority of the scrap material consists of dirty scrap, that is, skull and dross, machine turnings, residue from melting operations, and the like, rather

than clean scrap from finished fuel elements. One clean scrap job that they have in process at the present time consists of the reprocessing of rejected WTR fuel elements. These fuel elements are non-irradiated elements which have been rejected by WTR because of poor meat to clod bond as determined by ultrasonic tests.

The plant is designed around the reprocessing of highly enriched scrap. Nurmi stated that they are not in a competitive position to bid on low-enriched scrap recovery jobs, and they seldom have such operations. He stated that all material is treated as though it were highly enriched.

The refining process is described in the license application and in a previous inspection report. The principal change, which has been made in the process, is that in the initial dissolution tank 350 grams of cadmium in the form of cadmium-nitrate are placed in every initial dissolving operation. The purpose of this is to ensure against any possibility of a criticality problem in the initial dissolution. Nurmi stated that they take the word of the customer as to the uranium content and the isotopic content of the scrap. No assay is done before the initial dissolution. He stated that, after the initial dissolution, the material is filtered and a wet chemical analysis is then made. He stated that the accuracy of this analysis is approximately ±.2%. This analysis is not an isotopic analysis but an analysis simply for uranium content. The uranium is assumed to be highly enriched in the U-235 isotope. Nurmi stated that there have been discrepancies found on the basis of this analysis with what the customer claims to be the uranium content of his scrap. He said that they load the initial dissolving tanks with scrap such that there would be a maximum of 350 grams of U-235 in a dissolving tank. However, analysis after the first filtering, has shown that occasionally there has been approximately 1-1/2 times this amount, or up to 500 grams of highly enriched uranium in the initial dissolver.

All of the process equipment was noted to be of safe geometric design for processing highly enriched liquid uranium solutions, except for the following:

(a) Initial dissolver tanks of approximately 60 liter capacity - more than 8" in diameter.
(b) There are many containers of more than 5" diameter which are used for drawing off organic solutions which may contain minimal amounts of uranium. Non-safe polyethylene bottles are also used for transferring the feed solution for the extraction columns from the storage columns to the extraction columns.
(c) The entrainment section of the evaporator condenser used to condense the effluent from the extraction columns is not of always-safe geometric design. However, there is an overflow line taped off the bottom of this entrainment section, such that any solution would flow back to the safe geometry feed tank rather than up into the entrainment section.

There are four TBP extraction columns. (b)(4) (b)(4) Ex 4 (b)(4) The columns are operated as a continuous process rather than a batch operation. (b)(4) (b)(4) (b)(4) Ex 4 The equipment after this point, with the exception of the entrainment section in the evaporator condenser noted above, is of safe geometric design.

Recovery solutions are stored after the initial dissoltuion in safe geomtric vertical columns to await feed into the extraction columns. Records are kept of the richness in uranium content of the solution in the storage columns. (b)(4) (b)(4) Ex 4 (b)(4) One of the operators stated to the inspector that vessels larger than 5" in diameter may be used for transferring this 10 liter feed from the storage columns to the location where it is fed into the extraction columns.

The effluent from the extraction columns will average, according to Nurmi, approximately (b)(4) and the effluent from the evaporator condenser will average (b)(4) The effluent from the evaporator condenser is drawn off into a (b)(4) stainless steel container and only 1 liter at a time is drawn off. This effluent is precipitated with hydrogen peroxide and filtered, and the filtrate placed into boats for firing and drying. Ex 4 The yellow cake which results from the precipitation was stated to average about (b)(4) (b)(4)

No assay is performed at any time through the process after the first filtering following the first dissolution. However, the two operators on duty and Nurmi stated that they had a very good idea of how much uranium is in any step of the process. The operators indicated that on the basis of experience, they are confident that there is never more than approximately (b)(4) (b)(4) Ex 4

Overflow from the TBP liquid at the top of the extraction columns is caught in a non-safe geomtric container and is pumped to two columns which contain carbonate solutions and Raschig rings for further extraction. (b)(4) (b)(4) Ex 4 The effluent from this refining operation then follows the same procedure as the effluent from the extraction columns, that is, through the evaporator condenser, precipitation, filtering, and firing and drying.

It was noted that there are available initial dissolution tanks of always-safe geometric design. Nurmi stated that these are no longer used because the amount of acid necessary to dissolve the aluminum in uranium aluminum alloys is so large that these tanks could not hold an economic batch. (b)(4) (b)(4) Ex 4

A discussion was held by the inspector with the two operators on duty, a Mr. M. Scapicchio and Mr. McManus. Scapicchio is rated as an A operator and McManus as a B operator. Scapicchio is responsible for the first part of the operation, that is, dissolving and extraction, and McManus for concentration of the product and product precipitation. It appeared to the inspector that the operators had a good grasp of criticality hazards and criticality control in these operations. Scapicchio stated that anything unusual or out of the ordinary which is noted, for example, in the color of an effluent discharging during an operation, is immediately reported to Nurmi and the operation is stopped until the anomaly is satisfactorily explained.

Outside Consultant

Nurmi stated that Engelhard employs a consultant who makes quarterly visits of inspection to the plant. The consultant is Dr. Jankowski, Professor of Nuclear Engineering at Rutgers University. The inspectors reviewed two of Dr. Jankowski's reports. Dr. Jankowski has made such recommendations as changing the wooden storage racks to steel construction and changing all containers in the plant to have a maximum of 5" in diameter. Another point made by Dr. Jankowski was that since a 5" cylinder is safe for solutions, but not necessarily for solid metal, a rule should be established allowing a maximum of (b)(4) (b)(4) in the 5" columns at any one time. Dr. Jankowski also made recommendations as to their emergency procedures and assignment of responsibility in case of a major incident. It was stated that Dr. Jankowski makes an inspection visit to the plant quarterly. Ex 4

Training and Procedures

Nurmi stated that there has been very little turnover in personnel. Only four operators are employed in the plant, two on the day shift and two on the evening shift. Nurmi was critical of the AEC's distribution of information following incidents in processing plants. He said that he disseminates among his staff all information available on incidents in processing plants, but he said most of his information comes from the articles in Nucleonics rather than from AEC publications. It was noted during the inspection tour that a simple check-off form is used at the first dissolution tank. This form gives the recipe, that is, the amount of acid, the amount of material, the lot of material, and the amount of uranium in the lot for the particular dissolution in that tank. This form was observed to include a note on the addition of the 350 grams of cadmium. The operators stated to the inspector that they always place the cadmium into the tank before adding any liquids in any form, and they then check this item off on the form.

Radiation Monitoring

Two AEC furnished disaster monitors were noted to be installed in the process area. Three Victoreen radiation detectors were also noted to be installed in the process area. These detectors read out on a standard meter relay rack which was located in the process engineer's office. Nurmi stated that these radiation detectors also operate a general evacuation horn and a horn in the guard's booth. Nurmi also stated that the radiation detectors do have a recorder which is located at the guard's station. At the present time, this recorder is not operating correctly, but it will be placed back into operation shortly.

Nurmi stated that there is an evacuation horn in the locker room adjacent to the process area. He said that a test is made of the evacuation horns weekly and that trial evacuations of the process area have been made. He stated that no evacuation of the adjacent locker rooms (from another refining operation) has ever been rehearsed. However, he stated that people who use that locker room are aware of the potential hazard in the process area, and would exit in case of an incident away from the process area.

12. Facilities and Processing

Refining operations are virtually the same as noted in the February 17, 1959 inspection. One change in the existing facility was noted during this inspection. An area which was located immediately adjacent to the refinery area is now being used for receiving incoming shipments and for transferring outgoing shipments. This area during the initial inspection was noted to house a gasoline test engine, which was used to measure gas octane rating. As noted in the prior report, Nurmi stated that this device is a definite fire hazard and he then stated that the gasoline test unit would be removed in one or two weeks from the date of the initial inspection. This area was now found to be clear of any flammable materials.

Nurmi stated that the only work being done at Engelhard involves the reprocessing of highly enriched (b)(4) U-235. Nurmi stated that he takes the customers' transfer records as to the amount of uranium contained in the scrap, and that after the first dissolution, a sample of the solution is taken and analyzed by isotopic analysis. The enriched scrap, according to Nurmi, is in the form of skull and dross, vacuum cleanings, machine turnings, etc. Ex 4

Nurmi stated that most of his business in the past year has involved contract material, and the scrap has come out of the New York Operations Office. It was noted during the course of the inspection that no licensed material was in process and that all licensed material was being stored.

13. Security

This is the same as reported in the initial inspection report, with the following additional information:

a. (b)(4) (b)(4)

b.

Ex 4

14. Accountability and Inventory

As noted in the initial inspection, incoming material weights are included in log books maintained by Nurmi. These include weights of material, type, and assay if included by the licensee.

At the time of the inspection, the following licensed material was noted to be in storage:

Company	SNM #	U (in grams)	% Enriched
Clevite Company	183	1780	(b)(4)
Clevite Company	183	1750	
Westinghouse Test Reactor	TR-2	16,580	

Ex 4

With regard to the WTR material, Nurmi noted that less than half of the total uranium noted above was processed through to the oxide.

The following contract material was noted to be possessed by the licensee:

Contract No. or Company	Lot No.	U (in grams)	% Enriched
AT-(30)-1-2517	A	600	(b)(4)
AT-(30)-1-2658	E	4540	
AT-(30)-1-2658	G	14,867	
Argonne		4318	

Ex 4

At the time of the inspection, work was being performed on Lot E noted above.

Records of transfers maintained by Nurmi show that on June 28, 1961, 4900 grams of uranium (b)(4) were shipped to GE, San Jose, who has License SNM-34. Nurmi noted that there was a 1 kg difference between GE, San Jose, and Engelhard Industries regarding this material. Nurmi stated that the difference is based on the isotopic analysis of the material after dissolution, and that at present, GE and Engelhard are in negotiation regarding this difference.

Ex 4

As noted in the prior report, special nuclear material isotopic standards were noted to be stored in the Spectrographic Lab located at 113 Astor Place and are used under the supervision of Mr. A. Lincoln. Messrs. Lincoln, Nurmi and Dr. Anderson stated that special nuclear License SNM-98 as amended, dated July 15, 1960, which allows for the use of the isotopic standards noted below, lists the place of use as "licensee's chemical refinery area at 149 Murray Street, Newark 5, New Jersey." It was pointed out to Dr. Anderson that according to the license condition, the place of use is 149 Murray Street. He was informed that he could apply for an amendment to list as another place of use, the Spectrographic Lab located at 113 Astor Place.

The following isotopic standards were maintained by Lincoln:

Per Cent U-235	Net Weight
1.03	0.3037
2.01	0.3024
3.03	0.3061
4.95	0.3020
17.28	0.3024
18.38	0.3020
19.85	0.3023
(b)(4)	0.3034
	0.3033
	0.3021
	0.3057
	0.3009
	0.3046
	0.3026
	0.3026

Ex 4

15. Storage Vaults and Areas

Special nuclear material storage areas are the same as noted in the initial inspection report with the following additions:

a. An additional storage facility is located in a room, which was formerly used to check gas octane. This area, as noted prior in the report, is used only when receiving or shipping special nuclear material. This storage area is enclosed by a room-height cyclone fence which is locked. Nurmi maintains the keys to the lock.

b. Within the refinery area directly adjacent to the open shelve facility, which is described in the initial inspection report, is located a locked safe. This safe is used for the storage of products. Safe geometry is maintained.

Ex 4

c. Another storage area was noted to contain a total of (b)(4) This area is also in the refinery. (b)(4) (b)(4) (b)(4) each of the cylinders is also tagged with a radiation caution sign and symbol.

16. Waste Disposal

A. Solid Wastes

Twelve drums containing a total of 18 grams of special nuclear material were transferred to Nuclear Engineering, a commercial waste disposal concern, on 12/20/60. The waste consisted of wipes and acid insoluble wastes. On hand was one 55 gallon drum containing approximately one dozen ventilation filters.

B. Liquid Wastes

As noted in the prior inspection report, liquid wastes resulting from the solvent extraction and the peroxide precipitation steps are held in glass carboys. Solutions are analyzed for soluble uranium content, and then, according to Nurmi, are disposed to the public sewer system in accordance with the requirements of 10 CFR 20. Records of the aqueous waste disposals to the sanitary sewer system were noted to be maintained. Results of samples taken of these wastes released to the sewer system were noted to be recorded in grams/liter instead of uc/ml. Specifically, on 5/11/61, a notation of .000757 grams/liter and .0191 grams/liter and .036 grams/liter were noted to be recorded. Nurmi stated that these readings were recorded in his log book. Records of the releases made to date were reviewed, and it was found that the licensee did not discharge any licensed material in the sewer system that was not readily soluble or dispersible in water, and the average daily quantity of sewer release did not exceed the limits specified in Appendix D, Table II, Column 2. Other requirements noted by 10 CFR 20.303 were also being met by the licensee.

17. Posting and Labeling

The entrance doors to facilities, the incoming receiving area, and the refinery area were noted to be posted with proper radiation caution signs and symbols. A 55 gallon drum , which was reported by Nurmi to contain one dozen filters, was noted not to be labeled with a radiation caution symbol or the type or amount of material. Nurmi stated that he did not know how much special nuclear material was contained in the drum.

In the receiving and shipping area, (b)(4) were noted to be labeled with the proper radiation caution sign, but not with a notation as to type and quantity of material. A 12" diameter carboy containing 30 grams of (b)(4) uranium was noted not to be labeled with the radiation caution sign and symbol or with a notation as to type and amount of material. A plastic shipping container containing 1.570 kgs of uranium (b)(4) was found to be labeled with a sign worded "Radioactive" and the prescribed radiation symbol. The words "Caution" and "Material" were omitted from the sign. Fourteen (b)(4) were each

18. Radiological Health and Safety

As noted in the prior inspection report, Eugene Nurmi is the RSO and has responsibility for the safe use of special nuclear materials within his facility. His experience was reported in the previous inspection report.

A. Instructions

Nurmi reported that no additional changes in the written instructions have been made since the previous inspection. He noted that he receives from USAEC Washington Office of Health & Safety monthly information bulletins regarding health and safety and discusses them with the four technicians employed in the refinery.

B. Medical and Bioassay Program

Yearly physical examinations, which include blood, urine and chest X-rays, are still provided for the refinery personnel. Medical records are maintained. Nurmi reported that bioassay samples are still being submitted by employees every three months, and these samples are analyzed by Controls for Radiation, Cambridge, Massachusetts, instead of the National Spectrographic Lab, Inc., Miami Beach, Florida. The records of personnel bioassay samples were reviewed. The highest bioassay sample was found for (b)(6) a technician who handles precipitation and packing. This bioassay sample was noted to be 41 dpm/liter and was submitted on 1/4/61. On 3/20/61, a sample containing 35.7 dpm/liter was found for (b)(6) and on 6/15/61, 11.9 dpm/liter was noted. Bioassay samples for (b)(6) showed a concentration of 3.8 dpm/liter on 1/4/61, 36.2 dpm/liter on 3/20/61, and 2.38 dpm/liter on 6/15/61. Records showed no overexposure for any of the plant personnel.

Ex 6

C. Personnel Monitoring

A biweekly film badge program is in effect for all employees. A total of six badges are employed by Nurmi. Film badges are presently processed by Tracerlab on a biweekly basis. Also, a 13 week cumulative badge is supplied by Tracerlab. Records of personnel monitoring maintained by Nurmi include exposures noted on form AEC-5, Tracerlab reports both for biweekly and 13 week periods, and individual personnel exposure sheets. Records were reviewed from the period 2/59 to 7/3/61. These records showed no overexposures in excess of 30 mr per two week period. 13 week film badges showed less than 100 mr for the entire 13 week period.

D. Surveys

As noted in the prior report, Nuclear Corporation of America conducted a survey in May, 1958, which consisted of outplant soil sampling, contamination swipes, inplant air and stack effluent air sampling, and a direct inplant survey. Records of all the above surveys were recorded, with the exception of the outplant soil sample survey. Analysis of these soil samples were not completed by Nuclear Corporation of America at the time of the last inspection. Records of the results of the outplant soil samples were reviewed, and the soil samples were noted to range between 1.14 and 8.85 x 10^{-10} uc/mg of soil.

Records of air samples taken by Nurmi using a Staplex air sampler and Whatman 41 filter paper within the operating area and unrestricted areas were reviewed. The highest sample in the unrestricted areas was noted to be 1.5 x 10^{-12} uc/ml. In the operating area, a restricted area, the highest sample was noted to be 1.65 x 10^{-11} uc/ml, and the lowest was noted to be 9 x 10^{-12} uc/ml.

Radiation surveys are still being performed on all incoming and outgoing shipments. Records of these surveys were noted to be maintained.

E. Protective Equipment

There was no change in protective equipment from that reported in the previous inspection report.

F. Ventilation Control

There was no change in ventilation control from that reported in the previous inspection report.

G. Instrumentation

The following operable instrumentation was noted to be on hand:

1 Thyac beta-gamma survey meter
1 NRD scaler
2" scintillation head
Staplex air sampler

A Victoreen remote area monitor, which was not available during the previous inspection, was noted to be installed. Three alarms were noted throughout the facility, and the control apparatus was noted to be located in Nurmi's office. Horn alarms were reported by Nurmi to be located in the yard outside the refinery, in the yard near the boiler room, and one in the locker room for precious metal processes. Nurmi stated that a weekly check of the horn and occasional evacuation drills have been held.

19. Fire and Safety

No change has been made since the last inspection, with the exception that as noted prior in the report, the gasoline test engine used to measure octane rating was removed from the area.

20. Records

Records of purchase, inventory, transfer, radiation surveys, bioassays, disposals, and film badge results were reviewed. As noted prior in the report, records of waste disposals to the sewer system were recorded in grams/liter instead of uc/ml.