

030 05215

VOID SHEET

TO: Licensee Fee Management Branch

FROM: Region I

SUBJECT: **VOIDED APPLICATION**

Control Number: 125963

Applicant: Department of the Army (29-00047-02)

Date Voided: 8/18/98

Reason for Void: Does not require an amendment. Voided before review.

Brenda Platchuk 8/19/98
Signature Date

Attachment: Official Record Copy
of Voided Action

FOR LFMB USE ONLY

Final Review of VOID Completed:

Refund Authorized and Processed
☒ No Refund Due
Fee Exempt or Fee Not Required

Comments:

Log Completed

Processed By:

220071

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9910290014 980819
PDR ADOCK 03005215
C PDR

This is to acknowledge the receipt of your letter/application dated

7/31/98, and to inform you that the initial processing which includes an administrative review has been performed.

AMEND. 29-00047-02 / SUB-348

☒ There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned Mail Control Number 1 2 5 9 6 3

When calling to inquire about this action, please refer to this control number.

You may call us on (610) 337-5398, or 337-5260.

1 2 5 9 9 1

NRC FORM 532 (R)

4-98

Sincerely,
Licensing Assistance Team Leader

DO NOT PROCESS, STORE, OR TRANSMIT CLASSIFIED INFORMATION ON UNSECURED TELECOMMUNICATIONS SYSTEMS. OFFICIAL DOD TELECOMMUNICATIONS SYSTEMS, INCLUDING FACSIMILE MACHINES, ARE SUBJECT TO MONITORING FOR TELECOMMUNICATIONS SECURITY MONITORING AT ALL TIMES. USE OF THIS SYSTEM CONSTITUTES CONSENT TO TELECOMMUNICATIONS SECURITY MONITORING.

Department of the Army
U.S. Army Tank-automotive and Armaments Command
Armament Research, Development and Engineering Center
Picatinny Arsenal, NJ 07806-5000

FACSIMILE TRANSMITTAL HEADER SHEET

FROM: *Rich FLISZAR*
Radiation Protection Office
AMSTA-AR-QAW-R, Bldg 320
Phone - (973)724-3126
DSN 880-3126

DATE: *8-13-98*No. Pages: *7*
(Including Header)

Fax: DSN 880-7047 (Comm - (973)724-7047)

TO: *MA. Richard Gibson*
NRC - Region I

Phone No. *610-337-5071*Fax No. *610-337-5368*

Remarks:

Rich,
I didn't include enclosures to
letters in the fax.

Rich Fliszar

OFFICIAL RECORD COPY

ML10

This is to acknowledge the receipt of your letter/application dated

7/31/98

, and to inform you that the initial processing which includes an administrative review has been performed.

☒ There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

24-00047-02

25-00047-06

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned Mail Control Number 1 2 5 9 7 8
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

1 2 5 9 7 9

NRC FORM 532 (4)
(8-98)

Sincerely,
Licensing Assistance Team Leader

This is to acknowledge the receipt of your letter/application dated

7/31/98

, and to inform you that the initial processing which includes an administrative review has been performed.

☒ There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

AMIND. 24-00047-02

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned Mail Control Number 1 2 5 9 6 3
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (4)
(8-98)

Sincerely,
Licensing Assistance Team Leader



DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

31 July 1998

Radiation Protection Group
Quality Evaluation & Safety Team
Quality Engineering Directorate

Mr. John D. Kinneman
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, Pa. 19406-1415

Dear Mr. Kinneman,

The purpose of this letter is to request amendments to both our Broad Scope License, 29-00047-02, and to our Radiography License, 29-00047-06. In regards to our "06" license, it is requested that the U.S. Army Armament Research, Development & Engineering Center (ARDEC) be authorized to relocate item r.o. 6.C., the cesium-137 containing Ameray Corp. self-shielded irradiator, found on NRC Form 374, from its present storage location in Bldg. 3030 to Bldg. 312. It will be noted that item 6.B. on that same NRC Form 374 for the "06" license is already approved for housing and use in Bldg. 312. Storage only provisions would be retained for the cesium-137 containing system upon its transfer to Bldg. 312, unless a later amendment request for its use were submitted to your Agency and approved. The reason for this request is to remove the last remaining radioactive material containing item from Bldg. 3030, and then proceed to conduct an anticipated final status close-out radiation survey of that building, in order to return it to unrestricted use status.

The transfer of the Ameray Corp. self-shielded irradiator would be directly coordinated by this office in conjunction with support from the ARDEC Security staff and heavy equipment handlers. The heavy equipment handlers would be radiation workers. The transfer would be performed under a radiation work permit (RWP) issued by this office. ARDEC Security would be part of the transfer convoy during movement of the irradiator from Bldg. 3030 to 312. It is intended to store the irradiator in the northern end of Bldg. 312, as depicted on a revised page 56 to the 20 May 1993 "06" license renewal application (see encl 1- pg. 56, dated 31 July 1998). This revised page 56 will replace the present page should this amendment request be approved. For informational purposes, it is noted that woods are located next to the northern end of Bldg. 312.

-2-

In regards to our proposed "02" license amendment, a request is made to transfer item numbers 6. A. thru C. found on NRC Form 374 of our SNM-561 Special Nuclear Material License (encl 2) to the "02" license. The reason for this request is for further consolidation of ARDEC licenses. In addition, this would negate the time and money that would need to be expended in the next few months to prepare a renewal application for the SNM-561 license, scheduled to expire on 31 January 1999. Please note that the material listed in item 6.D. on NRC Form 374 of the "561" license has recently been transferred to another authorized organization outside of the Army, and therefore will no longer be applicable to the "561" license. The POC within NRC - HQ, Rockville, MD concerning the transfer of the item 6.D. material is Mr. Don Stout (301-415-5269). Further information concerning the transfer of that material can be obtained from this office by contacting the undersigned.

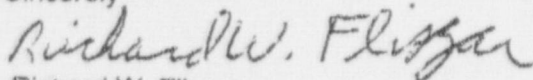
The items requested to be transferred from the SNM-561 license to the "02" license are all sealed or plated / foiled sources. Materials covered under item 6.A. (plutonium-239) as well as item 6.C. (plutonium-238) are calibration / check sources stored / used in Bldg. 320. The material covered under item 6.B. (plutonium-238) are power sources in the form of thermal batteries, which are also located in Bldg. 320. Again, it should be noted that Bldg. 320 is already one of the facilities covered under our "02" license.

An effort is underway to dispose of these thermal batteries. However, since the quantity of plutonium-238 involved is classified as a greater than Type C Waste, they are awaiting disposal at a high level radioactive waste disposal site, when established, unless other acceptable arrangements could be coordinated with a low level radioactive waste burial site, or the items transferred to another authorized organization that would want them.

Should the transfer of the above referenced items from the SNM-561 license to the "02" license be approved, it would be the intent of this office to carry out a radiation safety program toward those items, that would be commensurate with the conditions / stipulations contained in the "02" license, and, in addition, the Bioassay protocol presently contained on pages 52 - 53 of the SNM-561 renewal application dated 28 August 1992 (item 10.2) specifically regarding those items (encl 3).

Should you have any questions regarding these requests please contact the undersigned at (973) 724-3126 / 3742. Your expeditious attention to this matter would be appreciated, since a renewal application for the SNM-561 license must be prepared and submitted to your Rockville, MD office by January 1999.

Sincerely



Richard W. Fliszar

TACOM-ARDEC Radiation Protection Officer

Enclosures

-3-

Copies Furnished (w/enci):

U.S. NRC-HQ, Mail Stop T8D14 (ATTN. Mr. Don Stout), Washington, DC 20555
AMSTA-AR-PSS (Mr. O.T. Perry - IRCC Chairman)
AMCSF-P (Mr. John Manfre)
AMSTA-CS-CZ (Ms. Karen McGuire)
AMSTA-AR-QAW (Mr. Geza Pap)



DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

31 July 1998

Radiation Protection Group
Quality Evaluation & Safety Team
Quality Engineering Directorate

Mr. Don Stout
U.S. Nuclear Regulatory Commission
Mail Stop T8D14
Washington, D.C. 20555

Dear Mr. Stout,

The purpose of this letter is to request amendment to Special Nuclear Material License, SNM-561, to reflect the recent transfer of the uranium enriched sealed MTR-type fuel elements to the U.S. Department of Energy (DOE). These elements are depicted in item 6.D. on NRC Form 374 of the SNM-561 license. The elements, which are also at times referred to as CFX plates, were received by Lockheed Martin Energy Systems at the DOE Y-12 Plant in Oak Ridge, Tennessee prior to 30 June 1998. An unclassified version of the Nuclear Material Transaction Report, NRC Form 741, that documents this transfer, is contained in enclosure 1. Should a classified (confidential) version of this transaction be desired, it can be obtained through secure fax by notifying this office. A POC at the Y-12 Plant concerning this matter is Ms. L.C. (Bo) Adelaine at (423) 574-2572. In addition, the Nuclear Materials Management & Safeguards System, which is located in Norcross, Georgia, has been informed by our office of this transfer.

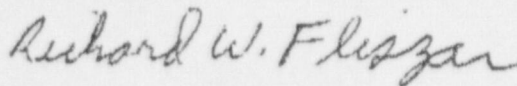
Also contained in this correspondence is the NRC Form 314 (enclosure 2) concerning this transaction. It will be noted in the accompanying attachments that the outside of the three shipping containers housing these elements were surveyed in preparation for shipment on 23 June 1998, with no removable radioactive contamination detected. However, a final close-out radiation survey of Bldg. 3030 has not yet been conducted, since a cesium-137 containing self-shielded irradiator (NRC license no. 29-00047-06), is still in storage in that facility. In another recent piece of correspondence to NRC - Region I, which you have been copy furnished, this office has requested permission to transfer this irradiator to another facility on post. When the amendment request to that "06" license is granted, and the irradiator, in turn, subsequently transferred out of the building, this office will conduct an anticipated final status close-out

-2-

radiation survey of Bldg. 3030, in order to return it to unrestricted use status. This documentation will be provided to your office at that time in support of a request to terminate the SNM-561 license, pending the approval to transfer the remaining items, 6.A. thru C. on NRC Form 374, to our Broad Scope License, 29-00047-02, as we had previously discussed.

Should you have any additional questions concerning the above matter, you may contact the undersigned at (973) 724-3126 / 3742.

Sincerely,



Richard W. Fliszar
TACOM-ARDEC Radiation Protection Officer

Enclosures

Copies Furnished (w/encl):

AMSTA-AR-PSS (Mr. O.T. Perry - IRCC Chairman)
AMCSF-P (Mr. John Manfre)
AMSTA-CS-CZ (Ms. Karen McGuire)
AMSTA-AR-QAW (Mr. Geza Pap)



DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

1998 AUG 24 PM 2:10

31 July 1998

030-05215
29-00047-02

Radiation Protection Group
Quality Evaluation & Safety Team
Quality Engineering Directorate

Mr. Richard Gibson Jr.
Nuclear Material Safety Branch 2
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, Pa. 19406-1415

Dear Mr. Gibson,

With reference to prior correspondence from this office, dated Sept. 12, 1997, the purpose of this letter is to request permission for the unrestricted release of Bldg. 31. Since that correspondence a "final status" type survey was conducted by the U.S. Army Center for Health Promotion & Preventive Medicine (CHPPM) in January 1998 of the suspect area in Bldg. 31 where magnesium -thorium alloy machining operations had erroneously previously been conducted in the 1970's.

The survey, survey no. 27-MH-7871-98 (encl 1), was performed following the guidance contained in draft NUREG / CR-5849, entitled "Manual for Conducting Radiological Surveys in Support of License Termination". In addition, analytical results of the dust which had been vacuumed up prior to conducting the meter and swipe surveys of the suspect area can be found in enclosures 2 & 3. Enclosure 2 is a memorandum, dated 23 Jan. 1998, which includes an analysis of a dust sample from the HEPA vacuumed debris following the vacuuming of that suspect area. Enclosure 3 is a lab report (project no. 27-23-7871; report serial no. 334137), dated 1 July 1998, which includes analytical results from a second dust sample taken from the same HEPA vacuumed debris, along with a cumulative dust sample of adjacent non-suspect areas (background) within Bldg. 31. Examination of these results reveals that the dust, which had been covering the floor surface in the suspect area, was not contaminated with thorium residue. This indicates that thorium contamination had not spread to other areas of the building, in turn negating the need to survey beyond those areas already assessed.

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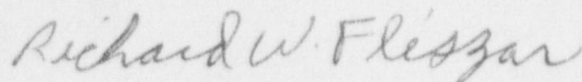
ML 10

AUG - 6 1998

Based on the documentation provided here, along with the additional decommissioning documentation for this building, which had been provided to your office in prior separate correspondence, dated 5 March 1997, Bldg. 31 is considered to have been satisfactorily decommissioned. Therefore, it is requested that Bldg. 31 be approved for unrestricted use by 28 Sept. 1998, as the building is planned for extensive renovation scheduled to begin as soon as possible.

The person to contact regarding this matter is the undersigned at (973) 724-3126 / 3742.

Sincerely,



Richard W. Fliszar
TACOM-ARDEC Radiation Protection Officer

Enclosures

Copies Furnished (w/o encl):

AMSTA-AR-PSS (Mr. O.T. Perry -- IRCC Chairman)
AMCSF-P (Mr. John Manfre)
AMSTA-CS-CZ (Ms. Karen McGuire)
AMSTA-AR-QAW (Mr. Geza Pap)

U.S. Army Center for Health Promotion
and Preventive Medicine

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INDUSTRIAL RADIATION SURVEY NO. 27-MH-7871-98
FACILITY CLOSE-OUT AND TERMINATION SURVEY
PICATINNY ARSENAL, NEW JERSEY
6 - 16 JANUARY 1998

Distribution limited to U.S. Government agencies only;
protection of privileged information evaluating another
command; Apr 98. Requests for this document must be
referred to Commander, U.S. Army Materiel Command, ATTN:
AMCSG, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001.

Readiness Thru Health

Encl 1

U.S. Army Center for Health Promotion and Preventive Medicine

The lineage of the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) can be traced back over 50 years. This organization began as the U.S. Army Industrial Hygiene Laboratory, established during the industrial buildup for World War II, under the direct supervision of the Army Surgeon General. Its original location was at the Johns Hopkins School of Hygiene and Public Health. Its mission was to conduct occupational health surveys and investigations within the Department of Defense's (DOD's) industrial production base. It was staffed with three personnel and had a limited annual operating budget of three thousand dollars.

Most recently, it became internationally known as the U.S. Army Environmental Hygiene Agency (AEHA). Its mission expanded to support worldwide preventive medicine programs of the Army, DOD, and other Federal agencies as directed by the Army Medical Command or the Office of The Surgeon General, through consultations, support services, investigations, on-site visits, and training.

On 1 August 1994, AEHA was redesignated the U.S. Army Center for Health Promotion and Preventive Medicine with a provisional status and a commanding general officer. On 1 October 1995, the nonprovisional status was approved with a mission of providing preventive medicine and health promotion leadership, direction, and services for America's Army.

The organization's quest has always been one of excellence and the provision of quality service. Today, its goal is to be an established world-class center of excellence for achieving and maintaining a fit, healthy, and ready force. To achieve that end, the CHPPM holds firmly to its values which are steeped in rich military heritage:

- ★ *Integrity is the foundation*
 - ★ *Excellence is the standard*
 - ★ *Customer satisfaction is the focus*
 - ★ *Its people are the most valued resource*
 - ★ *Continuous quality improvement is the pathway*

This organization stands on the threshold of even greater challenges and responsibilities. It has been reorganized and reengineered to support the Army of the future. The CHPPM now has three direct support activities located in Fort Meade, Maryland; Fort McPherson, Georgia; and Fitzsimons Army Medical Center, Aurora, Colorado; to provide responsive regional health promotion and preventive medicine support across the U.S. There are also two CHPPM overseas commands in Landstuhl, Germany and Camp Zama, Japan who contribute to the success of CHPPM's increasing global mission. As CHPPM moves into the 21st Century, new programs relating to fitness, health promotion, wellness, and disease surveillance are being added. As always, CHPPM stands firm in its commitment to Army readiness. It is an organization proud of its fine story, yet equally excited about its challenging future.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

EXECUTIVE SUMMARY
INDUSTRIAL RADIATION SURVEY NO. 27-MH-7871-98
FACILITY CLOSE-OUT AND TERMINATION SURVEY
PICATINNY ARSENAL, NEW JERSEY
6 - 15 JANUARY 1998

1. PURPOSE. This survey was conducted to determine the presence and extent of radiological health hazards in Building 31, North Wing or Area D, Site 39 as designated by the ARDEC Environmental Office Restoration Team at Picatinny Arsenal. This building is associated with the ongoing Base Realignment and Closure actions at Picatinny Arsenal. This survey also verified that any residual radioactivity in the buildings surveyed is in compliance with the Nuclear Regulatory Commission and the State of New Jersey Industrial Site Restoration Act guidelines for decontamination of facilities prior to release for unrestricted use.
2. CONCLUSION. A review of the survey results indicates that there were no radiological health hazards identified as a result of the use of radioactive materials in Building 31.
3. RECOMMENDATION. Recommend Building 31 be released for unrestricted use.



REPLY TO
ATTENTION OF

MCHB-TS-OIP

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

23 APR 1998

INDUSTRIAL RADIATION SURVEY NO. 27-MH-7871-98
FACILITY CLOSE-OUT AND TERMINATION SURVEY
PICATINNY ARSENAL, NEW JERSEY
6 - 16 JANUARY 1998

1. REFERENCES. See Appendix A for a list of references.
2. AUTHORITY. Electronic-mail, Picatinny Arsenal, Robert VanZee, December 1997, subject: Picatinny Arsenal's Proposed Usage for Building 31.
3. PURPOSE.
 - a. This survey was conducted to determine the presence and extent of radiological health hazards in Building 31, North Wing. The North Wing of Building 31 is within the foot print of the Base Realignment and Closure actions at Picatinny Arsenal, NJ.
 - b. This survey also verified that any remaining residual radioactivity in the buildings surveyed is in compliance with the Nuclear Regulatory Commission (NRC) and the State of New Jersey Industrial Site Restoration Act guidelines for decontamination of facilities prior to release for unrestricted use.
4. GENERAL.
 - a. Meetings and briefings were conducted by SSG Timothy P. Webster, Industrial Health Physics Program (IHPP), U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), and Mr. Lorus Miller, Henry M. Jackson Foundation Participant, IHPP, USACHPPM, with Mr. Richard Fliszar, Department of the Army Civilian (DAC), Picatinny Arsenal and Mr. Joseph A. Fabiano, DAC, Picatinny Arsenal to discuss the findings and recommendations.
 - b. Project management for the close-out and termination survey was conducted by the USACHPPM.
 - c. The survey was managed by SSG Timothy P. Webster, Project Manager. Mr. Lorus Miller, Senior Health Physics Technician was the Team Leader. A team of health physics technicians performed the field surveys.

Readiness thru Health

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

d. The survey personnel from USACHPPM have varied expertise in radiological health issues and are qualified to perform this survey. Each individual was provided occupational health and safety training at USACHPPM and at Picatinny Arsenal to administer a safe working environment.

e. Laboratory analyses were performed by the Radiological, Classic, & Clinical Chemistry Division (RCCCD), USACHPPM.

f. Quality Assurance (QA) was provided by an independent QA Officer, Mr. Oscar James, Henry M. Jackson Foundation Participant.

g. Appendix B contains a list of abbreviations used in this report.

5. BACKGROUND.

a. Chronology.

(1) The history of the use, storage and disposal of radioactive material was documented by the current Radiation Protection Officers' files and archived records at Picatinny Arsenal, NJ.

(2) The USACHPPM began preparation for performing the Picatinny Arsenal radiological termination survey, December 1997.

(3) The USACHPPM prepared the sample protocol document titled Industrial Radiation Survey Protocol No. 27-MH-7871-P-98, Picatinny Arsenal, NJ, after being staffed through all interested parties for comment, January 1998.

(4) The USACHPPM began the close-out and termination survey of Picatinny Arsenal's Building 31, North Wing, in accordance with (IAW) the above referenced protocol, January 1998.

b. Site Condition at Time of Survey.

(1) The floor area of Building 31 was covered with a variety of trash, debris and dust, however, the survey team removed all trash and debris. The dust was removed with a nuclear HEPA-filter vacuum. A complimentary grab sample of the collected dust was analyzed by RCCCD. The results are on file at the Radiation Protection Office at Picatinny Arsenal, NJ. It is up to Picatinny

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Arsenal's Radiation Protection Office to determined the disposition of the dust.

(2) The room immediately adjacent to the survey area was used as the project field office for the termination survey. The USACHPPM used this room throughout the duration of the survey. The room was surveyed at the completion of the survey of Building 31.

c. Potential Contaminants and Release Guidelines. See Industrial Radiation Survey Protocol No. 27-MH-7871-P-98 for a detailed listing of the potential radioactive material at Picatinny Arsenal. The release guideline for this potential contaminant is listed in Appendix D.

6. RADIATION SURVEYS AND RESULTS.

a. Instrumentation/Equipment.

(1) A list of the instrumentation used during this survey is provided in Appendix E. The Minimum Detectable Activity (MDA) of each instrument is provided with the instrumentation survey data in Appendix C. The efficiencies for each instrument was determined with an appropriate radioisotope traceable to the National Institute of Standards and Technology (NIST). Each radioisotope had energies similar to the isotopes used and stored in Building 31.

(2) After calibration, an efficiency factor was calculated for each alpha and beta survey instrument which assisted in correlating the survey meter results to the actual radioactivity present.

(3) The alpha and beta detectors used during the survey were 100 square centimeter (cm^2) gas flow proportional detectors. The gamma detector used was a 1 inch x 1 inch sodium iodide crystal. The equation to convert counts per minute to disintegrations per minute (dpm)/100 cm^2 can be found in the Nuclear Regulatory Guide (NUREG)/CR-5849, page 8.2, Section 8.1.1.

(4) The efficiency value for each instrument was used to record the final reading into standardized regulatory criteria expressed in dpm per 100 cm^2 . The monitoring values for gross alpha and gross beta in the tables of Appendix C are presented in the converted values of dpm/100 cm^2 .

(5) The sensitivity of the gamma survey meter correlates with NUREG/CR-5849, page 5-14, Table 5-6.

(6) All portable survey meters were checked for operability at USACHPPM prior to packaging and shipping to Picatinny Arsenal. Upon arrival at the survey site, before each day of surveying, midday during the survey, at the end of each day, and after any malfunctions or repairs, operability checks were performed. Chapter 5, page 17, NUREG/CR-5849 was used for the field instruments as guidance for operational checks. Instrument variation of ± 2 sigma was used as a standard.

(a) Alpha. Operational instrument checks were performed with a NIST traceable thorium-230. All operational checks were made at approximately 2 millimeters from contact with the alpha source. The same procedures were used for each check to assure reproducibility.

(b) Beta. Operational instrument checks were performed with a NIST traceable technetium-99. All operational checks were made at approximately 1 centimeter (cm) from the beta source. The same procedures were used for each check to assure reproducibility.

(c) Gamma. Operational instrument checks were performed with a NIST traceable cesium-137 source. The same procedures were used for each check to assure reproducibility.

b. Instrumentation Survey.

(1) Instrumentation surveys were conducted within pre-established areas, as described by the termination survey protocol. The floor plan diagrams can be found in Appendix C. Areas were scanned at the surface and fixed readings were taken as necessary IAW the protocol.

(2) The survey grid system used alphanumeric designators. Grid rows would be designated by a letter and grid columns designated by a number.

(3) The site was classified as an affected non-uniform area, survey grid size was set at 1 meter x 1 meter (1 m x 1 m). It was scanned 100%. Fixed meter readings were taken at the center of each grid for alpha, beta-gamma, and gamma activity. If during scanning, a measured reading was found to be greater than

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

three times above background, it would have been marked and a fixed reading taken at that point.

(4) All north walls were identified as Wall A (WA) and the other walls were assigned consecutive letters in a clockwise manner around the room (i.e., WB, WC, and WD). The grid squares always started in the lower left corner of the wall. The first "1 m x 1 m" (affected area) grid square was identified as "WA1A" and the grid square directly above was designated "WA1B", with "B" representing the next horizontal row on the wall.

(5) Floors were gridded using a different system. The grid squares always started in the northwest corner of the floor. The northwest grid square was identified as FA1. The grid squares to the east would be FA2, FA3, etc. The grid squares to the south would be FB1, FC1, etc.

(6) Flag values, or action levels, for alpha and beta-gamma monitoring measurements were established for each type of survey instrument used. Flag values were established by taking 75% of the release criteria found in Appendix D. If any instrument readings exceeded the flag values, a more thorough investigation was conducted to determine if the detected radiation was above the criteria.

(7) In addition to surveying the building surfaces, random readings were collected from physical features where residual radioactivity would likely be found. Cracks in walls and floors, seams where walls met floors, holes in the walls, and other like areas to include the fiberboard (filler) material around the perimeter of the cement machine pads, were surveyed.

(8) Readings observed above background were reported to the onsite USACHPPM Health Physics Technician and QA representative immediately, for reevaluation and confirmation. The USACHPPM's QA representative reviewed the data for each surveyed area and evaluated the survey results in relationship to the survey grid system.

c. Wipe Sampling. Wipe tests were performed to determine the presence of removable contamination on surface areas. Wipe test samples were collected from each grid square of all affected and unaffected surfaces surveyed.

(1) Cloth wipe test samples were collected using a 2-inch diameter wipe pad to wipe an area of 100 cm². These samples were analyzed for alpha and beta-gamma removable activity.

(2) If during scanning, a meter reading was found to be three times background the area was flagged. Then a hard smear wipe sample was taken at that location.

d. Survey Results.

(1) Background Survey Results. Background survey measurements were taken from an area inside (IAW the Survey Protocol) of a building that has no history of radioactive material use. Background measurements were taken for each type of radiation to be monitored. The average background values were established at a 95% confidence level. Background survey results are presented with the site survey results in Appendix C.

(2) Instrumentation Survey Results.

(a) Alpha Instrumentation Results. A fixed meter reading was taken in each grid square at 0.5 cm from the surface. No readings were above release limits. All alpha activity results and location of survey results are presented in Appendix C.

(b) Beta-Gamma Instrumentation Results. A fixed meter reading was taken in each grid square at 0.5 cm from the surface. No readings were above release limits. All beta-gamma survey results and locations are presented in Appendix C.

(c) Gamma Instrumentation Results. Each grid square was surveyed at approximately 1m from the surface and the location with the highest exposure reading was recorded. All gamma survey results and locations are presented in Appendix C.

(d) Scanning Instrumentation Results. One hundred percent of the surface area of affected areas was scanned. The protocol states that a minimum of 10% of the surface area of unaffected areas will be scanned. However, there was no unaffected area.

(3) Laboratory Analysis. Wipe test samples were collected and analyzed for gross alpha, gross beta-gamma. These QA wipe test results can be found throughout Appendix C.

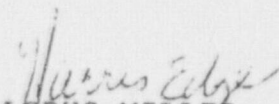
Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ. 6 - 16 Jan 98

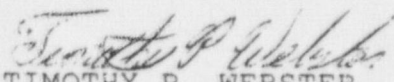
(a) The gross alpha activity ranged from a low of -0.32 dpm/100 cm² to a high of 1.9 dpm/100 cm². The MDA at 95% confidence level was determined to be less than two dpm/100 cm². All gross alpha activity results and locations where wipe tests were taken are included in Appendix C. Gross alpha analysis shows no sample data that exceeds release criteria.

(b) The gross beta-gamma activity ranged from a low of -2.5 dpm/100 cm² to a high of 0.414 dpm/100 cm². The MDA at 95% confidence level was determined to be less than four dpm/100 cm². All gross beta-gamma activity results and locations where wipe tests were taken are included in Appendix C. Gross beta analysis shows no sample data that exceeds release criteria.

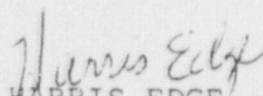
7. CONCLUSION. A review of the survey results indicate that there were no radiological health hazards identified as a result of the use and storage of radioactive materials in Building 31.

8. RECOMMENDATION. Recommend that Building 31 be released for unrestricted use.


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Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX A

REFERENCES

1. NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment, June 1992.
2. NRC Reg Guide 1.86, Termination of Operating Licenses for Nuclear Reactors, June 1974.
3. Army Regulation 385-11, Ionizing Radiation Protection (Licensing, Control, Transportation, Disposal, and Radiation Safety), 1 May 1980.
4. Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation, 1993 Rev.
5. Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material, August 1987.
6. NUREG-1500, Working Draft Regulatory Guide on Release Criteria for Decommissioning: NRC Staff's Draft for Comment, August 1994.
7. Industrial Radiation Survey Protocol No. 27-MH-7871-98.

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX B

ABBREVIATIONS

cal	calibration
cm	centimeter
cm ²	square centimeter
DAC	Department of the Army Civilian
dpm	disintegrations per minute
IAW	in accordance with
IHPP	Industrial Health Physics Program
m	meter
MDA	Minimum Detectable Activity
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulatory Guide
QA	Quality Assurance
RCCCD	Radiologic, Classic & Clinical Chemistry Division
USACHPFM	U.S. Army Center for Health Promotion and Preventive Medicine

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX C

LIST OF BUILDINGS SURVEYED

BUILDING DIAGRAMS

RADIOLOGICAL SURVEY RESULTS

Grids at "1m x 1m" unless otherwise annotated

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

BUILDINGS SURVEYED:

31

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

GRAPHICAL ILLUSTRATION

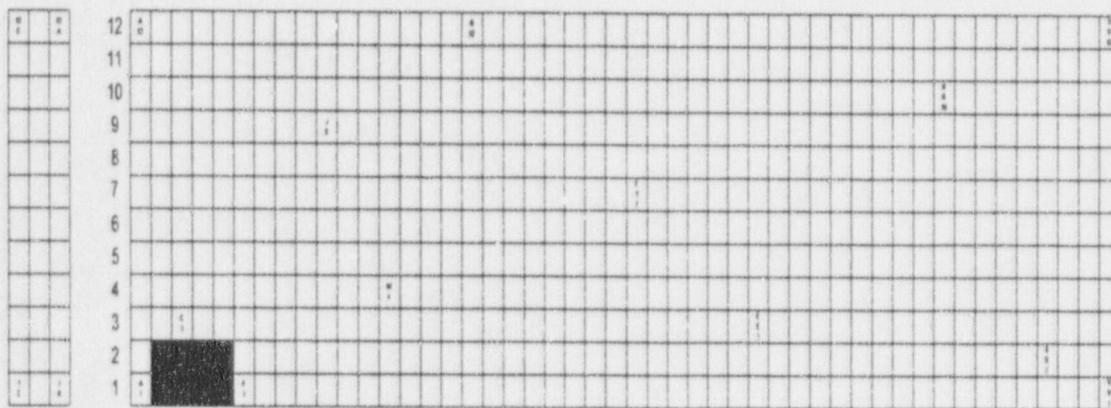


BUILDING 31

Wall B



Wall A



A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA BB CC DD EE FF GG HH II JJ KK LL MM NN OO PP QQ RR SS TT UU VV

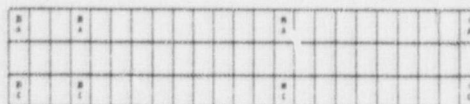
Wall F



Wall E



Wall D



Wall C

BUILDING 31,
Picatinny Arsenal, NJ

U.S. ARMY CENTER FOR HEALTH PROMOTION
AND PREVENTIVE MEDICINE
UNITED STATES ARMY MEDICAL DEPARTMENT

DATE 29 FEB 1996

DRAWN TPW

APPROVED HE

SCALE NTS

PLATE

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
	(Units =>) dpm/100cm^2	dpm/100cm^2	uR/hr	dpm/100cm^2 +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
FA1	-9	-516	0	0.3 ± 1.0	0.2 ± 2.4	±	QL00001
FA2	29	-234	0	0.6 ± 1.1	2.1 ± 2.7	±	QL00002
FA3	-4	-428	1	0.0 ± 0.8	-0.2 ± 2.3	±	QL00003
FA4	-4	-344	0	0.3 ± 1.0	0.9 ± 2.5	±	QL00004
FA5	-14	-485	0	0.6 ± 1.1	0.2 ± 2.4	±	QL00005
FA6	0	-134	2	0.3 ± 1.0	1.5 ± 2.6	±	QL00006
FA7	-9	-115	1	0.8 ± 1.2	0.4 ± 2.4	±	QL00007
FA8	0	201	3	0.0 ± 0.8	3.0 ± 2.8	±	QL00008
FA9	-9	106	3	0.3 ± 1.0	4.3 ± 3.0	±	QL00009
FA10	-9	22	4	0.0 ± 0.8	0.7 ± 2.4	±	QL00010
FA11	-9	64	4	0.0 ± 0.8	1.9 ± 2.6	±	QL00011
FA12	5	56	6	0.3 ± 1.0	1.3 ± 2.5	±	QL00012
FB3	-9	-573	0	-0.3 ± 0.6	0.0 ± 2.3	±	QL00013
FB4	-19	-47	1	0.0 ± 0.8	0.2 ± 2.4	±	QL00014
FB5	-14	-493	1	-0.3 ± 0.6	0.7 ± 2.4	±	QL00015
FB6	5	72	2	-0.3 ± 0.6	-0.2 ± 2.3	±	QL00016
FB7	5	-16	1	0.0 ± 0.8	-0.9 ± 2.2	±	QL00017
FB8	-9	136	-	0.0 ± 0.8	1.5 ± 2.6	±	QL00018
FB9	-19	270	3	0.3 ± 1.0	0.6 ± 2.4	±	QL00019
FB10	-14	-188	3	0.0 ± 0.8	0.4 ± 2.4	±	QL00020
FB11	-4	-31	4	-0.3 ± 0.6	-0.2 ± 2.3	±	QL00021
FB12	-9	-96	4	-0.3 ± 0.6	-0.7 ± 2.2	±	QL00022
FC3	-14	-508	0	0.3 ± 1.0	-1.7 ± 2.0	±	QL00023
FC4	-4	-333	1	0.3 ± 1.0	0.0 ± 2.3	±	QL00024
FC5	-19	-474	1	-0.3 ± 0.6	-1.5 ± 2.0	±	QL00025
FC6	-9	-146	2	0.0 ± 0.8	-1.5 ± 2.0	±	QL00026
FC7	-9	-176	2	0.3 ± 1.0	-1.3 ± 2.1	±	QL00027
FC8	-4	64	2	-0.3 ± 0.6	-1.5 ± 2.0	±	QL00028
FC9	-14	205	2	0.0 ± 0.8	1.3 ± 2.5	±	QL00029
FC10	15	-424	2	0.6 ± 1.1	-0.7 ± 2.2	±	QL00030
FC11	-19	-298	4	-0.3 ± 0.6	0.4 ± 2.4	±	QL00031
FC12	5	186	4	-0.3 ± 0.6	-0.4 ± 2.2	±	QL00032
FD3	-4	-592	0	0.0 ± 0.8	0.4 ± 2.4	±	QL00033
FD4	0	-241	1	0.0 ± 0.8	0.4 ± 2.4	±	QL00034
FD5	-9	-367	0	0.0 ± 0.8	-1.1 ± 2.1	±	QL00035
FD6	10	-165	0	0.3 ± 1.0	-0.2 ± 2.3	±	QL00036
FD7	-9	-77	1	0.0 ± 0.8	-1.7 ± 2.0	±	QL00037
FD8	-9	-108	1	-0.3 ± 0.6	-0.2 ± 2.3	±	QL00038
FD9	0	14	3	-0.3 ± 0.6	-0.4 ± 2.2	±	QL00039
FD10	-9	-85	2	0.3 ± 1.0	0.9 ± 2.5	±	QL00040
FD11	-14	3	2	0.0 ± 0.8	0.7 ± 2.4	±	QL00041
FD12	10	-20	3	0.3 ± 1.0	0.2 ± 2.4	±	QL00042
FE3	0	-489	0	0.0 ± 0.8	-0.7 ± 2.2	±	QL00043
FE4	0	-424	0	0.3 ± 1.0	1.7 ± 2.5	±	QL00044
FE5	-19	-329	1	-0.3 ± 0.6	-0.4 ± 2.2	±	QL00045
FE6	-9	-382	1	0.0 ± 0.8	0.0 ± 2.3	±	QL00046
FE7	5	-142	1	0.3 ± 1.0	0.6 ± 2.4	±	QL00047
FE8	-14	-379	1	-0.3 ± 0.6	-0.2 ± 2.3	±	QL00048
FE9	-4	-375	2	0.0 ± 0.8	-1.5 ± 2.0	±	QL00049
FE10	0	-485	1	-0.3 ± 0.6	0.9 ± 2.5	±	QL00050

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A								
Location Code	Monitoring			Wipe Test				Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS		
(Units =>)	dpm/100cm^2	dpm/100cm^2	uR/hr	dpm/100cm^2 +/- 2 sigma				
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0		
(MDA =>)	56	423	-	2 *	4 *	*		
FE11	-14	60	3	-0.3 ± 0.6	0.4 ± 2.4	±	QL00051	
FE12	-9	-405	2	-0.3 ± 0.6	0.2 ± 2.4	±	QL00052	
FF1	-9	-558	1	0.3 ± 1.0	0.6 ± 2.4	±	QL00053	
FF2	-14	-512	0	0.0 ± 0.8	-0.9 ± 2.2	±	QL00054	
FF3	-4	-409	0	0.0 ± 0.8	-0.2 ± 2.3	±	QL00055	
FF4	-4	-222	0	0.0 ± 0.8	-0.9 ± 2.2	±	QL00056	
FF5	-14	-245	1	-0.3 ± 0.6	-0.2 ± 2.3	±	QL00057	
FF6	0	-50	2	-0.3 ± 0.6	-1.3 ± 2.1	±	QL00058	
FF7	-9	-401	1	0.6 ± 1.1	0.6 ± 2.4	±	QLC 759	
FF8	-4	-478	1	0.3 ± 1.0	0.0 ± 2.3	±	QL00060	
FF9	-9	-680	0	-0.3 ± 0.6	1.7 ± 2.6	±	QL00061	
FF10	-4	-409	0	0.6 ± 1.1	1.0 ± 2.5	±	QL00062	
FF11	-9	-539	0	-0.3 ± 0.6	0.9 ± 2.5	±	QL00063	
FF12	-14	-501	2	0.0 ± 0.8	0.4 ± 2.4	±	QL00064	
FG1	-19	-516	0	0.6 ± 1.1	-0.3 ± 2.3	±	QL00065	
FG2	-9	-440	0	-0.3 ± 0.6	-1.1 ± 2.1	±	QL00066	
FG3	-9	-360	0	-0.3 ± 0.6	0.7 ± 2.4	±	QL00067	
FG4	-14	-249	0	0.3 ± 1.0	0.2 ± 2.4	±	QL00068	
FG5	-19	-428	1	0.3 ± 1.0	0.0 ± 2.3	±	QL00069	
FG6	-9	-577	1	-0.3 ± 0.6	0.4 ± 2.4	±	QL00070	
FG7	-14	-558	0	0.6 ± 1.1	0.8 ± 2.5	±	QL00071	
FG8	-9	-535	-1	0.6 ± 1.1	0.4 ± 2.4	±	QL00072	
FG9	-4	56	-1	1.1 ± 1.3	2.7 ± 2.8	±	QL00073	
FG10	-4	-367	0	0.6 ± 1.1	-0.5 ± 2.2	±	QL00074	
FG11	0	-649	1	0.3 ± 1.0	-0.9 ± 2.2	±	QL00075	
FG12	5	-642	1	0.0 ± 0.8	-0.2 ± 2.3	±	QL00076	
FH1	-9	-562	-1	0.3 ± 1.0	0.2 ± 2.4	±	QL00077	
FH2	5	-58	1	0.0 ± 0.8	0.2 ± 2.4	±	QL00078	
FH3	-14	-47	1	0.0 ± 0.8	0.9 ± 2.5	±	QL00079	
FH4	5	-218	2	-0.3 ± 0.6	0.4 ± 2.4	±	QL00080	
FH5	-14	-550	1	-0.3 ± 0.6	0.0 ± 2.3	±	QL00081	
FH6	-9	-566	1	0.3 ± 1.0	0.0 ± 2.3	±	QL00082	
FH7	-19	-459	1	-0.3 ± 0.6	0.2 ± 2.4	±	QL00083	
FH8	-4	-520	0	0.0 ± 0.8	0.9 ± 2.5	±	QL00084	
FH9	-9	-77	0	0.0 ± 0.8	-0.4 ± 2.2	±	QL00085	
FH10	5	-184	0	0.6 ± 1.1	1.7 ± 2.6	±	QL00086	
FH11	-9	-638	1	-0.3 ± 0.6	-0.7 ± 2.2	±	QL00087	
FH12	0	-611	1	0.8 ± 1.2	0.4 ± 2.4	±	QL00088	
FI1	5	-642	0	0.0 ± 0.8	1.5 ± 2.6	±	QL00089	
FI2	-4	-253	0	1.1 ± 1.3	0.4 ± 2.4	±	QL00090	
FI3	10	-382	0	0.6 ± 1.1	0.2 ± 2.4	±	QL00091	
FI4	-9	-478	1	-0.3 ± 0.6	0.9 ± 2.5	±	QL00092	
FI5	-4	-241	2	-0.3 ± 0.6	-0.4 ± 2.2	±	QL00093	
FI6	0	-413	1	-0.3 ± 0.6	1.5 ± 2.6	±	QL00094	
FI7	-14	-295	1	-0.3 ± 0.6	0.2 ± 2.4	±	QL00095	
FI8	-19	-253	1	0.0 ± 0.8	0.2 ± 2.4	±	QL00096	
FI9	-19	-253	0	-0.3 ± 0.6	1.1 ± 2.5	±	QL00097	
FI10	10	-268	1	-0.3 ± 0.6	-0.9 ± 2.2	±	QL00098	
FI11	-14	-615	1	-0.3 ± 0.6	0.7 ± 2.4	±	QL00099	
FI12	-9	-657	1	0.0 ± 0.8	1.7 ± 2.6	±	QL00100	

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	-	
FJ1	-4	-512	0	-0.2 ± 0.5	-0.9 ± 2.1	±	QL00101
FJ2	-14	-249	0	-0.2 ± 0.5	-1.2 ± 2.1	±	QL00102
FJ3	-4	-146	0	-0.2 ± 0.5	-0.5 ± 2.2	±	QL00103
FJ4	-4	-253	1	0.7 ± 1.1	-0.5 ± 2.2	±	QL00104
FJ5	-14	-337	1	-0.2 ± 0.5	-0.3 ± 2.2	±	QL00105
FJ6	-9	-291	2	0.1 ± 0.7	1.0 ± 2.5	±	QL00106
FJ7	0	-401	1	-0.2 ± 0.5	-0.9 ± 2.1	±	QL00107
FJ8	-9	-417	1	-0.2 ± 0.5	0.6 ± 2.4	±	QL00108
FJ9	-9	-657	1	-0.2 ± 0.5	0.6 ± 2.4	±	QL00109
FJ10	0	-81	1	0.1 ± 0.7	-1.0 ± 2.1	±	QL00110
FJ11	15	-623	2	0.4 ± 0.9	1.0 ± 2.5	±	QL00111
FJ12	-14	-573	1	0.1 ± 0.7	1.0 ± 2.5	±	QL00112
FK1	0	-474	0	0.1 ± 0.7	-0.5 ± 2.2	±	QL00113
FK2	-14	-501	1	0.9 ± 1.2	2.1 ± 2.7	±	QL00114
FK3	-14	-592	0	0.1 ± 0.7	0.2 ± 2.3	±	QL00115
FK4	-9	-253	0	-0.2 ± 0.5	-0.3 ± 2.2	±	QL00116
FK5	-9	-665	1	0.1 ± 0.7	-0.7 ± 2.2	±	QL00117
FK6	-9	-573	1	0.1 ± 0.7	-0.3 ± 2.2	±	QL00118
FK7	-19	-138	1	-0.2 ± 0.5	0.8 ± 2.4	±	QL00119
FK8	10	-157	1	0.1 ± 0.7	0.4 ± 2.4	±	QL00120
FK9	-9	-226	1	0.1 ± 0.7	0.4 ± 2.4	±	QL00121
FK10	-4	-253	2	0.4 ± 0.9	-0.5 ± 2.2	±	QL00122
FK11	-14	68	3	0.1 ± 0.7	-0.5 ± 2.2	±	QL00123
FK12	-9	-176	1	0.7 ± 1.1	-1.0 ± 2.1	±	QL00124
FL1	-14	-470	1	0.1 ± 0.7	0.8 ± 2.4	±	QL00125
FL2	-19	-577	1	0.1 ± 0.7	0.4 ± 2.4	±	QL00126
FL3	-9	-592	1	0.1 ± 0.7	0.4 ± 2.4	±	QL00127
FL4	0	-16	2	0.4 ± 0.9	-1.0 ± 2.1	±	QL00128
FL5	0	-287	2	-0.2 ± 0.5	0.6 ± 2.4	±	QL00129
FL6	5	-409	3	-0.2 ± 0.5	1.2 ± 2.5	±	QL00130
FL7	-4	-451	1	-0.2 ± 0.5	-0.5 ± 2.2	±	QL00131
FL8	10	-428	1	0.1 ± 0.7	0.6 ± 2.4	±	QL00132
FL9	-9	56	3	0.4 ± 0.9	1.2 ± 2.5	±	QL00133
FL10	-19	-142	4	0.1 ± 0.7	-0.1 ± 2.3	±	QL00134
FL11	0	-203	3	0.1 ± 0.7	-0.3 ± 2.2	±	QL00135
FL12	-9	-81	2	0.1 ± 0.7	-1.0 ± 2.1	±	QL00136
FM1	-14	-543	1	0.1 ± 0.7	0.8 ± 2.4	±	QL00137
FM2	-14	-485	1	-0.2 ± 0.5	1.0 ± 2.5	±	QL00138
FM3	-4	-627	1	-0.2 ± 0.5	-1.8 ± 1.9	±	QL00139
FM4	-9	-253	0	0.1 ± 0.7	-0.3 ± 2.2	±	QL00140
FM5	0	-12	1	0.4 ± 0.9	0.1 ± 2.3	±	QL00141
FM6	-14	-16	1	-0.2 ± 0.5	0.4 ± 2.4	±	QL00142
FM7	-9	-272	1	0.4 ± 0.9	0.1 ± 2.3	±	QL00143
FM8	-14	-253	1	0.1 ± 0.7	-1.0 ± 2.1	±	QL00144
FM9	-9	-360	0	0.1 ± 0.7	-0.1 ± 2.3	±	QL00145
FM10	-9	-100	1	-0.2 ± 0.5	0.2 ± 2.3	±	QL00146
FM11	-9	-298	1	-0.2 ± 0.5	-0.5 ± 2.2	±	QL00147
FM12	-9	-20	1	-0.2 ± 0.5	0.2 ± 2.3	±	QL00148
FN1	-19	-512	2	0.4 ± 0.9	-0.5 ± 2.2	±	QL00149
FN2	-9	-478	2	-0.2 ± 0.5	-1.4 ± 2.0	±	QL00150

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
FN3	-4	-401	1	0.1 ± 0.7	-1.0 ± 2.1	±	QL00151
FN4	-4	-211	1	0.9 ± 1.2	-0.8 ± 2.2	±	QL00152
FN5	5	-173	0	0.9 ± 1.2	0.8 ± 2.4	±	QL00153
FN6	-9	-237	0	0.1 ± 0.7	-0.3 ± 2.2	±	QL00154
FN7	-14	-131	0	0.4 ± 0.9	0.8 ± 2.4	±	QL00155
FN8	-19	-295	1	0.4 ± 0.9	-1.0 ± 2.1	±	QL00156
FN9	-19	-142	1	0.1 ± 0.7	-1.8 ± 1.9	±	QL00157
FN10	-9	-104	2	-0.2 ± 0.5	-0.5 ± 2.2	±	QL00158
FN11	-14	-718	2	1.2 ± 1.3	-0.8 ± 2.2	±	QL00159
FN12	-14	-535	2	0.1 ± 0.7	1.2 ± 2.5	±	QL00160
QA --	N/A	N/A	N/A	-0.2 ± 0.5	-0.3 ± 2.2	±	QL00161
FO1	-4	-688	0	-0.2 ± 0.5	-1.6 ± 2.0	±	QL00162
FO2	0	-417	2	-0.2 ± 0.5	0.6 ± 2.4	±	QL00163
FO3	-19	-592	1	0.1 ± 0.7	-0.5 ± 2.2	±	QL00164
FO4	-4	-260	1	0.1 ± 0.7	0.4 ± 2.4	±	QL00165
FO5	-14	-260	1	-0.2 ± 0.5	-2.5 ± 1.8	±	QL00166
FO6	0	-62	1	0.1 ± 0.7	0.2 ± 2.3	±	QL00167
FO7	-14	-451	0	0.7 ± 1.1	-0.8 ± 2.2	±	QL00168
FO8	-14	-276	0	-0.2 ± 0.5	-0.1 ± 2.3	±	QL00169
FO9	-14	-318	1	0.1 ± 0.7	-0.7 ± 2.2	±	QL00170
FO10	-4	-146	1	0.4 ± 0.9	4.3 ± 3.0	±	QL00171
FO11	-14	-176	2	0.4 ± 0.9	-1.6 ± 2.0	±	QL00172
FO12	-9	-169	3	0.1 ± 0.7	0.4 ± 2.4	±	QL00173
FP1	-9	-325	4	0.7 ± 1.1	-0.5 ± 2.2	±	QL00174
FP2	-19	-443	3	0.1 ± 0.7	-1.2 ± 2.1	±	QL00175
FP3	-14	-466	1	0.4 ± 0.9	0.8 ± 2.4	±	QL00176
FP4	-19	60	0	0.4 ± 0.9	0.1 ± 2.3	±	QL00177
FP5	0	-47	0	0.1 ± 0.7	-2.0 ± 1.9	±	QL00178
FP6	-4	125	2	-0.2 ± 0.5	0.2 ± 2.3	±	QL00179
FP7	-19	-165	1	0.4 ± 0.9	-1.2 ± 2.1	±	QL00180
FP8	-9	-165	0	-0.2 ± 0.5	-0.7 ± 2.2	±	QL00181
FP9	-9	-1	1	0.9 ± 1.2	0.8 ± 2.4	±	QL00182
FP10	-4	-195	1	0.4 ± 0.9	-0.1 ± 2.3	±	QL00183
FP11	-14	-89	0	0.4 ± 0.9	-0.3 ± 2.2	±	QL00184
FP12	0	-85	2	-0.2 ± 0.5	0.4 ± 2.4	±	QL00185
FQ1	-4	-337	4	0.7 ± 1.1	1.2 ± 2.5	±	QL00186
FQ2	-14	-413	3	-0.2 ± 0.5	-1.6 ± 2.0	±	QL00187
FQ3	-14	-459	3	-0.2 ± 0.5	-0.5 ± 2.2	±	QL00188
FQ4	-4	-180	2	-0.2 ± 0.5	0.2 ± 2.3	±	QL00189
FQ5	19	-50	2	-0.2 ± 0.5	0.8 ± 2.4	±	QL00190
FQ6	0	-260	2	0.1 ± 0.7	-0.1 ± 2.3	±	QL00191
FQ7	10	-108	1	-0.2 ± 0.5	-0.9 ± 2.1	±	QL00192
FQ8	-9	-35	1	0.4 ± 0.9	1.0 ± 2.5	±	QL00193
FQ9	-4	-165	1	-0.2 ± 0.5	-0.1 ± 2.3	±	QL00194
FQ10	-9	-100	1	0.1 ± 0.7	-1.0 ± 2.1	±	QL00195
FQ11	-9	-77	1	0.1 ± 0.7	-1.0 ± 2.1	±	QL00196
FQ12	0	-104	2	-0.2 ± 0.5	-0.9 ± 2.1	±	QL00197
FR1	-19	-550	2	0.4 ± 0.9	-0.3 ± 2.2	±	QL00198
FR2	-14	-478	3	-0.2 ± 0.5	1.5 ± 2.5	±	QL00199
FR3	-14	-424	4	-0.2 ± 0.5	-1.6 ± 2.0	±	QL00200

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	-	
FR4	-4	-1	3	0.5 ± 0.8	0.2 ± 2.2	±	QL00201
FR5	-4	11	2	-0.1 ± 0.3	1.9 ± 2.5	±	QL00202
FR6	-14	87	2	0.5 ± 0.8	0.8 ± 2.3	±	QL00203
FR7	-9	-165	2	0.5 ± 0.8	0.0 ± 2.2	±	QL00204
FR8	-4	-92	2	0.2 ± 0.6	1.1 ± 2.4	±	QL00205
FR9	-19	-12	2	0.2 ± 0.6	0.6 ± 2.3	±	QL00206
FR10	-4	-150	1	0.6 ± 1.0	0.0 ± 2.2	±	QL00207
FR11	-4	-211	2	-0.1 ± 0.3	-0.4 ± 2.1	±	QL00208
FR12	-9	11	2	0.2 ± 0.6	1.7 ± 2.5	±	QL00209
FS1	-14	-489	4	0.5 ± 0.8	-0.5 ± 2.1	±	QL00210
FS2	-19	-367	3	-0.1 ± 0.3	1.1 ± 2.4	±	QL00211
FS3	-14	-409	3	0.8 ± 1.0	-0.7 ± 2.0	±	QL00212
FS4	-14	-115	3	0.2 ± 0.6	0.0 ± 2.2	±	QL00213
FS5	-9	-108	3	0.2 ± 0.6	2.1 ± 2.5	±	QL00214
FS6	-14	-28	4	0.2 ± 0.6	2.8 ± 2.6	±	QL00215
FS7	-9	-31	3	0.2 ± 0.6	-1.3 ± 1.9	±	QL00216
FS8	0	-211	3	0.8 ± 1.0	0.6 ± 2.3	±	QL00217
FS9	-14	-165	2	0.5 ± 0.8	0.4 ± 2.2	±	QL00218
FS10	-14	-127	2	0.2 ± 0.6	2.6 ± 2.6	±	QL00219
FS11	-4	-20	3	0.2 ± 0.6	-1.1 ± 1.9	±	QL00220
FS12	-4	175	2	0.2 ± 0.6	0.6 ± 2.3	±	QL00221
FT1	-9	-398	6	0.2 ± 0.6	1.3 ± 2.4	±	QL00222
FT2	0	-451	4	0.5 ± 0.8	-0.2 ± 2.1	±	QL00223
FT3	-9	-432	3	0.2 ± 0.6	1.1 ± 2.4	±	QL00224
FT4	-14	-28	2	0.2 ± 0.6	0.4 ± 2.2	±	QL00225
FT5	0	-119	3	0.2 ± 0.6	-0.9 ± 2.0	±	QL00226
FT6	-14	-92	2	0.2 ± 0.6	-0.9 ± 2.0	±	QL00227
FT7	-4	-146	2	-0.1 ± 0.3	-1.1 ± 1.9	±	QL00228
FT8	5	-115	2	0.2 ± 0.6	-0.2 ± 2.1	±	QL00229
FT9	-9	-96	2	1.0 ± 1.1	-0.1 ± 2.2	±	QL00230
FT10	-4	-138	3	0.5 ± 0.8	1.7 ± 2.5	±	QL00231
FT11	-9	22	4	0.2 ± 0.6	-0.7 ± 2.0	±	QL00232
FT12	0	7	4	0.2 ± 0.6	0.2 ± 2.2	±	QL00233
FU1	-9	-459	4	0.2 ± 0.6	0.0 ± 2.2	±	QL00234
FU2	-19	-436	3	0.2 ± 0.6	0.2 ± 2.2	±	QL00235
FU3	-9	-329	4	0.2 ± 0.6	-0.4 ± 2.1	±	QL00236
FU4	-4	-176	3	-0.1 ± 0.3	0.2 ± 2.2	±	QL00237
FU5	-9	-35	2	0.2 ± 0.6	-1.7 ± 1.8	±	QL00238
FU6	-4	-43	2	-0.1 ± 0.3	1.1 ± 2.4	±	QL00239
FU7	-9	-85	1	0.2 ± 0.6	-0.4 ± 2.1	±	QL00240
FU8	5	-226	1	0.5 ± 0.8	0.8 ± 2.3	±	QL00241
FU9	19	-115	1	-0.1 ± 0.3	0.9 ± 2.3	±	QL00242
FU10	10	22	4	0.5 ± 0.8	1.0 ± 2.4	±	QL00243
FU11	19	-24	2	-0.1 ± 0.3	0.0 ± 2.2	±	QL00244
FU12	-9	37	1	0.2 ± 0.6	0.2 ± 2.2	±	QL00245
FV1	-4	-329	5	0.5 ± 0.8	0.2 ± 2.2	±	QL00246
FV2	-9	-497	4	0.2 ± 0.6	0.0 ± 2.2	±	QL00247
FV3	-14	-489	3	-0.1 ± 0.3	0.2 ± 2.2	±	QL00248
FV4	-9	209	3	0.2 ± 0.6	-1.1 ± 1.9	±	QL00249
FV5	-14	-119	2	-0.1 ± 0.3	0.4 ± 2.2	±	QL00250

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm^2	dpm/100cm^2	uR/hr	dpm/100cm^2 +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
FV6	0	-340	2	-0.1 ± 0.3	-0.7 ± 2.0	±	QL00251
FV7	-14	-371	0	-0.1 ± 0.3	0.0 ± 2.2	±	QL00252
FV8	-4	-131	2	-0.1 ± 0.3	1.9 ± 2.5	±	QL00253
FV9	5	-180	1	-0.1 ± 0.3	0.4 ± 2.2	±	QL00254
FV10	-14	18	2	-0.1 ± 0.3	0.0 ± 2.2	±	QL00255
FV11	-4	-1	2	-0.1 ± 0.3	-0.7 ± 2.0	±	QL00256
FV12	9	98	3	0.2 ± 0.6	-1.5 ± 1.8	±	QL00257
QA	N/A	N/A	N/A	0.8 ± 1.0	0.2 ± 2.2	±	QL00258
FW1	-19	-241	4	-0.1 ± 0.3	-0.9 ± 2.0	±	QL00259
FW2	33	-340	3	0.8 ± 1.0	-0.3 ± 2.1	±	QL00260
FW3	-4	-485	3	0.5 ± 0.8	-0.5 ± 2.1	±	QL00261
FW4	5	-28	3	-0.1 ± 0.3	1.1 ± 2.4	±	QL00262
FW5	-4	-268	2	1.0 ± 1.1	1.4 ± 2.4	±	QL00263
FW6	-9	-291	1	0.2 ± 0.6	1.3 ± 2.4	±	QL00264
FW7	9	-241	1	-0.1 ± 0.3	-0.2 ± 2.1	±	QL00265
FW8	-9	-161	2	0.2 ± 0.6	0.4 ± 2.2	±	QL00266
FW9	-4	-77	2	0.5 ± 0.8	-0.7 ± 2.0	±	QL00267
FW10	0	-260	1	-0.1 ± 0.3	-0.7 ± 2.1	±	QL00268
FW11	5	-62	3	-0.1 ± 0.3	0.2 ± 2.2	±	QL00269
FW12	-14	-161	4	0.2 ± 0.6	0.6 ± 2.3	±	QL00270
FW12	-4	-356	3	-0.1 ± 0.3	0.9 ± 2.3	±	QL00271
FX2	-14	-459	5	-0.1 ± 0.3	-1.1 ± 1.9	±	QL00272
FX3	-4	-329	4	1.0 ± 1.1	-0.1 ± 2.2	±	QL00273
FX4	-19	-161	3	0.2 ± 0.6	0.4 ± 2.2	±	QL00274
FX5	-4	-272	2	0.5 ± 0.8	-0.5 ± 2.1	±	QL00275
FX6	-9	-314	2	0.2 ± 0.6	1.3 ± 2.4	±	QL00276
FX7	-9	-279	1	0.8 ± 1.0	-0.3 ± 2.1	±	QL00277
FX8	-9	-176	2	0.5 ± 0.8	0.4 ± 2.2	±	QL00278
FX9	-9	-39	1	-0.1 ± 0.3	0.7 ± 2.3	±	QL00279
FX10	-4	83	2	-0.1 ± 0.3	1.1 ± 2.4	±	QL00280
FX11	15	159	2	0.2 ± 0.6	-0.4 ± 2.1	±	QL00281
FX12	-4	-35	3	1.0 ± 1.1	-0.9 ± 2.0	±	QL00282
FY1	-14	-394	3	0.2 ± 0.6	0.9 ± 2.3	±	QL00283
FY2	-19	-485	4	0.5 ± 0.8	0.4 ± 2.2	±	QL00284
FY3	-14	-459	2	-0.1 ± 0.3	0.4 ± 2.2	±	QL00285
FY4	-14	-581	2	0.8 ± 1.0	1.2 ± 2.4	±	QL00286
FY5	-4	-127	2	-0.1 ± 0.3	1.1 ± 2.4	±	QL00287
FY6	-9	-195	1	0.2 ± 0.6	0.9 ± 2.3	±	QL00288
FY7	-14	-218	1	-0.1 ± 0.3	0.2 ± 2.2	±	QL00289
FY8	-14	-329	1	0.2 ± 0.6	0.4 ± 2.2	±	QL00290
FY9	-9	-134	2	0.5 ± 0.8	1.7 ± 2.5	±	QL00291
FY10	-9	60	1	-0.1 ± 0.3	0.4 ± 2.2	±	QL00292
FY11	5	-12	1	0.2 ± 0.6	0.4 ± 2.2	±	QL00293
FY12	19	91	2	-0.1 ± 0.3	-0.2 ± 2.1	±	QL00294
FZ1	-9	-440	3	0.2 ± 0.6	0.9 ± 2.3	±	QL00295
FZ2	-14	-630	2	0.5 ± 0.8	-0.9 ± 2.0	±	QL00296
FZ3	0	-356	3	0.5 ± 0.8	0.8 ± 2.3	±	QL00297
FZ4	-14	-9	2	-0.1 ± 0.3	0.2 ± 2.2	±	QL00298
FZ5	-4	-180	2	0.2 ± 0.6	-0.7 ± 2.0	±	QL00299
FZ6	-4	-70	1	0.5 ± 0.8	-0.9 ± 2.0	±	QL00300

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
FZ7	-4	167	3	0.0 ± 0.8	0.7 ± 2.3	±	QL00301
FZ8	0	11	2	-0.3 ± 0.5	0.9 ± 2.3	±	QL00302
FZ9	-14	114	2	0.3 ± 0.9	1.5 ± 2.4	±	QL00303
FZ10	0	-70	2	0.0 ± 0.8	0.9 ± 2.3	±	QL00304
FZ11	-4	22	2	-0.3 ± 0.5	0.2 ± 2.2	±	QL00305
FZ12	-4	37	3	0.8 ± 1.2	-0.3 ± 2.1	±	QL00306
QA	N/A	N/A	N/A	0.3 ± 0.9	0.0 ± 2.2	±	QL00307
FAA1	-9	-520	2	0.6 ± 1.1	0.8 ± 2.3	±	QL00308
FAA2	0	-501	2	0.0 ± 0.8	0.4 ± 2.2	±	QL00309
FAA3	-4	-89	2	0.0 ± 0.8	-0.4 ± 2.1	±	QL00310
FAA4	-9	33	4	0.3 ± 0.9	0.9 ± 2.3	±	QL00311
FAA5	-4	18	3	0.0 ± 0.8	-0.4 ± 2.1	±	QL00312
FAA6	-14	117	2	-0.3 ± 0.5	0.0 ± 2.2	±	QL00313
FAA7	24	-31	2	1.1 ± 1.3	-0.1 ± 2.2	±	QL00314
FAA8	-4	-100	2	0.3 ± 0.9	-0.7 ± 2.0	±	QL00315
FAA9	0	-253	2	-0.3 ± 0.5	-0.4 ± 2.1	±	QL00316
FAA10	-14	-184	1	0.3 ± 0.9	0.9 ± 2.3	±	QL00317
FAA11	15	-62	2	-0.3 ± 0.5	0.4 ± 2.2	±	QL00318
FAA12	15	-24	2	0.0 ± 0.8	1.1 ± 2.4	±	QL00319
FBB1	5	-47	4	0.0 ± 0.8	1.5 ± 2.4	±	QL00320
FBB2	10	-127	4	0.8 ± 1.2	1.5 ± 2.4	±	QL00321
FBB3	-4	-100	2	-0.3 ± 0.5	-1.3 ± 1.9	±	QL00322
FBB4	-14	-115	4	1.7 ± 1.5	0.3 ± 2.3	±	QL00323
FBB5	0	-89	1	-0.3 ± 0.5	1.5 ± 2.4	±	QL00324
FBB6	-4	-180	2	-0.3 ± 0.5	-1.5 ± 1.8	±	QL00325
FBB7	-19	-279	2	-0.3 ± 0.5	-0.7 ± 2.0	±	QL00326
FBB8	-19	37	2	0.6 ± 1.1	-0.5 ± 2.1	±	QL00327
FBB9	-4	-70	2	0.6 ± 1.1	-0.9 ± 2.0	±	QL00328
FBB10	-9	-65	2	0.6 ± 1.1	-0.3 ± 2.1	±	QL00329
FBB11	-4	-47	2	-0.3 ± 0.5	1.3 ± 2.4	±	QL00330
FBB12	-9	68	1	0.3 ± 0.9	-0.7 ± 2.0	±	QL00331
FCC1	-9	-218	6	0.0 ± 0.8	-0.2 ± 2.1	±	QL00332
FCC2	5	-142	4	0.0 ± 0.8	-0.9 ± 2.0	±	QL00333
FCC3	-19	-215	4	0.0 ± 0.8	1.1 ± 2.4	±	QL00334
FCC4	-9	-24	3	-0.3 ± 0.5	0.7 ± 2.3	±	QL00335
FCC5	-14	33	3	-0.3 ± 0.5	1.3 ± 2.4	±	QL00336
FCC6	-9	-134	2	0.3 ± 0.9	0.2 ± 2.2	±	QL00337
FCC7	-4	-70	2	0.8 ± 1.2	0.4 ± 2.3	±	QL00338
FCC8	-14	-24	2	0.0 ± 0.8	0.4 ± 2.2	±	QL00339
FCC9	-9	-127	2	0.0 ± 0.8	0.0 ± 2.2	±	QL00340
FCC10	5	-108	2	-0.3 ± 0.5	3.0 ± 2.7	±	QL00341
FCC11	-4	-20	3	-0.3 ± 0.5	-0.9 ± 2.0	±	QL00342
FCC12	-9	114	2	0.0 ± 0.8	-0.2 ± 2.1	±	QL00343
FDD1	-14	-192	4	-0.3 ± 0.5	-0.4 ± 2.1	±	QL00344
FDD2	-4	-169	5	0.3 ± 0.9	0.9 ± 2.3	±	QL00345
FDD3	-19	-9	3	-0.3 ± 0.5	2.2 ± 2.5	±	QL00346
FDD4	-4	140	3	0.3 ± 0.9	0.9 ± 2.3	±	QL00347
FDD5	0	-184	2	0.3 ± 0.9	0.2 ± 2.2	±	QL00348
FDD6	-14	171	3	0.6 ± 1.1	0.2 ± 2.2	±	QL00349
FDD7	0	167	2	0.0 ± 0.8	0.7 ± 2.3	±	QL00350

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
FDD8	-4	-184	3	-0.3 ± 0.5	-0.4 ± 2.1	±	QL00351
FDD9	-9	-230	2	-0.3 ± 0.5	0.9 ± 2.3	±	QL00352
FDD10	-9	-169	2	0.0 ± 0.8	0.4 ± 2.2	±	QL00353
FDD11	0	-260	2	0.0 ± 0.8	1.1 ± 2.4	±	QL00354
FDD12	-14	26	2	0.0 ± 0.8	0.9 ± 2.3	±	QL00355
FEE1	5	-31	8	0.0 ± 0.8	-0.7 ± 2.0	±	QL00356
FEE2	-14	-104	5	0.0 ± 0.8	1.1 ± 2.4	±	QL00357
FEE3	-4	-249	4	0.6 ± 1.1	1.3 ± 2.4	±	QL00358
FEE4	0	-50	3	0.0 ± 0.8	0.4 ± 2.2	±	QL00359
FEE5	-9	-89	2	1.1 ± 1.3	0.1 ± 2.2	±	QL00360
FEE6	-9	-5	3	0.6 ± 1.1	0.0 ± 2.2	±	QL00361
FEE7	-14	-287	2	0.3 ± 0.9	-0.2 ± 2.1	±	QL00362
FEE8	-9	-283	1	0.0 ± 0.8	1.3 ± 2.4	±	QL00363
FEE9	-9	-54	2	0.3 ± 0.9	0.2 ± 2.2	±	QL00364
FEE10	-14	-195	3	-0.3 ± 0.5	0.7 ± 2.3	±	QL00365
FEE11	-5	-20	1	0.6 ± 1.1	1.0 ± 2.4	±	QL00366
FEE12	-9	-108	1	0.3 ± 0.9	0.9 ± 2.3	±	QL00367
FFF1	-14	-199	7	-0.3 ± 0.5	0.2 ± 2.2	±	QL00368
FFF2	-9	-54	6	0.0 ± 0.8	0.7 ± 2.3	±	QL00369
FFF3	0	-207	5	0.0 ± 0.8	0.9 ± 2.3	±	QL00370
FFF4	-9	-70	4	-0.3 ± 0.5	-0.4 ± 2.1	±	QL00371
FFF5	-14	-58	3	0.6 ± 1.1	1.3 ± 2.4	±	QL00372
FFF6	-14	-165	2	0.3 ± 0.9	0.9 ± 2.3	±	QL00373
FFF7	-9	-58	1	-0.3 ± 0.5	0.2 ± 2.2	±	QL00374
FFF8	-9	-257	1	0.0 ± 0.8	-0.9 ± 2.0	±	QL00375
FFF9	-14	-119	1	0.3 ± 0.9	0.9 ± 2.3	±	QL00376
FFF10	-19	-115	2	0.0 ± 0.8	1.1 ± 2.4	±	QL00377
FFF11	-4	3	2	0.0 ± 0.8	0.0 ± 2.2	±	QL00378
FFF12	-4	106	2	-0.3 ± 0.5	0.9 ± 2.3	±	QL00379
FFF12	-9	3	7	0.3 ± 0.9	-0.2 ± 2.1	±	QL00380
FGG2	-14	33	4	-0.3 ± 0.5	1.5 ± 2.4	±	QL00381
FGG3	-14	-207	3	-0.3 ± 0.5	0.4 ± 2.2	±	QL00382
FGG4	-4	3	4	-0.3 ± 0.5	0.0 ± 2.2	±	QL00383
FGG5	-9	-85	4	-0.3 ± 0.5	1.9 ± 2.5	±	QL00384
FGG6	-14	-92	2	0.6 ± 1.1	1.0 ± 2.4	±	QL00385
FGG7	33	-226	1	-0.3 ± 0.5	0.9 ± 2.3	±	QL00386
FGG8	15	-203	1	0.6 ± 1.1	0.0 ± 2.2	±	QL00387
FGG9	0	-104	1	0.3 ± 0.9	1.9 ± 2.5	±	QL00388
FGG10	-9	-66	2	0.3 ± 0.9	-0.7 ± 2.0	±	QL00389
FGG11	-9	26	2	0.3 ± 0.9	0.0 ± 2.2	±	QL00390
FGG12	5	-1	6	0.0 ± 0.8	0.0 ± 2.2	±	QL00391
FHH1	-14	-104	4	-0.3 ± 0.5	2.4 ± 2.6	±	QL00392
FHH2	-9	-390	4	0.6 ± 1.1	-0.7 ± 2.0	±	QL00393
FHH3	0	-173	5	0.6 ± 1.1	1.3 ± 2.4	±	QL00394
FHH4	-14	-92	5	0.0 ± 0.8	1.9 ± 2.5	±	QL00395
FHH5	-9	-153	4	0.0 ± 0.8	0.2 ± 2.2	±	QL00396
FHH6	-14	-35	3	0.3 ± 0.9	-0.5 ± 2.1	±	QL00397
FHH7	-9	-89	2	0.6 ± 1.1	0.0 ± 2.2	±	QL00398
FHH8	-4	-184	2	-0.3 ± 0.5	-0.7 ± 2.0	±	QL00399
FHH9	5	-161	2	0.6 ± 1.1	2.3 ± 2.6	±	QL00400

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
FHH10	-14	-184	2	-0.1 ± 0.7	0.9 ± 1.8	±	QL00401
FHH11	5	3	3	0.7 ± 1.1	-0.3 ± 1.5	±	QL00402
FHH12	-9	-199	4	-0.1 ± 0.7	-0.3 ± 1.5	±	QL00403
QA	N/A	N/A	N/A	-0.3 ± 0.5	-0.3 ± 1.5	±	QL00404
FII1	-4	-283	2	0.2 ± 0.9	0.3 ± 1.6	±	QL00405
FII2	-14	-295	4	0.2 ± 0.9	-0.3 ± 1.5	±	QL00406
FII3	5	-321	4	-0.1 ± 0.7	0.7 ± 1.7	±	QL00407
FII4	-9	-199	3	-0.3 ± 0.5	0.3 ± 1.6	±	QL00408
FII5	-19	-35	3	-0.1 ± 0.7	0.5 ± 1.7	±	QL00409
FII6	-14	79	2	-0.1 ± 0.7	0.1 ± 1.6	±	QL00410
FII7	-9	-215	2	-0.3 ± 0.5	0.5 ± 1.7	±	QL00411
FII8	-19	-134	2	0.2 ± 0.9	1.1 ± 1.8	±	QL00412
FII9	-4	-58	3	-0.3 ± 0.5	0.7 ± 1.7	±	QL00413
FII10	-9	-43	3	-0.3 ± 0.5	-0.1 ± 1.5	±	QL00414
FII11	0	68	4	1.1 ± 1.3	-0.4 ± 1.5	±	QL00415
FII12	-14	-115	3	-0.1 ± 0.7	0.1 ± 1.6	±	QL00416
FJJ1	-4	-325	4	-0.1 ± 0.7	0.9 ± 1.8	±	QL00417
FJJ2	-19	-371	4	-0.3 ± 0.5	-0.3 ± 1.5	±	QL00418
FJJ3	-9	-272	3	-0.1 ± 0.7	-0.7 ± 1.4	±	QL00419
FJJ4	-14	-203	2	-0.1 ± 0.7	1.1 ± 1.8	±	QL00420
FJJ5	0	125	3	0.2 ± 0.9	0.9 ± 1.8	±	QL00421
FJJ6	-4	22	3	-0.3 ± 0.5	-0.7 ± 1.4	±	QL00422
FJJ7	-4	33	1	-0.3 ± 0.5	0.3 ± 1.6	±	QL00423
FJJ8	-14	152	2	0.4 ± 1.0	1.1 ± 1.8	±	QL00424
FJJ9	-9	-9	2	-0.3 ± 0.5	-0.5 ± 1.5	±	QL00425
FJJ10	-14	-272	2	0.2 ± 0.9	-0.3 ± 1.5	±	QL00426
FJJ11	-4	-1	3	0.2 ± 0.9	1.3 ± 1.9	±	QL00427
FJJ12	-4	-50	3	0.4 ± 1.0	0.3 ± 1.7	±	QL00428
FKK1	-14	-329	2	0.9 ± 1.2	0.0 ± 1.6	±	QL00429
FKK2	0	-413	4	-0.1 ± 0.7	0.7 ± 1.7	±	QL00430
FKK3	-9	-268	2	-0.3 ± 0.5	0.1 ± 1.6	±	QL00431
FKK4	-9	-89	2	-0.3 ± 0.5	-0.5 ± 1.5	±	QL00432
FKK5	-4	72	2	-0.1 ± 0.7	-0.1 ± 1.5	±	QL00433
FKK6	-9	49	2	-0.3 ± 0.5	0.1 ± 1.6	±	QL00434
FKK7	-4	136	2	-0.1 ± 0.7	1.1 ± 1.8	±	QL00435
FKK8	-19	68	2	-0.3 ± 0.5	0.7 ± 1.7	±	QL00436
FKK9	-14	-230	1	0.2 ± 0.9	1.9 ± 2.0	±	QL00437
FKK10	0	-298	2	-0.1 ± 0.7	-0.1 ± 1.5	±	QL00438
FKK11	-4	-138	2	-0.3 ± 0.5	-0.7 ± 1.4	±	QL00439
FKK12	0	-211	2	-0.1 ± 0.7	-0.5 ± 1.5	±	QL00440
FLL1	-9	-302	3	-0.3 ± 0.5	-0.1 ± 1.5	±	QL00441
FLL2	-19	-401	3	-0.1 ± 0.7	0.1 ± 1.6	±	QL00442
FLL3	-9	-447	3	-0.3 ± 0.5	-0.1 ± 1.5	±	QL00443
FLL4	-4	-195	2	-0.3 ± 0.5	0.1 ± 1.6	±	QL00444
FLL5	-4	-138	2	-0.3 ± 0.5	-0.1 ± 1.5	±	QL00445
FLL6	-14	14	2	-0.3 ± 0.5	-0.7 ± 1.4	±	QL00446
FLL7	-14	-108	2	-0.3 ± 0.5	0.5 ± 1.7	±	QL00447
FLL8	-9	37	2	-0.1 ± 0.7	0.9 ± 1.8	±	QL00448
FLL9	-9	-50	1	-0.1 ± 0.7	-0.3 ± 1.5	±	QL00449
FLL10	-4	-394	2	-0.1 ± 0.7	0.3 ± 1.6	±	QL00450

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A												
Location Code	Monitoring			Wipe Test						Wipe Number		
	Alpha	Beta	Gamma	Alpha		Beta		LS				
(Units =>)	dpm/100cm^2	dpm/100cm^2	uR/hr	dpm/100cm^2 +/- 2 sigma								
(Bkgd =>)	5	1072	9	0.0	to	0.414	0.7	to	1.5	0	to	0.0
(MDA =>)	56	423	-	2 *		4 *		*				
FLL11	0	-73	1	-0.1 ± 0.7		-0.3 ± 1.5		±		QL00451		
FLL12	10	-115	2	-0.1 ± 0.7		-0.1 ± 1.5		±		QL00452		
FMM1	-19	-516	3	0.4 ± 1.0		0.3 ± 1.7		±		QL00453		
FMM2	15	-478	3	0.2 ± 0.9		-0.5 ± 1.5		±		QL00454		
FMM3	0	-543	3	-0.1 ± 0.7		0.3 ± 1.6		±		QL00455		
FMM4	0	-123	3	-0.3 ± 0.5		-0.1 ± 1.5		±		QL00456		
FMM5	-19	-153	2	-0.3 ± 0.5		-0.1 ± 1.5		±		QL00457		
FMM6	-14	49	2	-0.3 ± 0.5		-0.7 ± 1.4		±		QL00458		
FMM7	-14	-234	1	0.2 ± 0.9		-0.5 ± 1.5		±		QL00459		
FMM8	0	-287	2	-0.3 ± 0.5		-0.1 ± 1.5		±		QL00460		
FMM9	-4	-77	1	-0.3 ± 0.5		1.1 ± 1.8		±		QL00461		
FMM10	-19	-276	1	0.2 ± 0.9		-0.3 ± 1.5		±		QL00462		
FMM11	-4	-394	1	-0.1 ± 0.7		0.1 ± 1.6		±		QL00463		
FMM12	-19	-382	1	0.4 ± 1.0		0.1 ± 1.6		±		QL00464		
FNN1	-9	-478	1	-0.1 ± 0.7		1.1 ± 1.8		±		QL00465		
FNN2	15	-558	1	0.4 ± 1.0		1.9 ± 2.0		±		QL00466		
FNN3	-9	-360	1	-0.3 ± 0.5		0.9 ± 1.8		±		QL00467		
FNN4	10	-104	2	-0.1 ± 0.7		0.5 ± 1.7		±		QL00468		
FNN5	0	-207	1	-0.1 ± 0.7		-0.1 ± 1.5		±		QL00469		
FNN6	-9	-211	2	0.2 ± 0.9		0.9 ± 1.8		±		QL00470		
FNN7	-14	-337	1	-0.1 ± 0.7		1.7 ± 1.9		±		QL00471		
FNN8	-9	-192	1	-0.3 ± 0.5		0.7 ± 1.7		±		QL00472		
FNN9	5	-504	1	-0.1 ± 0.7		-0.1 ± 1.5		±		QL00473		
FNN10	-9	-287	2	0.4 ± 1.0		0.7 ± 1.7		±		QL00474		
FNN11	10	-58	2	-0.3 ± 0.5		-0.3 ± 1.5		±		QL00475		
FNN12	-9	-112	2	-0.3 ± 0.5		0.3 ± 1.6		±		QL00476		
FOO1	-19	-421	1	0.4 ± 1.0		0.9 ± 1.8		±		QL00477		
FOO2	5	-260	1	0.4 ± 1.0		-0.1 ± 1.6		±		QL00478		
FOO3	-9	-295	1	-0.3 ± 0.5		1.3 ± 1.9		±		QL00479		
FOO4	-14	-165	1	-0.1 ± 0.7		0.1 ± 1.6		±		QL00480		
FOO5	-9	-161	3	-0.1 ± 0.7		0.1 ± 1.6		±		QL00481		
FOO6	-4	-436	2	0.2 ± 0.9		0.9 ± 1.8		±		QL00482		
FOO7	-9	-600	2	0.4 ± 1.0		-0.3 ± 1.5		±		QL00483		
FOO8	5	-424	2	0.2 ± 0.9		0.1 ± 1.6		±		QL00484		
FOO9	-14	-478	1	-0.1 ± 0.7		-0.3 ± 1.5		±		QL00485		
FOO10	-9	-310	1	-0.3 ± 0.5		0.5 ± 1.7		±		QL00486		
FOO11	-9	-432	1	-0.1 ± 0.7		-0.5 ± 1.5		±		QL00487		
FOO12	-9	-207	4	0.2 ± 0.9		0.7 ± 1.7		±		QL00488		
FPP1	-4	-264	2	-0.3 ± 0.5		0.9 ± 1.8		±		QL00489		
FPP2	19	-153	1	-0.1 ± 0.7		0.3 ± 1.6		±		QL00490		
FPP3	0	-428	1	-0.3 ± 0.5		-0.8 ± 1.3		±		QL00491		
FPP4	-9	-237	1	0.7 ± 1.1		-0.1 ± 1.6		±		QL00492		
FPP5	-9	-333	1	-0.3 ± 0.5		0.7 ± 1.7		±		QL00493		
FPP6	0	-329	0	-0.3 ± 0.5		-0.7 ± 1.4		±		QL00494		
FPP7	-14	-600	1	0.2 ± 0.9		0.1 ± 1.6		±		QL00495		
FPP8	-19	-352	1	-0.1 ± 0.7		-0.3 ± 1.5		±		QL00496		
FPP9	-9	-554	2	-0.1 ± 0.7		0.1 ± 1.6		±		QL00497		
FPP10	-4	-150	3	-0.3 ± 0.5		0.3 ± 1.6		±		QL00498		
FPP11	-9	-199	3	-0.1 ± 0.7		-0.7 ± 1.4		±		QL00499		
FPP12	-9	-104	3	-0.1 ± 0.7		-0.5 ± 1.5		±		QL00500		

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A								
Location Code	Monitoring			Wipe Test				Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS		
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma				
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0		
(MDA =>)	56	423	-	2 *	4 *	*		
FQQ1	0	-478	1	0.2 ± 0.9	1.1 ± 1.8	±		QL00501
FQQ2	-14	-314	0	-0.3 ± 0.5	1.1 ± 1.8	±		QL00502
FQQ3	-4	-276	1	0.4 ± 1.0	0.3 ± 1.7	±		QL00503
FQQ4	15	-298	1	-0.3 ± 0.5	1.1 ± 1.8	±		QL00504
FQQ5	0	-268	2	0.2 ± 0.9	1.1 ± 1.8	±		QL00505
FQQ6	10	-153	1	0.2 ± 0.9	0.4 ± 1.7	±		QL00506
FQQ7	-19	-386	2	-0.3 ± 0.5	-0.2 ± 1.5	±		QL00507
FQQ8	-14	-241	1	0.9 ± 1.2	-0.7 ± 1.5	±		QL00508
FQQ9	-19	-661	1	-0.3 ± 0.5	-1.1 ± 1.3	±		QL00509
FQQ10	-19	-577	3	-0.3 ± 0.5	0.4 ± 1.7	±		QL00510
FQQ11	-14	-401	4	-0.3 ± 0.5	0.6 ± 1.7	±		QL00511
FQQ12	19	-165	3	-0.3 ± 0.5	0.4 ± 1.7	±		QL00512
QA	N/A	N/A	N/A	-0.1 ± 0.7	-0.2 ± 1.5	±		QL00513
FRR1	-9	-463	1	0.4 ± 1.0	-1.0 ± 1.4	±		QL00514
FRR2	-14	-413	1	-0.3 ± 0.5	0.4 ± 1.7	±		QL00515
FRR3	-9	-459	2	0.2 ± 0.9	-0.4 ± 1.5	±		QL00516
FRR4	-9	-466	1	0.2 ± 0.9	0.4 ± 1.7	±		QL00517
FRR5	-9	-203	1	0.9 ± 1.2	-0.3 ± 1.6	±		QL00518
FRR6	-14	-241	1	-0.3 ± 0.5	0.6 ± 1.7	±		QL00519
FRR7	-14	-268	1	-0.3 ± 0.5	0.0 ± 1.6	±		QL00520
FRR8	5	-543	1	-0.3 ± 0.5	0.2 ± 1.6	±		QL00521
FRR9	-4	-493	1	-0.3 ± 0.5	1.0 ± 1.8	±		QL00522
FRR10	-14	-348	1	-0.3 ± 0.5	-1.0 ± 1.4	±		QL00523
FRR11	0	-310	2	-0.3 ± 0.5	-0.2 ± 1.5	±		QL00524
FRR12	-9	-28	3	-0.1 ± 0.7	-0.2 ± 1.5	±		QL00525
FSS1	-4	-379	1	0.4 ± 1.0	0.0 ± 1.6	±		QL00526
FSS2	-14	-424	2	0.4 ± 1.0	0.7 ± 1.8	±		QL00527
FSS3	-19	-470	0	-0.1 ± 0.7	-0.4 ± 1.5	±		QL00528
FSS4	-14	-188	0	0.4 ± 1.0	0.2 ± 1.6	±		QL00529
FSS5	-19	-188	0	-0.1 ± 0.7	-0.4 ± 1.5	±		QL00530
FSS6	-19	-184	1	-0.3 ± 0.5	-0.4 ± 1.5	±		QL00531
FSS7	-4	-215	0	-0.1 ± 0.7	-0.4 ± 1.5	±		QL00532
FSS8	0	-276	1	-0.3 ± 0.5	0.0 ± 1.6	±		QL00533
FSS9	0	-363	2	0.2 ± 0.9	0.2 ± 1.6	±		QL00534
FSS10	10	-321	1	-0.1 ± 0.7	0.6 ± 1.7	±		QL00535
FSS11	0	-337	1	-0.3 ± 0.5	-0.8 ± 1.4	±		QL00536
FSS12	10	-157	3	-0.3 ± 0.5	-0.2 ± 1.5	±		QL00537
FTT1	0	-607	0	0.2 ± 0.9	-0.2 ± 1.5	±		QL00538
FTT2	-14	-356	0	-0.1 ± 0.7	0.2 ± 1.6	±		QL00539
FTT3	-14	-390	1	-0.1 ± 0.7	-0.2 ± 1.5	±		QL00540
FTT4	5	-230	1	-0.1 ± 0.7	0.0 ± 1.6	±		QL00541
FTT5	5	14	1	-0.1 ± 0.7	0.2 ± 1.6	±		QL00542
FTT6	-9	-215	0	-0.1 ± 0.7	0.2 ± 1.6	±		QL00543
FTT7	-9	-298	0	-0.1 ± 0.7	-0.6 ± 1.4	±		QL00544
FTT8	-9	-230	1	-0.3 ± 0.5	0.2 ± 1.6	±		QL00545
FTT9	0	-165	1	0.2 ± 0.9	0.9 ± 1.8	±		QL00546
FTT10	0	-218	1	-0.3 ± 0.5	0.0 ± 1.6	±		QL00547
FTT11	0	-188	1	-0.3 ± 0.5	0.0 ± 1.6	±		QL00548
FTT12	-14	-222	0	-0.3 ± 0.5	-0.4 ± 1.5	±		QL00549
FUU1	-19	-554	0	-0.1 ± 0.7	-0.2 ± 1.5	±		QL00550

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A											
Location Code	Monitoring			Wipe Test						Wipe Number	
	Alpha	Beta	Gamma	Alpha		Beta		LS			
	(Units =>)	dpm/100cm^2	dpm/100cm^2	uR/hr	dpm/100cm^2 +/- 2 sigma						
	(Bkgd =>)	5	1072	9	0.0	to 0.414	0.7	to 1.5	0		to 0.0
(MDA =>)	56	423	-	2 *		4 *		"			
FUU2	-14	-470	1	0.2 ± 0.9		0.2 ± 1.6		±		QL00551	
FUU3	-9	-314	1	0.2 ± 0.9		0.4 ± 1.7		±		QL00552	
FUU4	0	-283	0	-0.1 ± 0.7		0.2 ± 1.6		±		QL00553	
FUU5	-14	-157	1	0.2 ± 0.9		0.2 ± 1.6		±		QL00554	
FUU6	-14	-218	1	0.7 ± 1.1		-0.3 ± 1.6		±		QL00555	
FUU7	10	-195	0	0.2 ± 0.9		-0.8 ± 1.4		±		QL00556	
FUU8	-14	-237	0	0.2 ± 0.9		0.2 ± 1.6		±		QL00557	
FUU9	-9	-356	0	0.2 ± 0.9		0.4 ± 1.7		±		QL00558	
FUU10	-14	-382	0	-0.1 ± 0.7		0.2 ± 1.6		±		QL00559	
FUU11	-14	-636	2	-0.1 ± 0.7		-0.2 ± 1.5		±		QL00560	
FUU12	-14	-257	0	-0.3 ± 0.5		-0.2 ± 1.5		±		QL00561	
FVV1	-9	-325	0	-0.3 ± 0.5		-0.6 ± 1.5		±		QL00562	
FVV2	-9	-489	0	0.2 ± 0.9		0.4 ± 1.7		±		QL00563	
FVV3	0	-413	-1	0.9 ± 1.2		-0.3 ± 1.6		±		QL00564	
FVV4	-4	-47	0	-0.3 ± 0.5		0.2 ± 1.6		±		QL00565	
FVV5	-14	-318	0	-0.1 ± 0.7		0.8 ± 1.8		±		QL00566	
FVV6	-14	53	-1	0.4 ± 1.0		-0.2 ± 1.6		±		QL00567	
FVV7	-4	-215	0	0.2 ± 0.9		0.9 ± 1.8		±		QL00568	
FVV8	-4	-230	0	0.7 ± 1.1		1.5 ± 1.9		±		QL00569	
FVV9	-4	-386	0	-0.3 ± 0.5		-0.2 ± 1.5		±		QL00570	
FVV10	-9	-424	0	0.2 ± 0.9		0.6 ± 1.7		±		QL00571	
FVV11	-4	-237	1	-0.3 ± 0.5		0.8 ± 1.8		±		QL00572	
FVV12	-14	-234	3	0.2 ± 0.9		0.6 ± 1.7		±		QL00573	
WA1A	-2	-36	-2	-0.1 ± 0.7		-0.8 ± 1.4		±		QL00574	
WA2A	-2	-90	-1	-0.1 ± 0.7		0.4 ± 1.7		±		QL00575	
WA3A	-2	-944	-1	-0.1 ± 0.7		0.0 ± 1.6		±		QL00576	
WA4A	7	-1086	-1	-0.3 ± 0.5		0.2 ± 1.6		±		QL00577	
WA5A	-7	-1097	-1	-0.1 ± 0.7		-1.0 ± 1.4		±		QL00578	
WA6A	7	-994	0	-0.3 ± 0.5		-0.6 ± 1.5		±		QL00579	
WA7A	2	-918	1	0.2 ± 0.9		-0.4 ± 1.5		±		QL00580	
WA8A	-2	-181	1	-0.3 ± 0.5		-0.4 ± 1.5		±		QL00581	
WA9A	-7	-281	2	0.2 ± 0.9		-1.0 ± 1.4		±		QL00582	
WA10A	-2	135	2	-0.3 ± 0.5		0.2 ± 1.6		±		QL00583	
WA11A	2	-361	4	-0.3 ± 0.5		-0.8 ± 1.4		±		QL00584	
WA12A	-2	-277	3	0.2 ± 0.9		0.6 ± 1.7		±		QL00585	
WA1B	2	-1143	0	-0.3 ± 0.5		-0.4 ± 1.5		±		QL00586	
WA2B	-7	-181	0	-0.3 ± 0.5		-0.6 ± 1.5		±		QL00587	
WA3B	-7	-1017	-2	-0.3 ± 0.5		-0.4 ± 1.5		±		QL00588	
WA4B	-2	-1028	-1	0.4 ± 1.0		-0.4 ± 1.5		±		QL00589	
WA5B	-2	-1017	-1	0.2 ± 0.9		-0.2 ± 1.5		±		QL00590	
WA6B	7	-1055	0	0.7 ± 1.1		0.1 ± 1.6		±		QL00591	
WA7B	-7	-983	0	0.7 ± 1.1		-0.7 ± 1.5		±		QL00592	
WA8B	7	-1009	0	-0.1 ± 0.7		0.2 ± 1.6		±		QL00593	
WA9B	2	-963	1	0.2 ± 0.9		0.2 ± 1.6		±		QL00594	
WA10B	-7	-986	2	0.2 ± 0.9		0.2 ± 1.6		±		QL00595	
WA11B	-2	200	3	-0.3 ± 0.5		1.0 ± 1.8		±		QL00596	
WA12B	2	135	3	-0.1 ± 0.7		-0.4 ± 1.5		±		QL00597	
WA1C	2	-998	-1	-0.1 ± 0.7		0.8 ± 1.8		±		QL00598	
WA2C	2	-803	-1	-0.1 ± 0.7		-0.4 ± 1.5		±		QL00599	
WA3C	-7	-1097	-2	-0.1 ± 0.7		0.4 ± 1.7		±		QL00600	

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MCA =>)	56	423	-	2 *	4 *	*	
WA4C	2	-1173	-1	0.4 ± 1.0	1.5 ± 1.8	±	QL00601
WA5C	-7	-1093	-1	0.2 ± 0.9	1.7 ± 1.8	±	QL00602
WA6C	-2	-1028	0	0.2 ± 0.9	-0.2 ± 1.4	±	QL00603
WA7C	-2	-868	1	-0.1 ± 0.7	-0.4 ± 1.3	±	QL00604
WA8C	2	-914	0	-0.1 ± 0.7	-0.8 ± 1.2	±	QL00605
WA9C	-2	-1169	2	0.2 ± 0.9	1.1 ± 1.7	±	QL00606
WA10C	21	-979	1	-0.1 ± 0.7	1.2 ± 1.7	±	QL00607
WA11C	-2	112	3	0.4 ± 1.0	0.2 ± 1.5	±	QL00608
WA12C	2	250	3	-0.1 ± 0.7	0.0 ± 1.4	±	QL00609
QA	N/A	N/A	N/A	-0.3 ± 0.5	0.4 ± 1.5	±	QL00610
WB1A	-2	-418	4	0.9 ± 1.2	0.1 ± 1.5	±	QL00611
WB2A	-2	-250	3	-0.1 ± 0.7	-0.4 ± 1.3	±	QL00612
WB3A	12	288	3	0.4 ± 1.0	0.3 ± 1.5	±	QL00613
WB4A	7	-139	2	0.2 ± 0.9	0.4 ± 1.5	±	QL00614
WB5A	17	-265	2	0.2 ± 0.9	0.4 ± 1.5	±	QL00615
WB6A	-2	-246	2	-0.3 ± 0.5	0.0 ± 1.4	±	QL00616
WB7A	-2	-422	1	0.7 ± 1.1	0.9 ± 1.7	±	QL00617
WB8A	2	-1036	-1	-0.1 ± 0.7	0.6 ± 1.6	±	QL00618
WB9A	-7	-971	0	-0.1 ± 0.7	0.4 ± 1.5	±	QL00619
WB10A	7	-983	1	-0.1 ± 0.7	0.4 ± 1.5	±	QL00620
WB11A	7	-948	1	-0.1 ± 0.7	1.0 ± 1.6	±	QL00621
WB12A	-7	-956	2	-0.1 ± 0.7	0.6 ± 1.6	±	QL00622
WB13A	12	-879	2	-0.3 ± 0.5	-0.2 ± 1.4	±	QL00623
WB14A	-2	-403	2	-0.3 ± 0.5	0.6 ± 1.6	±	QL00624
WB15A	-7	-509	1	0.2 ± 0.9	1.5 ± 1.8	±	QL00625
WB16A	12	-818	2	-0.3 ± 0.5	2.5 ± 2.0	±	QL00626
WB17A	2	-811	2	-0.1 ± 0.7	0.6 ± 1.6	±	QL00627
WB18A	-2	-929	2	-0.1 ± 0.7	0.2 ± 1.5	±	QL00628
WB19A	-7	-845	1	0.9 ± 1.2	0.1 ± 1.5	±	QL00629
WB20A	7	-776	1	-0.3 ± 0.5	1.2 ± 1.7	±	QL00630
WB21A	-2	44	2	-0.3 ± 0.5	1.0 ± 1.6	±	QL00631
WB22A	-7	-105	2	-0.3 ± 0.5	0.0 ± 1.4	±	QL00632
WB23A	2	-860	3	0.9 ± 1.2	1.1 ± 1.7	±	QL00633
WB24A	-7	-845	2	-0.1 ± 0.7	0.8 ± 1.6	±	QL00634
WB25A	-7	-864	2	-0.3 ± 0.5	0.8 ± 1.6	±	QL00635
WB26A	-7	-761	3	-0.1 ± 0.7	0.2 ± 1.5	±	QL00636
WB27A	2	-876	1	-0.3 ± 0.5	-0.4 ± 1.3	±	QL00637
WB28A	21	-979	1	-0.3 ± 0.5	1.2 ± 1.7	±	QL00638
WB29A	-2	-910	1	-0.1 ± 0.7	0.8 ± 1.6	±	QL00639
WB30A	-7	-838	2	-0.3 ± 0.5	1.0 ± 1.6	±	QL00640
WB31A	-7	-807	1	0.2 ± 0.9	0.8 ± 1.6	±	QL00641
WB32A	2	-841	2	0.2 ± 0.9	0.4 ± 1.5	±	QL00642
WB33A	17	-887	2	-0.1 ± 0.7	0.6 ± 1.6	±	QL00643
WB34A	-2	-59	1	0.2 ± 0.9	0.4 ± 1.5	±	QL00644
WB35A	-7	-25	3	1.1 ± 1.3	0.3 ± 1.5	±	QL00645
WB36A	-7	-639	3	-0.3 ± 0.5	1.2 ± 1.7	±	QL00646
WB37A	-7	-570	1	-0.3 ± 0.5	1.3 ± 1.7	±	QL00647
WB38A	-7	-731	0	-0.1 ± 0.7	0.4 ± 1.5	±	QL00648
WB39A	-2	-502	1	-0.3 ± 0.5	1.0 ± 1.6	±	QL00649
WB40A	2	-403	1	-0.1 ± 0.7	0.2 ± 1.5	±	QL00650

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A												
Location Code	Monitoring			Wipe Test						Wipe Number		
	Alpha	Beta	Gamma	Alpha		Beta		LS				
(Units =>)	dpm/100cm^2	dpm/100cm^2	uR/hr	dpm/100cm^2 +/- 2 sigma								
(Bkgd =>)	5	1072	9	0.0	to	0.414	0.7	to	1.5	0	to	0.0
(MDA =>)	56	423	-	2 *		4 *		*				
WB41A	-7	-216	1	-0.1 ± 0.7		-0.4 ± 1.3		±		QL00651		
WB42A	2	-231	3	-0.3 ± 0.5		-0.4 ± 1.3		±		QL00652		
WB43A	-7	-223	1	0.4 ± 1.0		0.3 ± 1.5		±		QL00653		
WB44A	-2	-147	3	-0.1 ± 0.7		0.4 ± 1.5		±		QL00654		
WB45A	2	-120	1	-0.3 ± 0.5		-0.2 ± 1.4		±		QL00655		
WB46A	-2	-1013	0	-0.3 ± 0.5		0.8 ± 1.6		±		QL00656		
WB47A	7	-1070	2	-0.1 ± 0.7		1.5 ± 1.8		±		QL00657		
WB48A	-7	-162	1	-0.1 ± 0.7		0.2 ± 1.5		±		QL00658		
QA	N/A	N/A	N/A	0.2 ± 0.9		0.6 ± 1.6		±		QL00659		
WB1B	-7	950	5	0.4 ± 1.0		0.3 ± 1.5		±		QL00660		
WB2B	-2	-49	3	-0.1 ± 0.7		-0.4 ± 1.3		±		QL00661		
WB3B	2	-175	3	-0.3 ± 0.5		-1.0 ± 1.1		±		QL00662		
WB4B	-7	-175	2	-0.3 ± 0.5		0.2 ± 1.5		±		QL00663		
WB5B	-2	-110	2	-0.3 ± 0.5		0.8 ± 1.6		±		QL00664		
WB6B	7	-217	1	-0.1 ± 0.7		0.4 ± 1.5		±		QL00665		
WB7B	-2	-206	1	-0.3 ± 0.5		0.2 ± 1.5		±		QL00666		
WB8B	-7	-198	2	-0.1 ± 0.7		1.5 ± 1.8		±		QL00667		
WB9B	7	-255	2	-0.1 ± 0.7		0.6 ± 1.6		±		QL00668		
WB10B	2	-114	2	0.2 ± 0.9		0.0 ± 1.4		±		QL00669		
WB11B	2	-171	1	0.4 ± 1.0		0.0 ± 1.4		±		QL00670		
WB12B	2	-236	1	0.7 ± 1.1		-0.1 ± 1.4		±		QL00671		
WB13B	2	-209	1	-0.1 ± 0.7		0.6 ± 1.6		±		QL00672		
WB14B	-2	-95	1	-0.3 ± 0.5		0.6 ± 1.6		±		QL00673		
WB15B	-7	-217	1	-0.3 ± 0.5		1.0 ± 1.6		±		QL00674		
WB16B	2	145	2	-0.3 ± 0.5		0.8 ± 1.6		±		QL00675		
WB17B	2	184	2	0.4 ± 1.0		-0.6 ± 1.3		±		QL00676		
WB18B	-7	-152	2	0.4 ± 1.0		0.2 ± 1.5		±		QL00677		
WB19B	-2	-95	2	-0.3 ± 0.5		-0.2 ± 1.4		±		QL00678		
WB20B	-2	-103	2	0.2 ± 0.9		1.1 ± 1.7		±		QL00679		
WB21B	-2	31	3	0.2 ± 0.9		1.3 ± 1.7		±		QL00680		
WB22B	2	-103	2	-0.3 ± 0.5		1.9 ± 1.8		±		QL00681		
WB23B	7	-110	3	0.2 ± 0.9		1.7 ± 1.8		±		QL00682		
WB24B	2	-91	2	-0.3 ± 0.5		-0.6 ± 1.3		±		QL00683		
WB25B	2	-183	2	0.7 ± 1.1		0.3 ± 1.5		±		QL00684		
WB26B	-2	35	3	-0.1 ± 0.7		-0.2 ± 1.4		±		QL00685		
WB27B	12	-160	3	0.7 ± 1.1		0.3 ± 1.5		±		QL00686		
WB28B	-2	-225	3	0.2 ± 0.9		0.8 ± 1.6		±		QL00687		
WB29B	-7	-206	3	0.4 ± 1.0		1.1 ± 1.7		±		QL00688		
WB30B	17	46	2	0.4 ± 1.0		1.3 ± 1.7		±		QL00689		
WB31B	-7	100	3	-0.1 ± 0.7		0.8 ± 1.6		±		QL00690		
WB32B	-2	-87	3	0.7 ± 1.1		0.9 ± 1.7		±		QL00691		
WB33B	7	-148	2	-0.1 ± 0.7		1.2 ± 1.7		±		QL00692		
WB34B	-7	-194	2	0.2 ± 0.9		0.8 ± 1.6		±		QL00693		
WB35B	-2	-91	2	-0.3 ± 0.5		0.2 ± 1.5		±		QL00694		
WB36B	-7	-122	2	0.2 ± 0.9		1.1 ± 1.7		±		QL00695		
WB37B	2	-179	3	-0.1 ± 0.7		1.3 ± 1.7		±		QL00696		
WB38B	-7	-118	4	0.2 ± 0.9		2.5 ± 2.0		±		QL00697		
WB39B	7	-57	3	-0.3 ± 0.5		0.6 ± 1.6		±		QL00698		
WB40B	2	1431	3	0.4 ± 1.0		0.2 ± 1.5		±		QL00699		
WB41B	-2	-19	3	0.2 ± 0.9		-0.2 ± 1.4		±		QL00700		

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	-	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
WB42B	-7	-129	4	0.5 ± 1.0	1.2 ± 1.9	±	QL00701
WB43B	-7	-145	4	0.0 ± 0.7	-0.1 ± 1.6	±	QL00702
WB44B	-2	-270	3	0.0 ± 0.7	-0.3 ± 1.6	±	QL00703
WB45B	-7	-232	3	-0.2 ± 0.5	0.1 ± 1.7	±	QL00704
WB46B	7	-198	2	0.0 ± 0.7	2.2 ± 2.1	±	QL00705
WB47B	-2	-103	1	-0.2 ± 0.5	0.1 ± 1.7	±	QL00706
WB48B	7	-213	2	0.0 ± 0.7	-0.7 ± 1.5	±	QL00707
WB1C	-2	-103	4	0.2 ± 0.8	-0.6 ± 1.5	±	QL00708
WB2C	2	-103	5	-0.2 ± 0.5	-0.3 ± 1.6	±	QL00709
WB3C	12	-167	4	0.2 ± 0.8	0.8 ± 1.8	±	QL00710
WB4C	7	-232	4	0.0 ± 0.7	0.1 ± 1.7	±	QL00711
WB5C	-2	-160	2	0.2 ± 0.8	0.2 ± 1.7	±	QL00712
WB6C	-7	-240	4	-0.2 ± 0.5	0.6 ± 1.8	±	QL00713
WB7C	2	-91	2	0.0 ± 0.7	0.4 ± 1.8	±	QL00714
WB8C	-2	-206	2	0.5 ± 1.0	0.4 ± 1.8	±	QL00715
WB9C	-2	-217	2	0.0 ± 0.7	0.6 ± 1.8	±	QL00716
WB10C	2	-213	2	-0.2 ± 0.5	0.3 ± 1.7	±	QL00717
WB11C	2	-114	2	1.2 ± 1.3	0.1 ± 1.7	±	QL00718
WB12C	-2	-194	2	0.2 ± 0.8	-0.4 ± 1.6	±	QL00719
WB13C	2	-126	2	-0.2 ± 0.5	0.6 ± 1.8	±	QL00720
WB14C	-2	-118	2	-0.2 ± 0.5	0.6 ± 1.8	±	QL00721
WB15C	7	-106	3	-0.2 ± 0.5	-0.5 ± 1.5	±	QL00722
WB16C	-7	-106	4	-0.2 ± 0.5	0.4 ± 1.8	±	QL00723
WB17C	-2	-148	2	0.2 ± 0.8	0.8 ± 1.8	±	QL00724
WB18C	2	-84	3	0.2 ± 0.8	0.4 ± 1.8	±	QL00725
WB19C	-7	-202	3	0.5 ± 1.0	1.0 ± 1.9	±	QL00726
WB20C	-2	-76	3	0.0 ± 0.7	0.1 ± 1.7	±	QL00727
WB21C	2	-45	3	-0.2 ± 0.5	0.1 ± 1.7	±	QL00728
WB22C	-7	-164	4	0.7 ± 1.1	-0.4 ± 1.6	±	QL00729
WB23C	-7	-290	3	0.0 ± 0.7	0.4 ± 1.8	±	QL00730
WB24C	12	-187	3	0.0 ± 0.7	0.6 ± 1.8	±	QL00731
WB25C	-2	0	4	1.0 ± 1.2	0.3 ± 1.8	±	QL00732
WB26C	-7	-84	3	0.7 ± 1.1	1.7 ± 2.0	±	QL00733
WB27C	7	-148	4	-0.2 ± 0.5	-0.1 ± 1.6	±	QL00734
WB28C	2	-164	2	0.5 ± 1.0	1.2 ± 1.9	±	QL00735
WB29C	-2	-87	1	1.0 ± 1.2	0.1 ± 1.7	±	QL00736
WB30C	-2	-84	3	0.2 ± 0.8	-0.4 ± 1.6	±	QL00737
WB31C	2	-190	3	0.5 ± 1.0	-1.0 ± 1.5	±	QL00738
WB32C	-7	-99	2	1.9 ± 1.5	-0.2 ± 1.7	±	QL00739
WB33C	2	-187	2	-0.2 ± 0.5	-0.7 ± 1.5	±	QL00740
WB34C	-2	-103	4	-0.2 ± 0.5	0.1 ± 1.7	±	QL00741
WB35C	-2	-61	2	0.2 ± 0.8	-0.2 ± 1.6	±	QL00742
WB36C	7	-194	2	0.2 ± 0.8	-0.7 ± 1.5	±	QL00743
WB37C	2	-129	3	0.0 ± 0.7	0.3 ± 1.7	±	QL00744
WB38C	-2	-141	2	0.7 ± 1.1	-0.2 ± 1.7	±	QL00745
WB39C	-7	611	3	-0.2 ± 0.5	-0.5 ± 1.5	±	QL00746
WB40C	-2	-15	2	0.0 ± 0.7	1.0 ± 1.9	±	QL00747
WB41C	-7	-129	3	-0.2 ± 0.5	-0.7 ± 1.5	±	QL00748
WB42C	2	-141	3	-0.2 ± 0.5	0.8 ± 1.8	±	QL00749
WB43C	2	-244	2	-0.2 ± 0.5	0.4 ± 1.8	±	QL00750

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
WB44C	-2	-232	2	-0.2 ± 0.5	1.2 ± 1.9	±	0751
WB45C	12	-141	2	0.0 ± 0.7	0.1 ± 1.7	±	QL00752
WB46C	7	-187	1	0.7 ± 1.1	0.6 ± 1.8	±	QL00753
WB47C	7	-267	1	0.5 ± 1.0	-1.2 ± 1.4	±	QL00754
WB48C	-2	-95	1	0.2 ± 0.8	0.0 ± 1.7	±	QL00755
WC1A	10	-199	-2	0.5 ± 1.0	-0.6 ± 1.6	±	QL00756
WC2A	0	-39	1	-0.2 ± 0.5	-0.7 ± 1.5	±	QL00757
WC3A	5	-611	1	0.2 ± 0.8	0.4 ± 1.8	±	QL00758
WC4A	19	-302	1	0.2 ± 0.8	0.0 ± 1.7	±	QL00759
WC5A	-4	-127	1	0.2 ± 0.8	-0.6 ± 1.5	±	QL00760
WC6A	10	-241	1	0.2 ± 0.8	-0.2 ± 1.6	±	QL00761
WC7A	10	-165	3	-0.2 ± 0.5	-0.7 ± 1.5	±	QL00762
WC8A	10	-272	4	-0.2 ± 0.5	-0.5 ± 1.5	±	QL00763
WC9A	10	-157	2	-0.2 ± 0.5	-1.1 ± 1.4	±	QL00764
WC10A	-4	-24	2	0.2 ± 0.8	0.2 ± 1.7	±	QL00765
WC11A	15	-161	3	-0.2 ± 0.5	-0.3 ± 1.6	±	QL00766
WC12A	0	-134	1	0.0 ± 0.7	-0.5 ± 1.5	±	QL00767
WC13A	10	-302	-1	0.0 ± 0.7	-1.3 ± 1.3	±	QL00768
WC14A	0	-367	-1	-0.2 ± 0.5	-0.1 ± 1.6	±	QL00769
WC15A	5	-432	0	0.0 ± 0.7	-0.5 ± 1.5	±	QL00770
WC16A	5	-130	0	-0.2 ± 0.5	-1.1 ± 1.4	±	QL00771
WC17A	-4	-245	1	0.2 ± 0.8	-0.4 ± 1.5	±	QL00772
WC18A	15	-214	1	-0.2 ± 0.5	0.1 ± 1.7	±	QL00773
WC19A	10	-233	0	0.2 ± 0.8	0.0 ± 1.7	±	QL00774
WC20A	0	-192	1	0.0 ± 0.7	0.3 ± 1.7	±	QL00775
WC21A	10	-1023	0	-0.2 ± 0.5	-0.3 ± 1.6	±	QL00776
WC22A	5	-268	3	0.0 ± 0.7	-0.3 ± 1.6	±	QL00777
WC23A	5	-150	2	0.2 ± 0.8	0.4 ± 1.8	±	QL00778
WC24A	0	-211	0	-0.2 ± 0.5	0.1 ± 1.7	±	QL00779
WC1B	5	-394	1	-0.2 ± 0.5	-0.3 ± 1.6	±	QL00780
WC2B	-4	-237	0	0.0 ± 0.7	-1.1 ± 1.4	±	QL00781
WC3B	10	-336	0	0.0 ± 0.7	-0.5 ± 1.5	±	QL00782
WC4B	10	-298	0	0.0 ± 0.7	0.6 ± 1.8	±	QL00783
WC5B	-4	-1141	1	-0.2 ± 0.5	-0.3 ± 1.6	±	QL00784
WC6B	0	-1054	1	0.2 ± 0.8	-0.2 ± 1.6	±	QL00785
WC7B	19	-192	1	0.7 ± 1.1	-0.8 ± 1.5	±	QL00786
WC8B	-4	-661	2	-0.2 ± 0.5	0.4 ± 1.8	±	QL00787
WC9B	0	-733	3	-0.2 ± 0.5	-0.1 ± 1.6	±	QL00788
WC10B	19	-626	1	0.0 ± 0.7	1.0 ± 1.9	±	QL00789
WC11B	0	-779	3	0.7 ± 1.1	-0.2 ± 1.7	±	QL00790
WC12B	5	-939	1	0.5 ± 1.0	0.6 ± 1.8	±	QL00791
WC13B	-4	-279	0	0.2 ± 0.8	-0.2 ± 1.6	±	QL00792
WC14B	19	-520	0	0.2 ± 0.8	-0.6 ± 1.5	±	QL00793
WC15B	5	-794	0	0.5 ± 1.0	-0.4 ± 1.6	±	QL00794
WC16B	0	-314	1	0.0 ± 0.7	0.1 ± 1.7	±	QL00795
WC17B	-4	-336	1	0.2 ± 0.8	0.4 ± 1.8	±	QL00796
WC18B	0	-996	1	0.7 ± 1.1	1.7 ± 2.0	±	QL00797
WC19B	0	-962	1	0.5 ± 1.0	0.0 ± 1.7	±	QL00798
WC20B	-4	213	2	-0.2 ± 0.5	0.8 ± 1.8	±	QL00799
WC21B	10	-211	2	0.0 ± 0.7	-1.3 ± 1.3	±	QL00800

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	1072	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
WC22B	0	18	1	0.2 ± 0.8	-0.3 ± 1.5	±	QL00801
WC23B	-4	-172	2	-0.2 ± 0.5	1.1 ± 1.8	±	QL00802
WC24B	-4	-260	1	-0.2 ± 0.5	0.7 ± 1.7	±	QL00803
WC1C	0	-85	1	0.0 ± 0.7	-0.6 ± 1.4	±	QL00804
WC2C	10	-115	2	-0.2 ± 0.5	-0.4 ± 1.4	±	QL00805
WC3C	29	-134	1	0.0 ± 0.7	-0.4 ± 1.4	±	QL00806
WC4C	5	-161	1	0.2 ± 0.8	-0.1 ± 1.5	±	QL00807
WC5C	5	-138	2	0.0 ± 0.7	-0.4 ± 1.4	±	QL00808
WC6C	15	-157	4	-0.2 ± 0.5	-0.4 ± 1.4	±	QL00809
WC7C	10	-58	4	0.0 ± 0.7	0.9 ± 1.7	±	QL00810
WC8C	5	-39	1	1.0 ± 1.2	-0.2 ± 1.5	±	QL00811
WC9C	10	-8	3	0.0 ± 0.7	-0.1 ± 1.5	±	QL00812
WC10C	10	-43	5	0.0 ± 0.7	0.3 ± 1.6	±	QL00813
WC11C	0	-47	3	0.2 ± 0.8	0.7 ± 1.7	±	QL00814
WC12C	0	-8	3	0.2 ± 0.8	0.7 ± 1.7	±	QL00815
WC13C	5	-43	1	-0.2 ± 0.5	0.5 ± 1.6	±	QL00816
WC14C	10	121	0	0.0 ± 0.7	-0.6 ± 1.4	±	QL00817
WC15C	10	49	1	-0.2 ± 0.5	-0.1 ± 1.5	±	QL00818
WC16C	5	-27	0	-0.2 ± 0.5	-0.1 ± 1.5	±	QL00819
WC17C	-4	18	2	0.0 ± 0.7	-0.4 ± 1.4	±	QL00820
WC18C	5	7	3	0.0 ± 0.7	-0.3 ± 1.5	±	QL00821
WC19C	5	-43	2	0.0 ± 0.7	0.5 ± 1.6	±	QL00822
WC20C	10	102	2	0.2 ± 0.8	-0.7 ± 1.4	±	QL00823
WC21C	0	-96	1	0.0 ± 0.7	1.7 ± 1.9	±	QL00824
WC22C	0	133	1	-0.2 ± 0.5	0.3 ± 1.6	±	QL00825
WC23C	5	11	2	0.0 ± 0.7	0.9 ± 1.7	±	QL00826
WC24C	0	7	1	-0.2 ± 0.5	-1.0 ± 1.3	±	QL00827
QA	N/A	N/A	N/A	0.0 ± 0.7	-0.4 ± 1.4	±	QL00828
WD1A	-2	-270	-4	1.5 ± 1.3	0.4 ± 1.7	±	QL00829
WD2A	-7	-251	-3	0.0 ± 0.7	0.7 ± 1.7	±	QL00830
WD1B	-7	-183	-3	-0.2 ± 0.5	-0.4 ± 1.4	±	QL00831
WD2B	-7	-240	-2	-0.2 ± 0.5	-0.8 ± 1.3	±	QL00832
WD1C	2	-209	-2	0.5 ± 1.0	-0.5 ± 1.4	±	QL00833
WD2C	2	-148	-1	0.7 ± 1.1	0.8 ± 1.8	±	QL00834
WE1A	-7	-133	0	0.0 ± 0.7	1.5 ± 1.9	±	QL00835
WE2A	2	-278	-1	-0.2 ± 0.5	0.9 ± 1.7	±	QL00836
WE3A	-2	-179	-2	0.0 ± 0.7	-0.3 ± 1.5	±	QL00837
WE4A	-2	-152	-1	-0.2 ± 0.5	0.7 ± 1.7	±	QL00838
WE5A	-7	-251	0	0.5 ± 1.0	0.3 ± 1.6	±	QL00839
WE6A	2	-290	-1	0.2 ± 0.8	-0.1 ± 1.5	±	QL00840
WE1B	-7	-301	-1	0.0 ± 0.7	0.3 ± 1.6	±	QL00841
WE2B	-2	-217	-2	-0.2 ± 0.5	-0.3 ± 1.5	±	QL00842
WE3B	-7	-213	-1	-0.2 ± 0.5	0.3 ± 1.6	±	QL00843
WE4B	7	-339	-1	0.0 ± 0.7	0.9 ± 1.7	±	QL00844
WE5B	-7	-274	-1	-0.2 ± 0.5	-0.3 ± 1.5	±	QL00845
WE6B	-2	-236	-1	0.7 ± 1.1	0.1 ± 1.6	±	QL00846
WE1C	-7	-118	-2	0.0 ± 0.7	-0.3 ± 1.5	±	QL00847
WE2C	-7	-221	0	0.0 ± 0.7	1.9 ± 1.9	±	QL00848
WE3C	7	-270	-1	0.0 ± 0.7	0.9 ± 1.7	±	QL00849
WE4C	-7	-267	-1	-0.2 ± 0.5	0.3 ± 1.6	±	QL00850

Picatinny Arsenal, BUILDING 31 HEADHOUSE-A							
Location Code	Monitoring			Wipe Test			Wipe Number
	Alpha	Beta	Gamma	Alpha	Beta	LS	
(Units =>)	dpm/100cm ²	dpm/100cm ²	uR/hr	dpm/100cm ² +/- 2 sigma			
(Bkgd =>)	5	10.2	9	0.0 to 0.414	0.7 to 1.5	0 to 0.0	
(MDA =>)	56	423	-	2 *	4 *	*	
WE5C	2	-129	-2	0.0 ± 0.7	-0.4 ± 1.4	±	QL00851
WE6C	12	-240	-1	0.5 ± 1.0	-0.5 ± 1.4	±	QL00852
WF1A	-7	-49	0	0.0 ± 0.7	-0.3 ± 1.5	±	QL00853
WF2A	-2	-103	-1	0.0 ± 0.7	0.1 ± 1.6	±	QL00854
WF1B	-7	0	-1	0.2 ± 0.8	0.3 ± 1.6	±	QL00855
WF2B	-7	-217	-1	0.0 ± 0.7	0.3 ± 1.6	±	QL00856
WF1C	12	-129	0	0.0 ± 0.7	0.3 ± 1.6	±	QL00857
WF2C	-7	-61	-2	0.5 ± 1.0	-0.3 ± 1.5	±	QL00858
ABOVE FB7	-7	58	-1	-0.2 ± 0.5	1.1 ± 1.8	±	QL00859
ABOVE FH8	2	16	0	-0.2 ± 0.5	-1.0 ± 1.3	±	QL00860
ABOVE FN7	12	-45	1	0.5 ± 1.0	0.1 ± 1.6	±	QL00861
ABOVE FS7	-2	-225	1	0.0 ± 0.7	-0.4 ± 1.4	±	QL00862
ABOVE FU8	-2	431	0	0.0 ± 0.7	-0.6 ± 1.4	±	QL00863
ABOVE FDD	2	-156	1	0.5 ± 1.0	0.9 ± 1.7	±	QL00864
ABOVE FJJ	-7	420	-3	-0.2 ± 0.5	-0.6 ± 1.4	±	QL00865

*

Indicates the highest MDA for this survey unit. The Alpha MDA ranged from 1 to 2 dpm

Indicates the highest MDA for this survey unit. The Beta MDA ranged from 3 to 4 dpm

Indicates the highest MDA for this survey unit. The H-3 MDA ranged from to dpm

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX D

RELEASE GUIDELINES

Limits for Removable Surface Contamination

Nuclide ^a	Removable ^{b c} (dpm/100 cm ²)	Average (dpm/100 cm ²)	Maximum (dpm/100 cm ²)
U-nat, U-235, U238, and associated decay products	1000	5000	15000
Transurancies, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, and I-129	20	100	300
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, and I-133	200	1000	3000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	1000	5000	15000

^a Where surface contamination by both alpha- and beta-gamma emitting nuclide exists, the limits established for alpha- and beta-gamma emitting nuclide should apply independently.

^b As used in this table, disintegrations per minute (dpm) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

^c The amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally. The entire surface should be wiped.

Reference: Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use of Termination of Licenses for Byproducts, Source, or Special Nuclear Material, U.S. Nuclear Regulatory Commission, Nov 1976.

Note: New Jersey Department of Environmental Radiation uses the same release criteria as mentioned above.

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Acceptable Surface Contamination Levels

Nuclides ^a	Average ^{b, c, f} (dpm/100cm ²)	Maximum ^{b, d, f} (dpm/100cm ²)	Removable ^{b, e, f} (dpm/100cm ²)
U-Nat, ²³⁵ U, ²³⁸ U, and associated products	5,000 α	15,000 α	1,000 α
Transuranics, ²²⁶ Ra, ²²⁸ Ra, ²³⁰ Th, ²²⁸ Th, ²³¹ Pa, ²²⁷ Ac, ¹²⁹ I, ¹²⁹ I	100	300	20
Th-nat, ²³² Th, ⁹⁰ Sr, ²²³ Ra, ²²⁴ Ra, ²³² U, ¹²⁶ I, ¹³¹ I, ¹³³ I	1,000	3,000	200
Beta/gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except ⁹⁰ Sr and other noted above	5,000 βγ	15,000 βγ	1,000 βγ

a→ Where surface contamination by both alpha- and beta/gamma-emitting nuclides exists, the limits established for alpha-and beta/gamma-emitting nuclides should apply independently.

b→ As used in this table dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

c→ Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

d→ The maximum contamination level applies to an area of not more than 100 cm²

e→ The amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, then pertinent levels should be reduced proportionally and the entire surface should be wiped.

f→ The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

Reference: Guidelines for Decontamination of Facilities and Equipment prior to Release for Unrestricted use or Termination of Licenses for Byproducts, Source, or Special Nuclear Material, U.S. Nuclear Regulatory Commission, April 1993.

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX E

INSTRUMENTATION USED AT PICATINNY ARSENAL

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Instrumentation used at Picatinny Arsenal
Termination Survey

	Alpha	Beta	Gamma
Readout Make	LUDLUM	LUDLUM	LUDLUM
Readout Model	2350	2350	2350
Serial Number	120585	120624	117577
Cal. Date	10/02/97	10/02/97	10/02/97
--Probe Make	LUDLUM	LUDLUM	LUDLUM
Probe Model	43-68	43-68	44-2
Serial number	011354	122124	109560

Scanning Instrumentation used at Picatinny Arsenal
Termination Survey

	Floor Scanner		
Readout Make	Ludlum		
Readout Model	2224		
Serial Number	119811		
Cal. Date	10/02/97		
Probe Make	LUDLUM		
Probe Model	43-37		
Probe Serial Number	123093		

All instrumentation was supplied by USACHPPM and the calibration is traceable to the National Institute of Standards and Technology.

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX F
QUALITY ASSURANCE RESULTS

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

1. Wipes QA samples. See table below.

Wipes Identification

QL00161	QL00513
QL00258	QL00610
QL00307	QL00659
QL00404	QL00828

2. Blank Wipe Samples. Survey teams randomly submitted blank samples to the laboratory. Blanks were submitted randomly for an average rate not less than 1 per 110 samples collected. All wipes came back clean.

Indust Radn Surv No. 27-MH-7871-98, Facility Closeout and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

APPENDIX G
INSTRUMENT QUALITY ASSURANCE CHARTS

Instrument Control Chart

InstrumentQCID:

4

Meter Serial #: 120624

Probe Serial #: 122124B

Meter Make / Model #: LUDLUM 2350

Probe Make / Model #: 2350

QCDateTime: 1/9/98 11:32:37 PM

Check Source Isotope Tc-99

Surveyor: Lorus Miller

Serial Number 1825-94

Background: 347.9 CPM

Activity 11600 DPM

Mean: 3040.6 # Data Points 30

StdDev: 59.2

2StdDev: 118.5 2922.1 3159.1

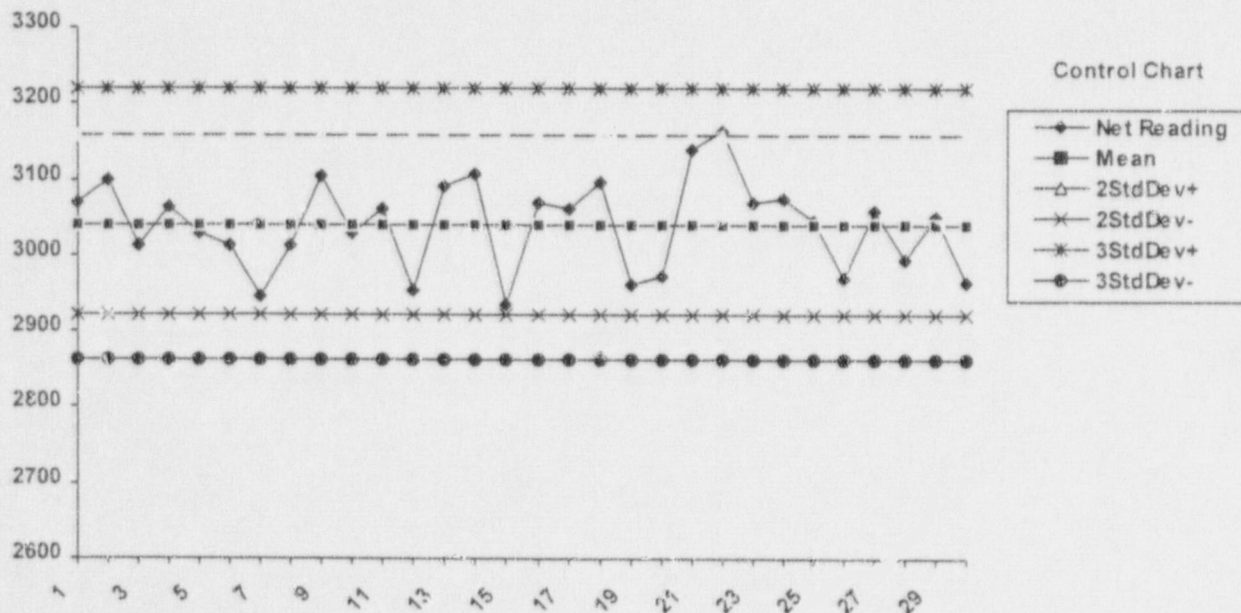
Count Time: 60

3StdDev: 177.7 2862.9 3218.3

Instrument Efficiency: 26.21%

Instrument QC Data:

1	3418	60	Counts	13	3439	60	Counts	25	3392	60	Counts
2	3448	60	Counts	14	3456	60	Counts	26	3317	60	Counts
3	3360	60	Counts	15	3283	60	Counts	27	3407	60	Counts
4	3411	60	Counts	16	3416	60	Counts	28	3343	60	Counts
5	3376	60	Counts	17	3410	60	Counts	29	3398	60	Counts
6	3361	60	Counts	18	3443	60	Counts	30	3314	60	Counts
7	3294	60	Counts	19	3310	60	Counts				
8	3362	60	Counts	20	3320	60	Counts				
9	3452	60	Counts	21	3487	60	Counts				
10	3376	60	Counts	22	3512	60	Counts				
11	3410	60	Counts	23	3416	60	Counts				
12	3302	60	Counts	24	3423	60	Counts				



Indust Radn Surv No.27-MH-7871-98, Facility Close-out and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Instrument Daily Control Chart

InstrumentQCID:

4

Meter Serial #: 120624

Probe Serial #: 122124B

Meter Make / Model #: LUDLUM 2350

Probe Make / Model #: 2350

QCDateTime: 1/9/98 11:32:37 PM

Check Source Isotope Tc-99

Surveyor: Lorus Miller

Serial Number 1825-94

Background: 347.9 CPM

Activity 11600 DPM

Mean: 3040.6 # Data Points 30

StdDev: 59.2

2StdDev: 118.5 2922.1 3159.1

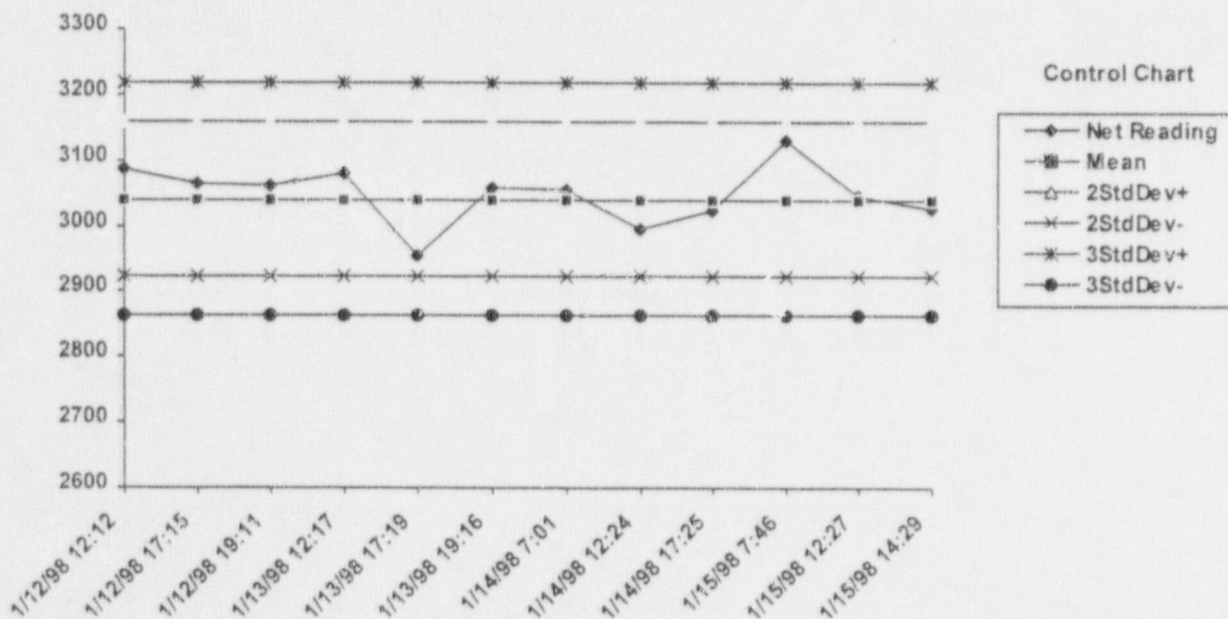
Count Time: 60

3StdDev: 177.7 2862.9 3218.3

Instrument Efficiency: 26.21%

Instrument QC Data:

1/12/98 12:12:55 PM	3088	cpm	MidDay	1/15/98 2:29:12 PM	3028	C-M	PM
1/12/98 5:15:27 PM	3064	cpm	PM				
1/12/98 7:11:57 PM	3062	cpm	AM				
1/13/98 12:17:47 PM	3079	cpm	MidDay				
1/13/98 5:19:13 PM	2956	cpm	PM				
1/13/98 7:16:50 PM	3057	cpm	AM				
1/14/98 7:01:41 AM	3055	cpm	AM				
1/14/98 12:24:23 PM	2997	CPM	MidDay				
1/14/98 5:25:56 PM	3025	CPM	PM				
1/15/98 7:46:51 AM	3131	CPM	AM				
1/15/98 12:27:54 PM	3047	CPM	MidDay				



Instrument Control Chart

InstrumentQCID: 5

Meter Serial #: 120585
Meter Make / Model #: LUDLUM 2350

Probe Serial #: 011354
Probe Make / Model #: 43-68A

QCDateTime: 1/10/98 12:10:18 AM

Check Source Isotope Th-230

Surveyor: Lorus Miller

Serial Number 1827-94

Background: 1.0 CPM

Activity 8820 DPM

Mean: 1865.3 # Data Points 30

StdDev: 51.1

2StdDev: 102.2 1763.1 1967.5

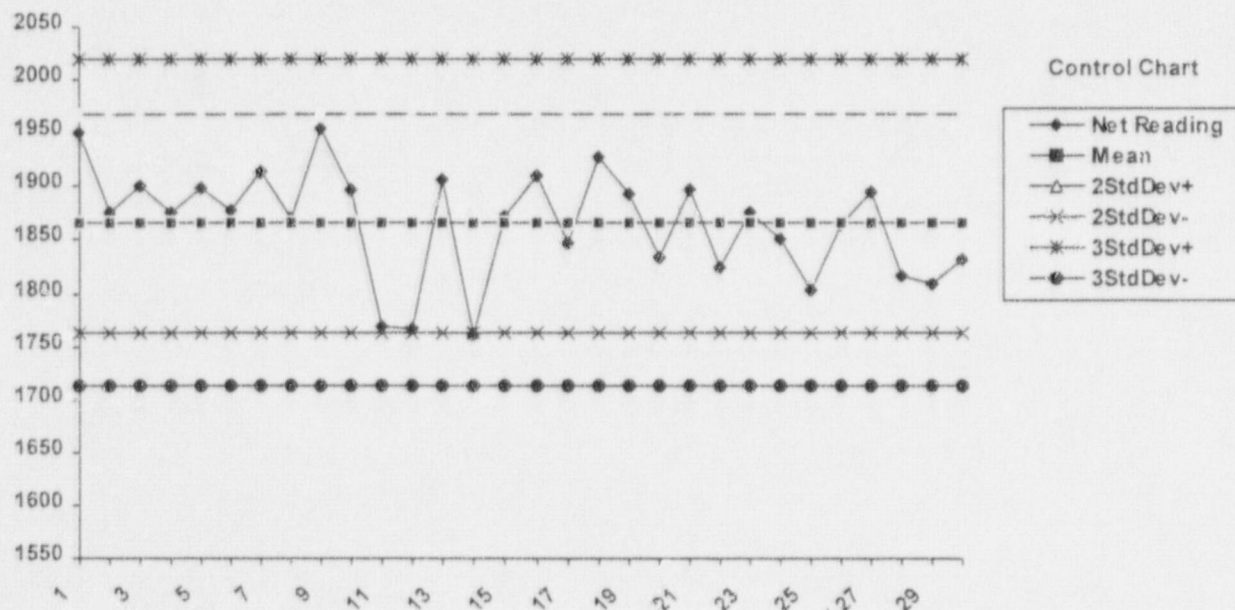
Count Time: 60

3StdDev: 153.3 1712.0 2018.6

Instrument Efficiency: 21.15%

Instrument QC Data:

1	1952	60 Counts	13	1908	60 Counts	25	1804	60 Counts
2	1876	60 Counts	14	1761	60 Counts	26	1865	60 Counts
3	1901	60 Counts	15	1873	60 Counts	27	1895	60 Counts
4	1876	60 Counts	16	1911	60 Counts	28	1817	60 Counts
5	1899	60 Counts	17	1848	60 Counts	29	1810	60 Counts
6	1879	60 Counts	18	1928	60 Counts	30	1833	60 Counts
7	1914	60 Counts	19	1893	60 Counts			
8	1871	60 Counts	20	1834	60 Counts			
9	1956	60 Counts	21	1898	60 Counts			
10	1898	60 Counts	22	1824	60 Counts			
11	1770	60 Counts	23	1876	60 Counts			
12	1767	60 Counts	24	1852	60 Counts			



Instrument Daily Control Chart

InstrumentQCID:

5

Meter Serial #: 120585

Meter Make / Model #: LUDLUM 2350

QCDate/Time: 1/10/98 12:10:18 AM

Surveyor: Lorus Miller

Background: 1.0 CPM

Probe Serial #: 011354

Probe Make / Model #: 43-68A

Check Source Isotope Th-230

Serial Number 1827-94

Activity 8820 DPM

Mean: 1865.3 # Data Points 30

StdDev: 51.1

2StdDev: 102.2 1763.1 1967.5

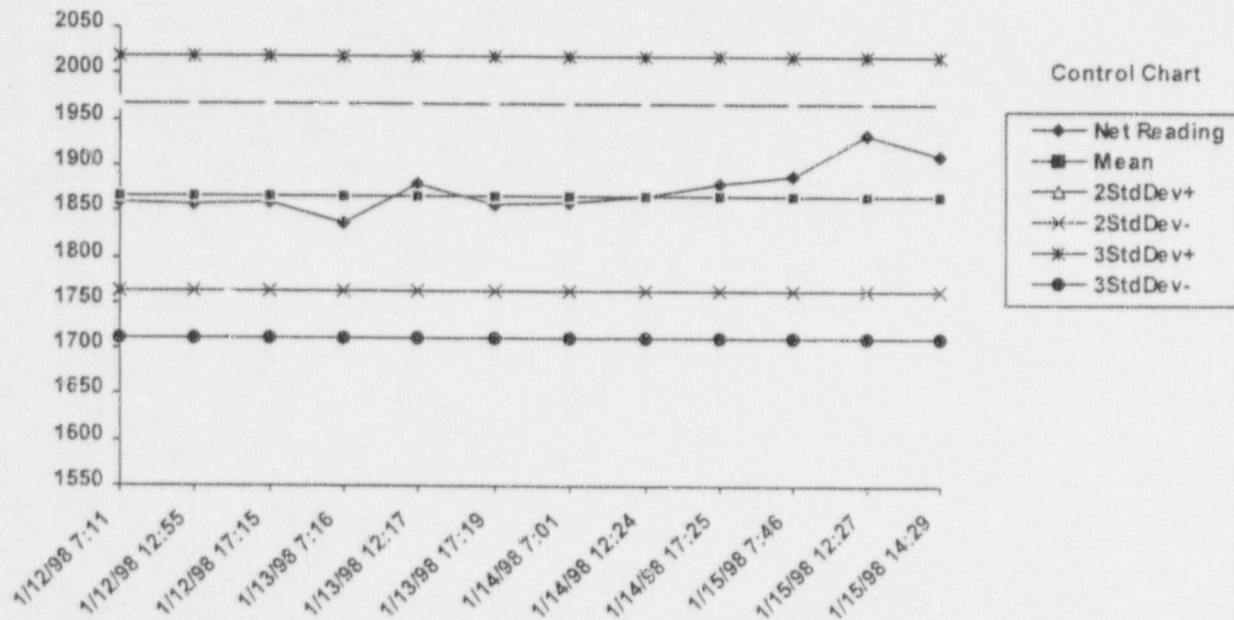
3StdDev: 153.3 1712.0 2018.6

Count Time: 60

Instrument Efficiency: 21.15%

Instrument QC Data:

1/12/98 7:11:34 AM	1859 CPM	AM	1/15/98 2:29:29 PM	1912 CPM	PM
1/12/98 12:55:40 PM	1857 CPM	MidDay			
1/12/98 5:15:17 PM	1860 CPM	PM			
1/13/98 7:16:16 AM	1837 CPM	AM			
1/13/98 12:17:15 PM	1879 CPM	MidDay			
1/13/98 5:19:17 PM	1858 CPM	PM			
1/14/98 7:01:21 AM	1859 CPM	AM			
1/14/98 12:24:30 PM	1866 CPM	MidDay			
1/14/98 5:25:24 PM	1879 CPM	PM			
1/15/98 7:46:23 AM	1889 CPM	AM			
1/15/98 12:27:15 PM	1934 CPM	PM			



Instrument Control Chart

InstrumentQCID:

7

Meter Serial #: SCANNER-A

Probe Serial #: 123093A

Meter Make / Model #: LUDLUM 2224

Probe Make / Model #

QCDateTime: 1/10/98 12:18:37 PM

Check Source Isotope Th-230

Surveyor: Lorus Miller

Serial Number 1827-94

Background: 3.2 CPM

Activity 8820 DPM

Mean: 791.7 # Data Points 30

StdDev: 31.8

2StdDev: 63.6 728.1 855.3

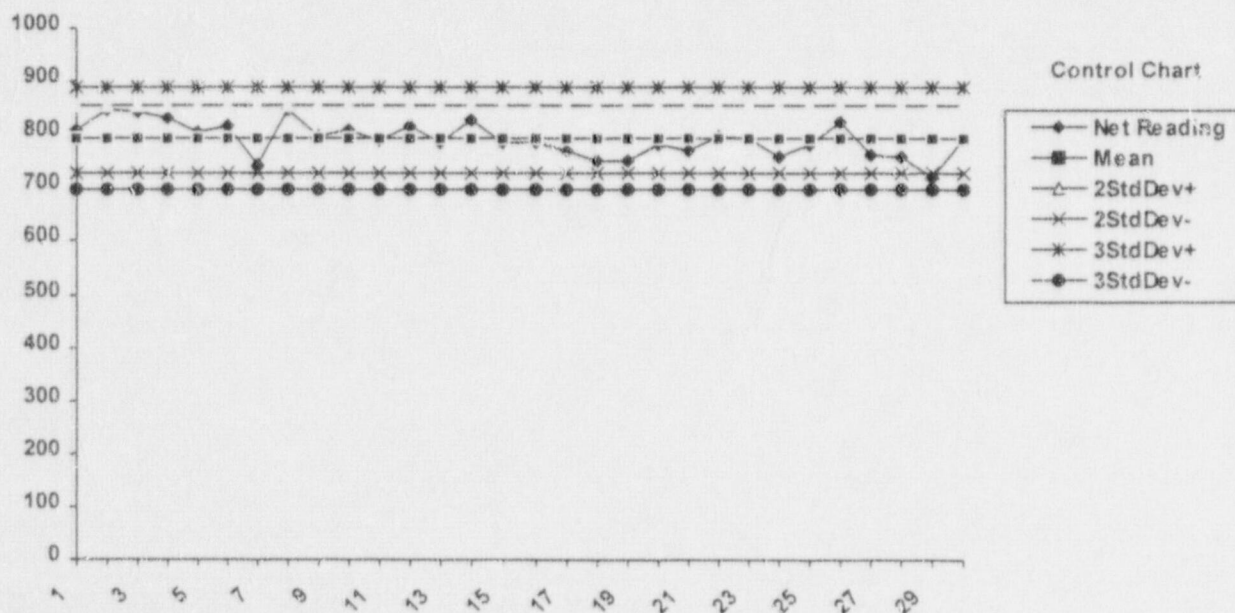
Count Time: 60

3StdDev: 95.4 696.3 887.1

Instrument Efficiency: 9.01%

Instrument QC Data:

1	810	60 Counts	13	790	60 Counts	25	783	60 Counts
2	849	60 Counts	14	830	60 Counts	26	826	60 Counts
3	846	60 Counts	15	790	60 Counts	27	764	60 Counts
4	834	60 Counts	16	788	60 Counts	28	763	60 Counts
5	809	60 Counts	17	772	60 Counts	29	723	60 Counts
6	821	60 Counts	18	755	60 Counts	30	796	60 Counts
7	748	60 Counts	19	756	60 Counts			
8	851	60 Counts	20	786	60 Counts			
9	801	60 Counts	21	772	60 Counts			
10	812	60 Counts	22	801	60 Counts			
11	791	60 Counts	23	798	60 Counts			
12	819	60 Counts	24	763	60 Counts			



Indust Radn Surv No.27-MH-7871-98, Facility Close-out and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Instrument Daily Control Chart

InstrumentQCID:

7

Meter Serial #: SCANNER-A

Probe Serial #: 123093A

Meter Make / Model #: LUDLUM 2224

Probe Make / Model #

QCDateTime: 1/10/98 12:18:37 PM

Check Source Isotope Th-230

Surveyor: Lorus Miller

Serial Number 1827-94

Background: 3.2 CPM

Activity 8820 DPM

Mean: 791.7 # Data Points 30

StdDev: 31.8

2StdDev: 63.6 728.1 855.3

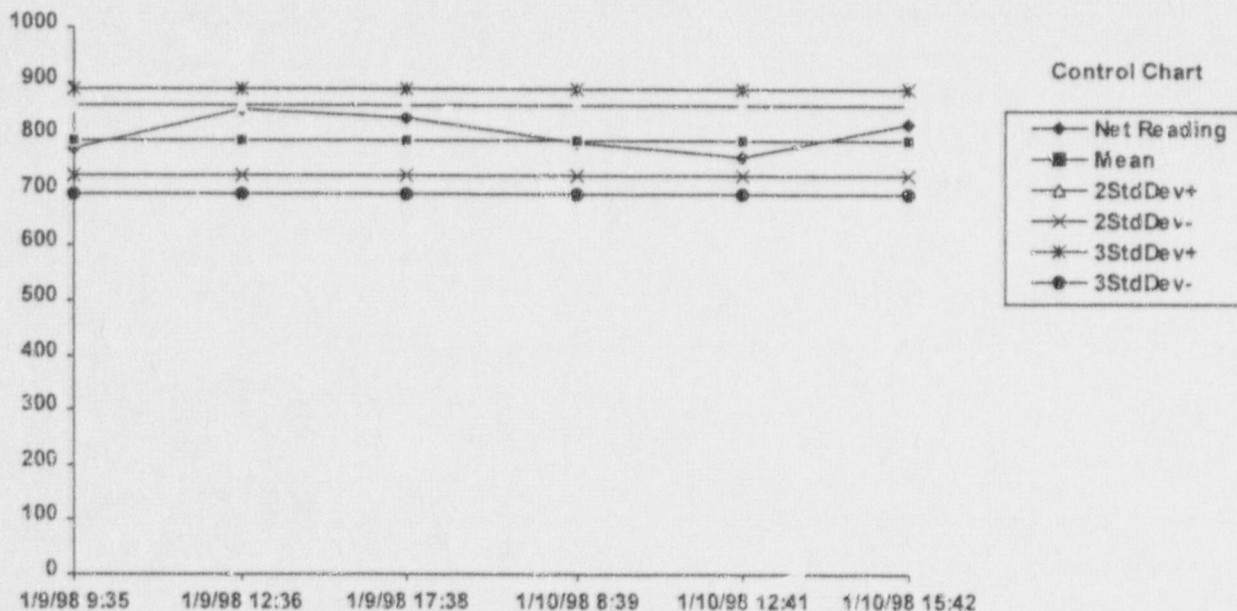
Count Time: 60

3StdDev: 95.4 696.3 887.1

Instrument Efficiency: 9.01%

Instrument QC Data:

1/9/98 9:35:54 AM	780	AM
1/9/98 12:36:16 PM	849	MidDay
1/9/98 5:38:46 PM	833	PM
1/10/98 8:39:58 AM	791	AM
1/10/98 12:41:01 PM	762	MidDay
1/10/98 3:42:09 PM	824	PM



Instrument Control Chart

InstrumentQCID: 8

Meter Serial #: SCANNER-B

Probe Serial #: 123093B

Meter Make / Model #: LUDLUM 2224

Probe Make / Model #

QCDateTime: 1/10/98 12:27:17 PM

Check Source Isotope Th-230

Surveyor: Lorus Miller

Serial Number 1827-94

Background: 874.1 CPM

Activity 8820 DPM

Mean: 1853.6 # Data Points 30

StdDev: 41.8

2StdDev: 83.6 1770.0 1937.2

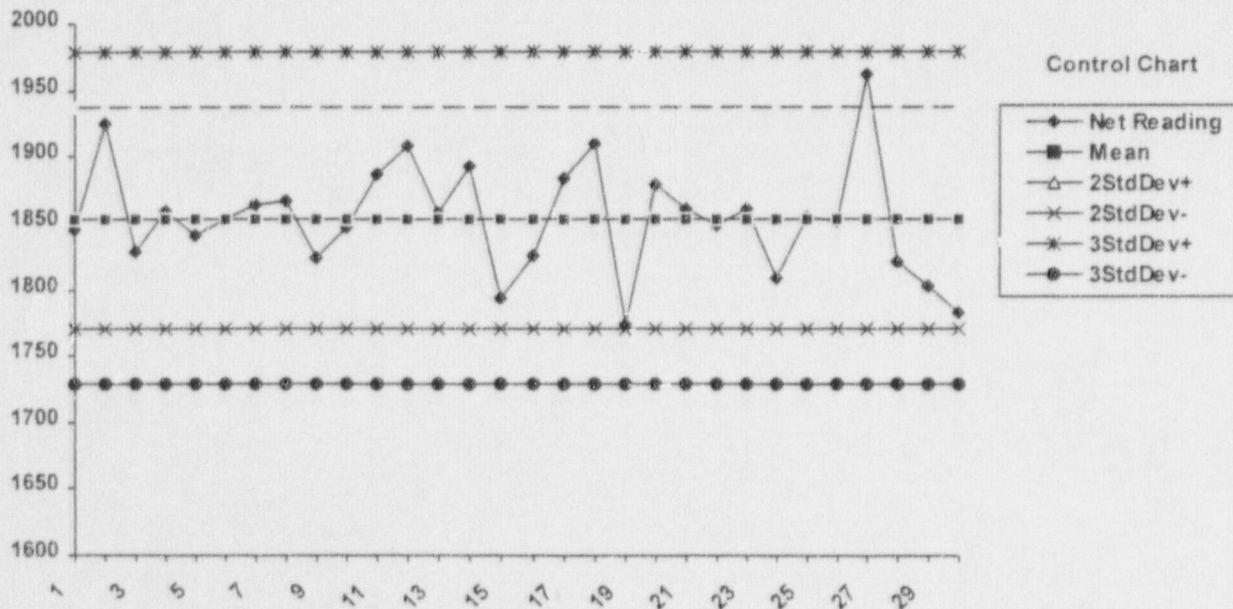
Count Time: 60

3StdDev: 125.4 1728.2 1979.0

Instrument Efficiency: 21.02%

Instrument QC Data:

1	2719	60 Counts	13	2732	60 Counts	25	2728	60 Counts
2	2799	60 Counts	14	2767	60 Counts	26	2726	60 Counts
3	2703	60 Counts	15	2667	60 Counts	27	2835	60 Counts
4	2733	60 Counts	16	2699	60 Counts	28	2694	60 Counts
5	2714	60 Counts	17	2757	60 Counts	29	2676	60 Counts
6	2727	60 Counts	18	2783	60 Counts	30	2657	60 Counts
7	2738	60 Counts	19	2648	60 Counts			
8	2740	60 Counts	20	2753	60 Counts			
9	2698	60 Counts	21	2735	60 Counts			
10	2721	60 Counts	22	2723	60 Counts			
11	2760	60 Counts	23	2735	60 Counts			
12	2782	60 Counts	24	2682	60 Counts			



Indust Radn Surv No.27-MH-7871-98, Facility Close-out and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Instrument Daily Control Chart

InstrumentQCID:

8

Meter Serial #: SCANNER-B

Probe Serial #: 123093B

Meter Make / Model #: LUDLUM 2224

Probe Make / Model #

QCDateTime: 1/10/98 12:27:17 PM

Check Source Isotope Th-230

Surveyor: Lorus Milier

Serial Number 1827-94

Background: 874.1 CPM

Activity 8820 DPM

Mean: 1853.6 # Data Points 30

StdDev: 41.8

2StdDev: 83.6 1770.0 1937.2

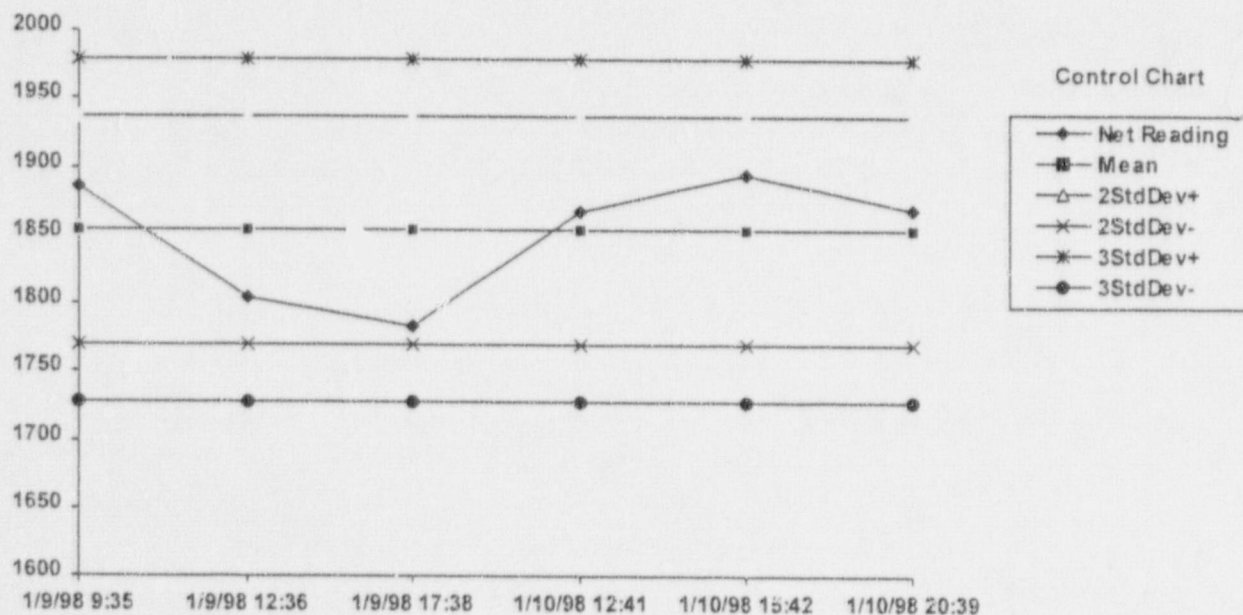
Count Time: 60

3StdDev: 125.4 1728.2 1979.0

Instrument Efficiency: 21.02%

Instrument QC Data:

1/9/98 9:35:43 AM	1886	AM
1/9/98 12:36:11 PM	1805	MidDay
1/9/98 5:38:10 PM	1783	PM
1/10/98 12:41:56 PM	1867	MidDay
1/10/98 3:42:25 PM	1895	PM
1/10/98 8:39:56 PM	1869	AM



Indust Radn Surv No.27-MH-7871-98, Facility Close-Out and
Termination Surv, Picatinny Arsenal, NJ, 6 - 16 Jan 98

Instrument Control Chart

InstrumentQCID: 9

Meter Serial #: 117577G

Probe Serial #: 109560G

Meter Make / Model #: LUDLUM 2350

Probe Make / Model #: 44-2

QCDateTime: 1/12/98 2:04:36 PM

Check Source Isotope Cs-137

Surveyor: Lorus Miller

Serial Number 1830-94

Background: 9.9 CPM

Activity 1676100 DPM

Mean: 347.6 # Data Points 30

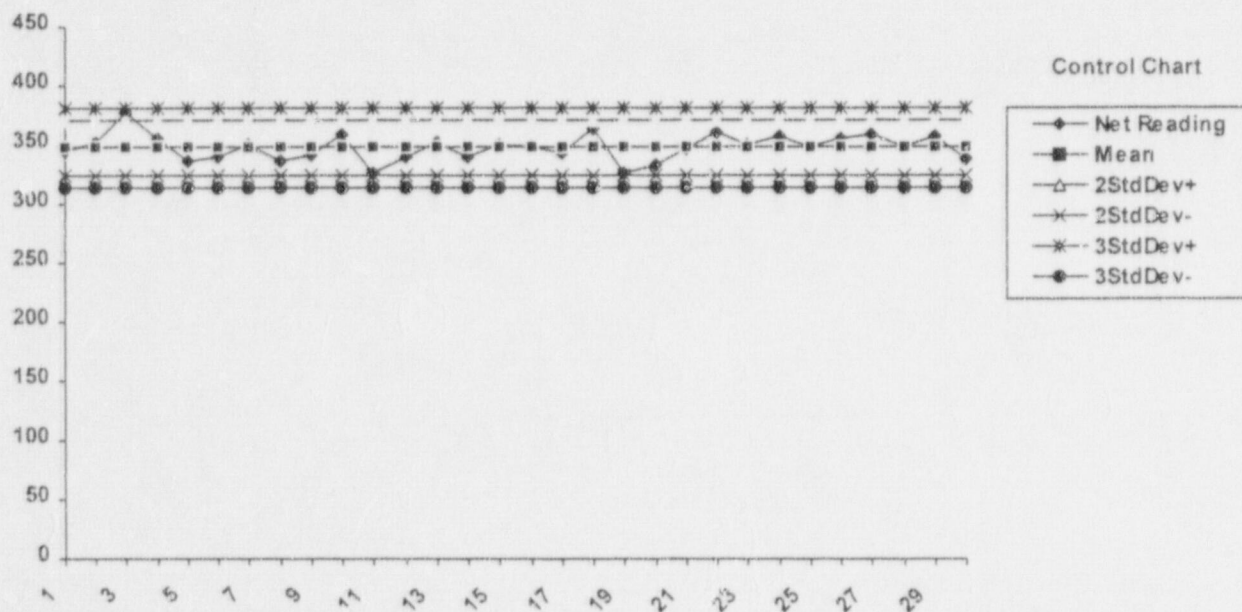
StdDev: 11.3

2StdDev: 22.6 325.0 370.2 Count Time: 60

3StdDev: 33.9 313.7 381.5 Instrument Efficiency: -100.00%

Instrument QC Data:

1	354	60 Counts	13	361	60 Counts	25	358	60 Counts
2	362	60 Counts	14	350	60 Counts	26	365	60 Counts
3	388	60 Counts	15	360	60 Counts	27	369	60 Counts
4	365	60 Counts	16	358	60 Counts	28	358	60 Counts
5	346	60 Counts	17	353	60 Counts	29	367	60 Counts
6	350	60 Counts	18	374	60 Counts	30	347	60 Counts
7	359	60 Counts	19	336	60 Counts			
8	346	60 Counts	20	342	60 Counts			
9	352	60 Counts	21	356	60 Counts			
10	368	60 Counts	22	370	60 Counts			
11	336	60 Counts	23	359	60 Counts			
12	349	60 Counts	24	366	60 Counts			



Instrument Daily Control Chart

Instrument QCID:

9

Meter Serial #: 117577G

Probe Serial #: 109560G

Meter Make / Model #: LUDLUM 2J50

Probe Make / Model #: 44-2

QC Date/Time: 1/12/98 2:04:36 PM

Check Source Isotope Cs-137

Surveyor: Lorus Miller

Serial Number 1830-94

Background: 9.9 CPM

Activity 1676100 DPM

Mean: 347.6 # Data Points 30

StdDev: 11.3

2StdDev: 22.6 325.0 370.2

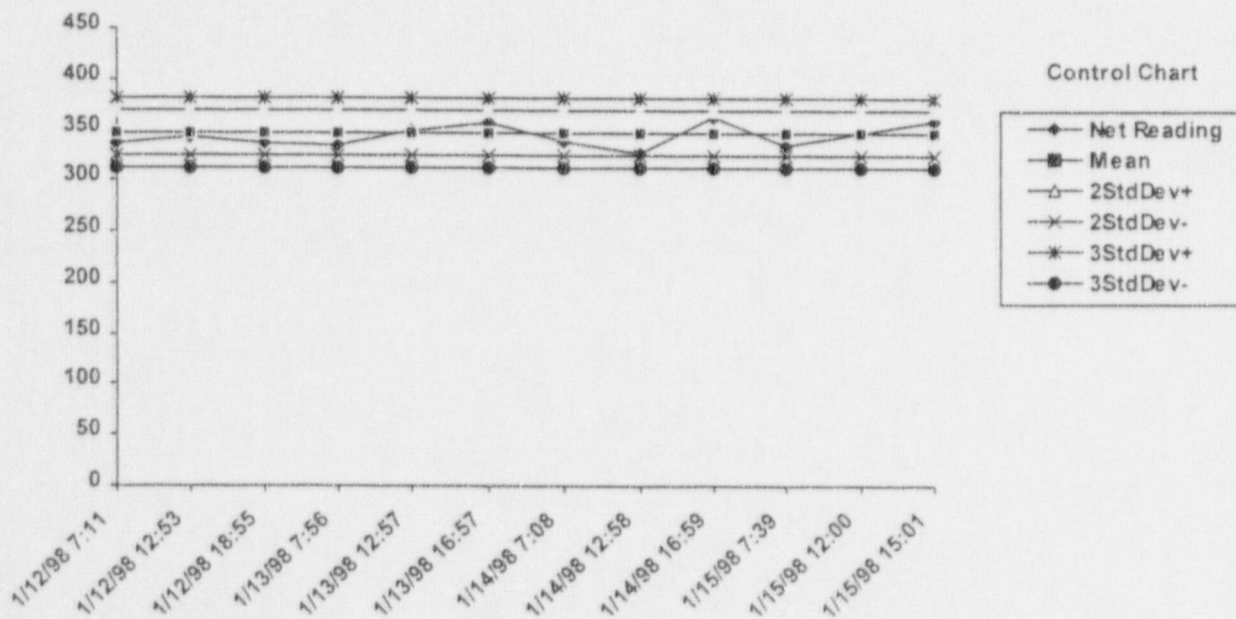
Count Time: 60

3StdDev: 33.9 313.7 381.5

Instrument Efficiency: -100.00%

Instrument QC Data:

1/12/98 7:11:28 AM	336	AM	1/15/98 3:01:30 PM	360	PM
1/12/98 12:53:42 PM	343	MidDay			
1/12/98 6:55:17 PM	337	PM			
1/13/98 7:56:26 AM	335	AM			
1/13/98 12:57:28 PM	349	MidDay			
1/13/98 4:57:54 PM	358	PM			
1/14/98 7:08:21 AM	340	AM			
1/14/98 12:58:48 PM	326	MidDay			
1/14/98 4:59:21 PM	363	PM			
1/15/98 7:39:50 AM	335	AM			
1/15/98 12:00:51 PM	348	MidDay			



23 JAN 1998

MONT-19-LRD (40-5f)

MEMORANDUM FOR Program Manager, Industrial Health Physics, ATTN: SSG Webster

SUBJECT: Results of Gamma Analysis of Debris Sample from Picatinny Arsenal

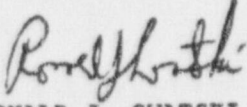
1. This report complies with the requirements of the American Association for Laboratory Accreditation (A2LA), therefore, "this report shall not be reproduced except in full without the written approval of the laboratory. The results relate only to the specified samples identified within this report." Other required compliance information is listed in the enclosure.

2. Results of analyzing debris sample W01, laboratory number X2649, from Picatinny Arsenal for gamma-emitting radionuclides are listed in the enclosure.

3. The sample was analyzed for the gamma-emitting isotopes: actinium-228, lead-212, and bismuth-212 the progeny of thorium-232; and thorium-234, lead-214, and bismuth-214 the progeny of uranium-238. Actinium-228 presence is based on the detection of the 911 keV peak and either the 338 or 969 keV peaks. Lead-212 presence is based on the detection of the 238 keV peak and the 300 keV peak. Bismuth-212 presence is based on the detection of the 717 keV peak and either the 785 or 1620 keV peak. Thorium-234 presence is based on the detection of both the 63 and 93 keV peaks. Lead-214 presence is based on the detection of 352 keV peak and either the 241 or the 295 keV peaks. Bismuth-214 presence is based on the detection of the 609 keV peak.

4. Point of contact for additional information on project number 27-MH-5690, (report number 8A8856-R1), is Mrs. A. Christman, extension 5-3983.

Encl
as


RONALD J. SWATSKI
Chief, Radiologic, Classic and
Clinical Chemistry Division

Encl 2

Date of Collection: 9 Jan 1998
 Date of Sample Receipt: 13 Jan 1998
 Counting Date: 16 Jan 1998
 Sample Size: 600 grams
 Instrument: High Purity Germanium Detector, 0
 Count Time: 100 minutes
 Lower Limits of Detection: See Table
 Variations to Accepted Method: None
 Method Name and Number: Gamma in Soil by Gamma Spectroscopy, G_002.000

Results of Analyzing Soil Samples

SAMPLE IDENTIFICATION	LAB NUMBER	PICOCURIES PER GRAM $\pm$ 1.96 STANDARD DEVIATIONS				
		Ac-228	Pb-212	Bi-212	Th-234	Pb-214
W01	K2649	0.6 $\pm$ 0.1	0.7 $\pm$ 0.05	0.5 $\pm$ 0.2*	0.09 $\pm$ 1#	0.5 $\pm$ 0.06
Representative		0.07	0.04	0.2	2	0.04
						0.03

Detection Limit

- * Key energy line found, but supporting peak(s) not found
- # No peak(s) were found

Received in inbox 7-20-98

U.S. Army Center for Health Promotion
and Preventive Medicine

02 JUL 1998

DIRECTORATE OF LABORATORY SCIENCES (DLS)
FINAL ANALYTICAL REPORT
PROJECT NO. 27-23-7871
REPORT SERIAL NO. 334137
DLS JOB ID. 8A9846
PROJECT SITE: PICATINNY ARSENAL
01-Jul-98

Angel
Writer: WDC 12/98
Chief: g 2/98
Team Leader: EB 7/1/98
Logout: js 7/1/98



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Readiness Thru Health

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ENCL 3

Received 15 Feb 98

Joseph A. Fabiani



DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO
ATTENTION OF

MCHB-TS-LRD (40-5F)

DIPECTORATE OF LABORATORY SCIENCES (DLS)
RADIOLOGIC, CLASSIC & CLINICAL CHEMISTRY DIVISION
FINAL ANALYTICAL REPORT

01-Jul-98

CLIENT: JAMES MULLIKIN
IHPP/PRGM27
USA HEALTH CLINIC, BLDG 118
PICATINNY ARSENAL, NJ 07806-5000

410-671-2656

PROJECT SITE: PICATINNY ARSENAL
PROJECT NUMBER: 27-23-7871
DLS JOB ID: 8A9846
REPORT SERIAL NUMBER: 334137

This report shall not be reproduced except in full without the written approval of DLS. The results relate only to the specific samples identified within the report.

REPORT RELEASE AUTHORIZATION:

Signature: *Ronald J. Latham*

Date: *2 July 98*



NLLAP



An ISO 9001 Registered Laboratory



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ISO 9001 REGISTERED
Readiness thru Health

CASE NARRATIVE

1. Reference electronic mail message from Mr. Mullikin, IHPP, 29 Jun 98, subject: Time, Data and Isotope of Interest.
2. Provided are results of analyzing two dust samples for gross alpha, gross beta and gamma.
3. Background dust sample, (laboratory number M1615), was analyzed in duplicate to demonstrate the precision of the procedure and the result is also listed in the enclosure with the suffix dup.
4. Actinium-228 was targeted for identification in the spectra from the thorium series. The presence of actinium-228 is based on the detection of the 911 keV peak and either the 338 or 968 keV peaks.
5. The result lists the activity + 1.96 standard deviations due to counting uncertainty in units of picocuries per gram (pCi/g).
6. Point of contact for additional information is Mrs. A. Christman, extension 5-3983.

List of the report contents:

Section	Number of Pages
Cover Sheet	1
Cover Letter	1
Case Narrative	2
Sample Summary	1
Analytical Data Report	1
Quality Control Data Report	0
Raw Data	0
Terminology/Abbreviations	1

Report Point-of-Contact: Angel Christman *ACC*Reviewer: GWW/RJS *RP*

List of all tests used:

DLS Test	Description	Method
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Number of samples included in the report, by matrix:

Matrix	Quantity
Soils	2

Analyst(s):

DLS Final Analytical Report, PICATINNY ARSENAL

Project No. 27-23-7871, DLS JOB ID 8A9846, Report Serial No. 334137, 7/1/98

Analyst Code	Analyst Name	Signature
--------------	--------------	-----------

		<i>Shepard Muford</i> <i>Angel Chute</i>
--	--	---

SAMPLE SUMMARY

Field ID	DLS ID	Date Collected	Matrix
BACKGROUND	M1615		Soils
HEPA VAC DUST	M1614		Soils

DLS Final Analytical Report, PICATINNY ARSENAL
Project No. 27-23-7871, DLS JOB ID 8A9846, Report Serial No. 334137, 7/1/98

Results of Analyzing Soil Samples

Date Samples Collected: 15 May 98
Date of Sample Receipt: 19 May 98
Extraction Date: N/A
Counting Dates: Gross Alpha/Beta 9 Jun 98
Gamma 16 Jun 98
Sample Sizes Analyzed: Gross Alpha/Beta 0.1 Gram
Gamma 100 Grams
Instruments: Gas Flow Proportional Counter. Tennelec 2
Gamma High Purity Germanium Detector, O
Count Time: 100.0 minutes
Lower Limit of Detection: See end of table
Variations to Accepted Method: None
Method Names and Numbers:
Gross Alpha and /or Beta in Soil, AB003.003
Gamma in Soil by Gamma Spectroscopy, G 002.000

Sample Identification	Lab Number	Picouries Per Gram ± 1.96 Standard Deviations	
		Gross Alpha	Gross Beta
HEPA VAC Dust	M1614	15 ± 5	15 ± 3
Background	M1615	9 ± 4	13 ± 3
Background - Dup	M1615	11 ± 5	15 ± 3
Lower Limits of Detection		4	3

		Picocuries Per Gram
Sample	Lab	± 1.96 Standard Deviations
<u>Identification</u>	<u>Number</u>	<u>Actinium-228</u>
HEPA VAC Dust	M1614	$0.6 \pm 0.2\#$
Background	M1615	$0.5 \pm 0.2^*$
Lower Limit of Detection		0.5

```

- Key Line found, but no supporting peaks found
# No Peaks Found

```

TERMINOLOGY/ABBREVIATIONS

Term	Description
A2LA	American Association for Laboratory Accreditation

28 JUL 98 10:00

RECEIVED VICTIM

Lab

DN 84 - 3983

98 AUG -6 PM 10:06

RECEIVED-REGION I

(FOR LFMS USE)
INFORMATION FROM LTS

```

: Program Code: 03610
: Status Code: 0
: Fee Category: EX 3L
: Exp. Date: 20011231
: Fee Comments: -----
: Decom Fin Assur Req'd: Y

```

A. REGION

Amount:

Check No.:

Signed M. A. Leachon
Date 8/6/99

3. OTHER

Signed _____
Date _____