UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005

November 27, 2006

Lt. Col. Mark Wrobel
Department of the Air Force
USAF Radioisotope Committee
HQ AFMOA/SGPR
110 Luke Ave., Suite 405
Bolling AFB, DC 20032-7050

SUBJECT: NRC INSPECTION REPORT 030-28641/06-004

Dear Lt. Col. Wrobel,

An NRC biennial inspection was conducted at Bolling Air Force Base on October 2-6, 2006. The purpose of the inspection was to verify that the activities authorized under NRC License 42-34539-01AF were conducted in accordance with NRC requirements. The enclosed report presents the details of the inspection which were discussed with members of the U.S. Air Force (USAF) Radioisotope Committee (RIC) during the exit meeting on October 6, 2006. On November 2, 2006, further telephonic discussions were held with the Air Force Inspection Agency (AFIA) inspector to obtain additional information related to the inspection program. Upon completion of the discussion, no additional deficiencies were identified.

The inspection included a review of activities associated with the USAF Master Materials License (MML) as they relate to radiation safety and compliance with the Commission's rules and regulations and the conditions of the license. Special emphasis was placed on several major areas within the USAF program including: (1) management and oversight of program activities, (2) permitting activities, and (3) inspection activities. Within the scope of this inspection, no violations were identified; therefore no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact the undersigned at (817) 860-8197 or Ms. Rachel S. Browder at (817) 276-6552.

Sincerely,

Jack E. Whitten, Chief
Nuclear Materials Licensing Branch

Docket No.: 030-28641
License No.: 42-23539-01AF

Enclosure: NRC Inspection Report 030-28641/06-04

EXECUTIVE SUMMARY

Department of the Air Force
NRC Inspection Report 030-28641/06-004

The biennial inspection conducted by the U.S. Nuclear Regulatory Commission (NRC) of the Department of the Air Force's (Air Force) Master Materials License (MML) program covered the period from June 2004 through October 2006. The inspection provided a comprehensive evaluation of the licensee's program, performance in regard to management oversight, inspection, permitting, and event or incident response programs. Additionally, the inspection included observation of the Air Force Radioisotope Committee (RIC) quarterly meetings as well as observations of inspections performed during the biennial review period.

The NRC grants significant authority to the Air Force to develop and implement a radiation control program that is protective of the health and safety of workers and the general public. The licensee satisfactorily implemented a radiation control program which ensured safe operations under their license and in accordance with the regulations.

Details related to the activities observed are provided in Attachment 2, "Inspector Notes," of this report. The following provides a summary of the findings of this inspection.

Management Oversight

- The licensee established effective communications and oversight to implement a satisfactory radioisotope committee that implemented the requirements of the NRC regulations and license conditions of the MML.

- Membership of the RIC was found to be as described in the license application. There had been significant turnover of the staff at the RIC and a realignment of the radiation protection division under the Assistant Surgeon General, Health Care Operations during the biennial review period. The RIC continued to implement a proactive and strong radiation protection program and completed a significant number of program accomplishments, which included implementing the radioactive material management information system (RAMMIS) database, responding to and implementing additional NRC security orders, and drafting several procedures, policy guides, and standing operating procedures in support of the MML renewal.

- The licensee made notifications to the NRC in accordance with 10 CFR 20.2202 or 20.2201. All 30-day reports were submitted to the NRC as required by Subpart M of 10 CFR Part 20.

Status and Technical Quality of Materials Inspection

- The inspections were performed by the Air Force Inspection Agency (AFIA) under the Inspector General. There were two successive inspectors during the review period and approximately 90 inspections were performed per year, world-wide. Approximately 98-99% of the inspection reports were issued within 30 days of completing the inspection.

The frequency of inspections and timeliness of inspection reports were determined to satisfactorily reflect the NRC's criteria for inspection activities.

- The inspections adequately addressed health and safety issues and were performed consistently with NRC criteria and guidance. The inspection reports were clear, concise, and well documented. The AFIA engaged the RIC at the appropriate threshold for resolution when there was a potential violation with a permit holder. There was good assessment, documentation, and follow-up on the findings identified by the AFIA.

- The RIC Secretariat and other members of the RIC staff performed 25 accompaniments during the biennial review period. The accompaniments provided continuity in the inspection program when there was a change in the AFIA staff and provided onsite inspection experience for new RIC staff members. There was a good rapport and working relationship between the AFIA and RIC which contributed to a successful accompaniment program.

Technical Quality of Materials Permitting Actions

- The RIC maintained oversight for 389 permits in the United State and overseas. Based on the review of 26 completed permit actions covering a variety of cases, the permit actions were thorough, complete and of good quality and properly addressed health and safety issues. The files generally contained appropriate documentation to support the permitting action. The permit actions followed the NRC NUREG-1556 series guidance documents, regulations, regulatory issue summaries, and regulatory guides.

- The RIC adequately implemented the NRC criteria for marking and handling sensitive unclassified non-safeguards information (SUNSI) as required by NRC guidance.

- The USAF received and implemented the required increase control orders for four permit holders. Three of the four permit holders had achieved full implementation. The remaining permit holder had implemented alternate means to meet the order and was scheduled to achieve full implementation by January 1, 2007, as approved by the NRC.

- The USAF indicated they would not ship any sources exceeding Category 1 thresholds under their MML. Therefore, the Air Force was not subject to implementing the NRC radioactive material quantities of concern (RAMQC) and fingerprinting orders.

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	030-28641
License No.:	42-23539-01AF
Report No:	030-28641/06-004
Licensee:	Department of the Air Force
Facility:	Radioisotope Committee Bolling Air Force Base
Dates:	October 2-6, 2006
Inspectors:	R.S. Browder, Health Physicist, Region IV R.R. Erickson, State Agreements Officer, Region IV C.F. Frazier, Senior Health Physicist, Region III
Approved By:	J.E. Whitten, Chief Nuclear Materials Licensing Branch
Attachments:	1. Supplemental Information 2. Inspector Notes 3. License Casework Reviews

Attachment 1

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee:

Col. Laurence M. Riddle (entrance)
Col. Margaret B. Matarese (entrance)
Lt. Col. Mark C. Wrobel (entrance/exit)
Lt. Col. Scott Nicholson (entrance)
Maj. Robert A. Rodgers (entrance/exit)
Col. Dale R. Tidabeck (exit)
Col. Linda E. Hanson (exit)

INSPECTION PROCEDURES USED

87129	Master Materials Program

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
AFIA	Air Force Inspection Agency
CFR	Code of Federal Regulations
NRC	U.S. Nuclear Regulatory Commission
MML	Master Materials License
RIC	Radioisotope Committee
SNM	Special Nuclear Material

Attachment 2
Air Force Biennial Inspection 2006
Inspector Notes

Category: AF Inspections **Topic:** Appraisal of Inspector

Reference: Letter of Understanding 7/1/87, Item 11

Requirement: The U.S. Air Force (USAF) Radioisotope Committee (RIC) will incorporate NRC's inspection criteria into the USAF inspection guides to assure compatibility of inspection program between the USAF and the NRC.

The supervisor [USAF RIC Secretariat] appraises the performance of each inspector during actual inspections at least once during each fiscal year. (IMC 2800, Section 04.05.e)

Finding: The RIC Secretariat and other members of the RIC staff accompanied the Air Force Inspection Agency (AFIA) inspector on 25 site visits between May 1, 2004 and August 26, 2006. Three of the accompaniments were performed by the RIC Secretariat, who had historically accompanied the AFIA inspector on at least one inspection each year. There was no formal mechanism in place for the RIC to perform a formal appraisal of the AFIA's activities and therefore no formal documentation was provided. The lack of formal documentation was primarily due to the separate chain of command between the two organizations. The AFIA reported to the Secretary of the Air Force Inspector General (IG), whereas, the RIC reported to the Office of the Surgeon General (OSG). There was a good rapport and working relationship between the RIC and the AFIA inspector. The accompaniments by RIC personnel provided continuity in the inspection program when there was a change in the inspection staff and provided onsite inspection experience for new RIC staff members.

Documents Reviewed: NRC License 42-23539-01AF, Letter of Understanding dated 7/1/87, Item 11;
Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," September 1, 2000;
Air Force Instruction 90-201, "Inspector General Activities," November 22, 2004

Category: AF Inspections **Topic:** Frequency of Inspections

Reference: Lic Cond 19.A., Application pg 9 & Lic Cond 19.I.

Requirement: It will be the responsibility of the Air Force Inspection and Safety Center (AFISC/SGMS) to conduct inspections to assess compliance with the provisions of the NRC License, NRC regulations, and of the permits. Inspections will be performed as an integral part of the Health Services Management Inspection (HSMI). Inspection criteria will be in accordance with NRC's inspection policy.

AFIA will inspect permits with inspection Priority 1 through 6 within six months of issue and at one-to-six year intervals thereafter.

The Base Bioenvironmental Engineer will inspect Priority 7 permits within 12 months of issue.

Finding: The RIC utilized the guidance identified in NRC Inspection Manual, Manual Chapter 2800, "Materials Inspection Program" to specify the permit inspection frequencies. Inspections were performed under Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," dated September 1, 2000, and Air Force Instruction 90-201, "Inspector General Activities," dated November 22, 2004. Collectively these documents adequately reflected the inspection criteria, including the inspection frequency and methodology as identified in IMC 2800. Initial inspections were performed within six months of issuance, and follow-up inspections were performed at inspection frequencies which reflected the priority code (inspection frequency) as defined in IMC 2800. Inspections were not cancelled, deferred, or extended during this review period. The priority code was verified on all permits and each priority code satisfactorily met the NRC inspection frequency.

Chemical agent monitors, chemical agent detectors, or low altitude navigation and targeting infrared for night (LANTIRN) systems were types of permits that were designated priority 7 inspection frequency. The permits for this priority code were typically inspected by telephone. This type of inspection was an acceptable methodology in accordance with IMC 2800. The AFIA inspector indicated that if he were conducting other types of inspections in an area where a Priority 7 permit holder was located, then he would perform an inspection in lieu of performing a telephonic inspection. Additionally, there were other types of Air Force inspections performed by the Bioenvironmental Engineering (BE) staff assigned to the AFIA, and when those inspectors were in a location of use performing another type of AFIA inspection, then they would also perform inspections of Priority 7 permit holders. The AFIA inspector indicated that utilizing the BE staff was initiated to maximize available resources.

Documents Reviewed: NRC License 42-23539-01AF;
Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," September 1, 2000;
Air Force Instruction 90-201, "Inspector General Activities," November 22, 2004

Category: AF Inspections **Topic:** Increased Controls and RAMQC

Reference: Letter of Understanding, Item 11

Requirement: The RIC will incorporate NRC's inspection criteria into the USAF inspection guides to assure compatibility of inspection program between the USAF and the NRC.

Finding: The RIC developed a draft standing operating procedure (SOP) RIC-SE-UN-1, "Standing Operating Procedure for the Handling of Sensitive Unclassified Information and Official Use Only Information," dated September 26, 2006. The RIC indicated they would provide the final SOP to applicable permit holders when it was issued. The draft SOP was developed to meet the requirements identified in the Letter of Understanding and to promote consistency among permit holders. The procedure incorporated increased control guidance as well as sensitive unclassified non-safeguards information (SUNSI) requirements as provided in Regulatory Issue Summary (RIS) 2005-31, "Control of Security-related Sensitive Unclassified Nonsafeguards Information." The draft SOP was determined to be compatible with NRC increased control requirements and SUNSI guidance.

The increased control (IC) orders for certain radioactive materials were issued by the RIC to six permit holders. Based on a request by the RIC, the NRC granted limited relief from the IC orders for one permit holder on May 11, 2006. The relief was based on the Commission's decision that the radioisotope thermoelectric generators authorized on the permit were classified as a Group 5 under the Protective Measures and therefore additional protective measures were not required. The RIC requested an extension for completing the requirements of the IC Order with respect to IC 2 for four permit holders, based on proposed alternative means to meet the requirements of IC 2 until such time that full implementation was achieved by the permit holder. The NRC granted the extension on June 26, 2006, for three of the four permit holders, with a final implementation date that was unique for each permit holder. The fourth permit holder was not granted an extension because they had achieved full implementation by the time the extension request was granted. One of the three permit holders who had an approved extended implementation date transferred its self-shielded irradiator from their facility on September 7, 2006, and therefore, the orders were no longer applicable. At the time of the inspection there were a total of four permit holders who were implementing the IC Orders and three of the four had achieved full implementation. The remaining permit holder had implemented alternate means to meet the orders and was scheduled to achieve full implementation by January 1, 2007.

The NRC observed the AFIA inspector perform a security inspection for one of the permit holders on September 18, 2006, at Kirtland AFB. The AFIA inspector had attended the security training course as required prior to performing a security inspection. The inspector was prepared and knowledgeable of the IC Orders. The inspection was performed satisfactorily and met the intent of the inspection procedure.

The RIC made the decision not to ship any sources exceeding Category 1 thresholds under their Master Materials License (MML). The RIC indicated they would contract with a vendor to ship any source that required removal or transfer under the vendor's license and the vendor's radioactive material quantities of concern (RAMQC) order. Therefore, the RAMQC order did not apply to the Air Force.

The RIC had a secure room in the Maisey Building where classified and otherwise protected documents were maintained. Security was more than adequate and documents stored in this area were classified by the Air Force, minimally, at the secret level with special access authorization required for entry. The RIC decided that all IC information, including permit files, would be maintained at this location and thereby controlled. It was determined that this facility adequately protected the security of the information.

Documents Reviewed: NRC License 42-23539-01AF, Letter of Understanding dated 7/1/87, Item 11; AFI 40-201 "Managing Radioactive materials in the US Air Force" September 1, 2000; Draft SOP No. RIC-SE-UN-1, "Standing Operating Procedure for the Handling of Sensitive Unclassified Information and Official Use Only Information" September 26, 2006

Category: AF Inspections **Topic:** Technical Quality of Inspection

Reference: Letter of Understanding, Item 11

Requirement: The RIC will incorporate NRC's inspection criteria into the USAF inspection guides to assure compatibility of inspection program between the USAF and the NRC.

Finding: The AFIA performed inspections in accordance with NRC Inspection Manual, Manual Chapter 2800, "Materials Inspection Program" and additional Air Force guidance documents that included Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," and Air Force Instruction 90-201, "Inspector General Activities." A random review of inspection files indicated that the inspections adequately addressed health and safety issues and were performed consistently with Manual Chapter 2800. The inspection reports reviewed were clear, concise, and well documented. There were a minor number of inspection reports which referenced incorrect regulatory requirements. These incorrect references were brought to the attention of the inspector during the biennial review period. As a result, there was closer attention to detail in the inspection reports.

The inspection findings identified in the sample of inspection reports reviewed appeared to be well founded and properly documented. The permit holder's response to any answerable findings were reviewed for adequacy by the AFIA inspector. If any response(s) were determined to be inadequate, then the response(s) were referred to the RIC for follow up and to address further action as necessary. Otherwise, the AFIA closed out the inspection based on the acceptable response to identified findings.

The Air Force did not use the same nomenclature to specify the level of the finding or violation, as described in the NRC Enforcement Manual. The AFIA engaged the RIC at the appropriate threshold for resolution and in turn, the RIC engaged the NRC at the threshold which corresponded to a Severity Level (SL) III violation. There were no SLIII violations identified during this biennial review period. If an urgent concern was identified during the inspection, then the concern was telephonically conveyed to the RIC typically while the inspector was still on site. The AFIA and RIC utilized the NRC enforcement process, including participation in an enforcement conference with the permit holder, as recommended in the NRC Enforcement Manual, in an effort to ensure compliance with NRC regulations and requirements.

Permit holders who received an unsatisfactory rating were reinspected within 90 days and then again at one year. If the permit holder was in compliance at the one year inspection, then they were returned to the routine inspection frequency.

Each year the AFIA received a list of facilities to be inspected from the RIC. It was the AFIA's responsibility to perform the inspections timely and in a cost effective manner. The RIC was aware of the list and periodically accompanied the AFIA during inspections. The AFIA inspector issued all inspection reports and copies were provided to the permit holder, the owning and host-installation major command (MAJCOM) BE, the RIC and the NRC.

The NRC Project Manager accompanied two different AFIA inspectors during the biennial review period. These accompaniments included a nuclear medicine permit at

Scott AFB, national guard unit at Scott AFB, a medical broad scope permit at Lackland AFB, and security inspection at Kirtland AFB for a permit holder who had implemented the IC orders. The NRC accompaniments served as a platform to observe the AFIA inspector to ensure consistency between the MML and NRC inspection program. While the Air Force may inspect more stringently than the NRC, the inspection program was determined to be comparable with the NRC inspection program. Based on the accompaniment observations, it was determined that both of the inspectors were knowledgeable of the regulations, health and safety issues, and both conducted the inspections as recommended in NRC Manual Chapter 2800 "Materials Inspection Program."

Documents Reviewed: AFI 40-201 "Managing Radioactive materials in the US Air Force" September 1, 2000;
AFI 90-201 "Inspector General Activities" November 22, 2004;
Sample of Inspection Reports

Category: AF Inspections **Topic:** Timeliness of Reports

Reference: Letter of Understanding, Item 11

Requirement: The RIC will incorporate NRC's inspection criteria into the USAF inspection guides to assure compatibility of inspection program between the USAF and the NRC.

Finding: The AFIA inspection reports were required to be issued within 30 days after completing the inspection, in accordance with Section 4.3.4 of AFI 90-201, "Inspector General Activities" dated November 22, 2004. Therefore, this procedure implemented the guidance from NRC Inspection Manual, Manual Chapter 2800, "Materials Inspection Program" for issuing inspection reports. The timeliness of inspection reports was tracked with the use of metrics and was reviewed during the quarterly RIC meetings. The only time when inspection reports were issued later than the requisite 30 days was when the Director of Medical Operations for the Air Force Inspection Agency was not available to sign out the report.

Inspection reports may contain both, answerable and non-answerable findings. Non-answerable findings were similar to NRC's non-cited violations. These findings were typically corrected at the time of inspection and were documented in the inspection report. A finding that required a response from the permit holder was similar to NRC's severity level (SL) IV violation, as specified in the NRC Enforcement Manual. The permit holder subsequently had 90 days to respond to the finding. The permit holder could request an extension only to allow for concurrence on the response report. If the permit holder did not answer timely, or answered inadequately, then AFIA referred the matter to the RIC for disposition.

Based on the review of several inspection reports it was determined that AFIA had issued closure letters within 30 days. A summary of the inspection reports issued during the biennial review period indicated that approximately 98-99% of the inspection reports had been issued within the 30 day time frame.

Documents Reviewed: AFI 40-201 "Managing Radioactive materials in the US Air Force" September 1, 2000;
AFI 90-201 "Inspector General Activities" November 22, 2004;
Sample of Inspection Reports

Category:	Decommissioning **Topic:** Disposal of LLW at Texas Municipal Waste Sites
Reference:	License Condition 19.F
Requirement:	NRC review and approval of permittees request to dispose of low level wastes at Texas municipal solid waste sites, after approval by the Texas Bureau of Radiation Control (now Texas Department of State Health Services, Radiation Control Program), or that the waste go through a broker specifically authorized to dispose of waste in Texas under Texas Regulations for Control of Radiation, Part 21.
Finding:	The RIC had not approved any permit request(s) to dispose of low level wastes at a Texas municipal solid waste site during this biennial review period.
Documents Reviewed:	Discussions with staff

Category:	Decommissioning **Topic:** Records of Disposal
Reference:	10 CFR 30.51(a)(3); (d) and (f)
Requirement:	(a)(3) The licensee who disposed of the material shall retain each record of disposal of byproduct material until the Commission terminates each license that authorizes disposal of material. (d) Prior to license termination, each licensee authorized to possess radioactive material with a half-life greater than 120 days, in an unsealed form, shall forward the following records to the appropriate NRC Regional Office [MML]: (1) Records of disposal of licensed material made under 20.2002, and (2) Records required by 20.2103(b)(4) [effluent release records] (f) Prior to license termination, each licensee shall forward records required by 30.35(g) to the appropriate NRC regional office (MML).
Finding:	The USAF procedure that addressed this regulatory requirement was AFI 40-201, "Managing Radioactive Materials in the USAF," September 1, 2000, which required AFIOH maintain records of all radioactive waste transferred for disposal in accordance with AFMAN 37-139, "Disposition of Air Force Records - Records Disposition Schedule." A review of decommissioning records determined that the records for disposals from Kirtland AFB permit NM-03110-02/03AFP, for the four OT-10 training sites, were maintained by AFIOH in accordance with the Air Force instruction for managing records. These records constituted approximately 30 compact discs of waste manifests. An example of the waste manifests was reviewed. Based on the example of the documents reviewed, it was determined that the management of records for the waste manifest adequately met the requirements for maintaining records as required by 10 CFR 30.51. Additional terminated permits were reviewed for the cases where the final disposition of the radioactive material was documented on NRC Form 314, "Certificate of Disposition of Materials." For these smaller permit holders who documented the disposal of materials under NRC Form 314, the RIC maintained the documentation in the respective permit holder's terminated file. The management of these types of records adequately met the requirements in 10 CFR 30.51.
Documents Reviewed:	AFI 40-201, "Managing Radioactive Materials in the USAF," September 1, 2000; AFMAN 37-139, "Disposition of Air Force Records - Records Disposition Schedule"

Category: Decommissioning **Topic:** Timeliness Rule and Categorical Exclusions

Reference: Letter dtd March 5, 1999 (DP under 30.36)

Requirement: Permittees are required to notify the MML of changes in operating status in accordance with 10 CFR 30.36(d).

The MML is not required to notify the NRC if the notification above is for: 1) sealed sources with no leakage (Group 1); or 2) possession of radioisotopes with half lives less than 120 days (Group 2). For all other principle decommissioning activities, the MML must notify the NRC with sufficient information to determine if a decommissioning plan (DP) is required and whether the NRC needs to review and approve the DP.

If a DP is required under 10 CFR 30.36(g)(1), then it must be submitted to the NRC. Some DPs may be reviewed by the MML (as determined by the NRC); however, all decommissioning actions which do not qualify for a categorical exclusion in accordance with 10 CFR 51.22 will, in all cases, remain the responsibility of the NRC.

Permittees who elect to submit request to extend the time periods established by 10 CFR 30.36(d) in accordance with 30.36(f), must submit requests to the MML. The MML is required to transmit such a request to the NRC. The NRC maintains the responsibility for reviewing the request and granting the approval.

Finding: Air Force Instruction 40-201, "Managing Radioactive Materials in the US Air Force" September 1, 2000, required the permit holder to notify the RIC within 30 days if they were no longer using radioactive materials as authorized on the permit. A review of the terminated actions performed during the biennial review period indicated that the RIC had completed 53 terminated actions. All of the terminated actions involved sealed sources, except for two permits located in the United States and one permit located in Germany, that was not under the authority of the MML. A sampling of the terminated permit files with sealed source authorizations indicated the appropriate information was documented on the NRC Form 314, "Certificate of Disposition of Materials" as required by AFI 40-201.

The two permits located in the United States that did not involve sealed sources and did not meet the categorical exclusion under 10 CFR 51.22(c)(20)(ii) involved; (1) europium-152 and other activation products used in Building 248 at McClellan AFB and, (2) magnesium-thorium used in Building 3001 at Tinker AFB. Both of these facilities were released in accordance with 10 CFR 20.1402 based on characterization and final status surveys that were performed in accordance with Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) survey methodology and NUREG-1757, "Consolidated Decommissioning Guidance."

The Air Force performed two environmental assessments (EAs) during the biennial review period. Both EAs were performed for the Nellis AFB Test and Training Range, permit number NV-30048-xx/xxAFP, which authorized depleted uranium munitions. One EA analyzed different disposal options for the depleted uranium contaminated targets (i.e., tanks and vehicles) and target debris munitions residue. For the alternatives analyzed, including maintaining the existing status quo, there was no significant impact

to the natural environment and a finding of no significant impact was determined. The second EA evaluated the impact from potentially increasing the number of depleted munitions fired at the range from 7,900 to 26,400 rounds per year. Based on the assessment, there was no significant impact to the natural environment and a finding of no significant impact was determined.

Documents Reviewed: 40-201, "Managing Radioactive Materials in the US Air Force" September 1, 2000; Terminated permit files

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Category: Dosimetry **Topic:** Exposure Monitoring

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 9

Requirement: The USAF Radioisotope Committee will require dosimetry if an individual is likely to receive a radiation dose in excess of 10% of the annual maximum permissible occupational exposure limit. Dosimetry service will normally be provided by the USAF Occupational and Environmental Health Laboratory (OEHL). Additionally, the Committee may incorporate into permits bioassay guidelines for those common isotopes identified in RG 8.20 (9/79) and RG 8.23 (1/81).

Finding: The overarching Air Force instruction for radioactive materials was AFI 40-201, "Managing Radioactive Materials in the US Air Force," September 1, 2000. This instruction specified that the Air Force Institute for Operational Health, Surveillance Directorate, Radiation Surveillance Division, Radiation Dosimetry Branch (AFIOH/SDRD), located at Brooks City-Base, San Antonio, Texas, was operating the exposure monitoring program. The personnel internal and external exposure monitoring program was addressed in Air Force Manual 48-125 "Personnel Ionizing Radiation Dosimetry," dated August 7, 2006, which superceded the instruction dated March 1, 1999. This instruction was applicable for the USAF, the Reserve and the Air National Guard installations and provided prescriptive guidelines for the Base Radiation Safety Officer (RSO) to determine who should be monitored and what type of dosimetry should be issued. The instruction adequately covered the internal and external exposure monitoring program that a base would be required to implement. The instruction covered elements such as non-routine dosimetry, abnormal exposure or over-exposures, declared radiation workers, and lost or damaged dosimeters. There were easy to follow decision trees which allowed the Base RSO to determine the type of monitoring required for each specific occupational worker. The Air Force dosimetry program required monitoring of pregnant occupational radiation workers on a monthly basis to ensure the whole body total effective dose equivalent is less than 500 mrem over the gestation period.

The AFIOH participated as a voting member on the USAF RIC and presented the exposure monitoring report for radioactive material ("ram") and non-radioactive material ("non-ram") users during the quarterly RIC meetings. The AFIOH quarterly exposure monitoring report was timely and provided a detailed summary of the maximum, average, and total exposures for ram and non-ram users for each occupational dose category. Generally, the predominant occupational dose category for ram users was cardiologist physician, while the predominant dose category for non-ram users was medical x-ray technician. The AFIOH processed several thousand dosimeters on a quarterly or monthly basis for conus and oconus sites. The turn around time was

reasonable and there was a very small percentage of late or missing dosimeters. The members of the RIC did not request additional information or raise any questions or concerns with the presentation of the quarterly exposure monitoring report during the RIC meetings that were observed by the NRC.

The AFIOH/SDRD completed National Voluntary Laboratory Accreditation Program (NVLAP) in beta-gamma and neutron-gamma for the electronic personnel dosimeters (EPDs), and was the only lab in the United States that had achieved this accreditation. During the RIC meeting on November 29, 2005, it was explained that first responders may potentially use the EPDs, as well as certain occupations working with pulsed x-ray units at non-destructive centers. However, at the time of the inspection, the EPD was not being used as the dose of record. The NVLAP accredited thermoluminescent dosimeters (TLDs) were used as the dose of record. The NVLAP accreditation is valid from April 1, 2006 through March 31, 2007. The categories authorized under NVLAP were representative of the types of exposures which the different bases could be exposed to during normal or accident conditions.

The Air Force used a radiation dosimetry web-based system that was implemented during 2005 and appeared to be well accepted throughout the bases in the country. The web-based system allowed the Base RSO or alternate, to request base information changes, add or deactivate person(s) in the exposure monitoring program, declare pregnant radiation worker(s), order additional whole body, neutron, or extremity dosimeters, request cumulative occupational exposure histories for an individual, obtain routine dosimetry reports, or request the required annual exposure reports for monitored workers.

The Air Force established the Master Radiation Exposure Registry (MPER) in accordance with Air Force Instruction 48-125. This database maintained the historical records of "all" exposure results from dosimeters worn by USAF personnel and persons issued dosimeters by the USAF. The AFMOA/SGPR, which is the organization responsible for the RIC, responded to all inquiries from Veterans regarding radiation exposure from ionizing radiation over any period of time while serving in the USAF. The AFMOA/SGPR provided dose information to the requestor in a timely manner as required by the regulations.

Regulatory Guide 8.20, "Health Physics Surveys for Byproduct Material at NRC-Licensed Processing and Manufacturing Plants," October 1979, was not applicable since there were no permits which authorized the handling of unsealed quantities of iodine that exceeded 1 millicurie in an open room, or 10 millicuries in a fume hood, or 100 millicuries in a glovebox, as specified in the guide. The procedure AFI 40-201, "Managing Radioactive Materials in the US Air Force," September 1, 2000, provided guidelines to ensure compliance with 10 CFR Part 20. The guideline in the USAF instruction required in part that a laboratory fume hood or other effective capture exhaust system be used when working with volatile forms of radioiodine, liquid or capsule form.

Regulatory Guide 8.23, "Radiation Safety Surveys at Medical Institutions" January 1981, was not directly tied down on permits because the surveys at medical institutions were performed in accordance with the regulations and guidance recommended in NUREG-

1556, Volume 9, "Program-Specific Guidance About Medical Use Licenses." This NUREG guidance was an acceptable method for performing surveys at medical institutions.

Documents Reviewed: NRC License 42-23539-01AF;
AFI 40-201, "Managing Radioactive Materials in the US Air Force," September 1, 2000;
Air Force Manual 48-125 "Personnel Ionizing Radiation Dosimetry," August 7, 2006

Category: Organization & Control **Topic:** Communications and Operations of RIC

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 2

Requirement: The RIC will review the activities of the Executive Secretary on at least a quarterly basis.

Finding: The U.S. Nuclear Regulatory Commission (NRC) granted a Master Material License (MML) to the Department of the Air Force (Air Force) in 1985. The MML provided broad authority for the Air Force to implement a radiation control program in accordance with the regulations, and to issue individual permits for use of licensed radioactive materials at individual Air Force installations. The Surgeon General under the Deputy Assistant Secretary of the Air Force set Air Force policy for controlling ionizing radiation hazards and set limits for exposure to ionizing radiation. As a condition of the MML, the Air Force Surgeon General formed the Radioisotope Committee (RIC) to manage and oversee the implementation of Air Force radioactive material management procedures, under the Commander, Air Force Medical Operations Agency.

During the inspection review period, the RIC operated under two different organizational structures. The Air Force Surgeon General's Headquarters Staff and Field Operating Agencies had been reorganized effective October 1, 2003. Under this reorganization, the Air Force Medical Support Agency (AFMSA) served as the RIC Chairman and reported directly to the Surgeon General. There were two Chiefs under the Radiation Protection Division (SGPR), who served successively as the RIC Secretariat during the biennial review period.

On January 24, 2006, the Air Force Surgeon General's Headquarters Staff and Field Operating Agencies were reorganized again. The Radiation Protection Division (SGPR) which implemented the MML activities and RIC were re-aligned as an Air Force Medical Operations Agency (AFMOA) from a previous supporting agency. The Chief of Aerospace Medicine Policy and Operations served as the Chairman of the RIC, effective March 2006. This chairman position reported directly to the Asst. Surgeon General, Health Care Operations.

Prior to the reorganization taking effect, the RIC Secretariat contacted the NRC to inform the agency of the forthcoming change. The constructive benefit ensuing from the reorganization, was that the Radiation Protection Division (SGPR) would be maintained under aerospace operations, which was realigned under the Assistant Surgeon General, Health Care Operations, thereby aligning the Chairmanship of the RIC with the policy development and operational support aspect of Air Force Headquarters.

The AFMOA/SGPR Radiation Protection Division continued to serve as the RIC Secretariat and was responsible for ensuring safe and regulatory compliant use of all

radiation producing materials or devices, except 91(a) and 91(b) materials, required for supporting the Air Force mission. The SGPR developed appropriate policy and guidance to implement the regulatory requirements to support the MML. The SGPR prepared, coordinated, and distributed the quarterly RIC agenda; facilitated the quarterly RIC meetings; and prepared and distributed the meeting minutes. Additionally, the RIC Secretariat was delegated the daily operating responsibilities for Air Force radioactive materials including initiating actions to carry out RIC decisions and policy.

The RIC continued to serve as the executive body as required by the MML and established by Air Force Policy Directive 40-2, "Radioactive Materials," April 8, 1993, coordinating administrative and regulatory aspects of radioactive material uses in the Air Force. The RIC was composed of 14 voting members which represented different areas of command or agencies within the Air Force, who were involved in all aspects of radiation protection. The RIC met quarterly during the biennial review period and discussed standing reports, decommissioning activities, inspection activities, old/new business, changes in regulation, policies and procedures, incident reports and informational items. The agenda and subsequent meeting minutes submitted by the RIC were timely and thorough. The RIC, as mandated by Air Force policy, ensured that a quorum was met for each RIC meeting. The RIC Secretariat reviewed the organizational charter which stated in part that the RIC was responsible for providing regulatory oversight for the use of radioactive materials by the Air Force, except for weapons related materials. The RIC, as an executive body, approved administrative controls for acquiring, receiving, storing, distributing, using, transferring, and disposing of radioactive material to ensure compliance with the MML, NRC policy and guidance, other applicable regulatory requirements and Department of Defense Air Force directives and instructions.

The NRC observed the quarterly RIC meetings during the biennial review period, wherein the RIC demonstrated its ability to identify, assess, and resolve issues and document decisions. The NRC Project Manager observed healthy discussions among the members in an effort to ensure safe operations and implementation of radiation control programs throughout the Air Force. For example, during the meeting on November 29, 2005, 4th Quarter RIC meeting, it was discussed that new radiation portal monitoring systems were being installed as new force protection assets at many bases. The RIC identified a potential issue in triggering the portal monitoring system by patients undergoing nuclear medicine and/or radiation oncology procedures. The RIC proposed guidance and instructions to distinguish patients from potential radiation threats at the bases where the system was in place. The RIC conducted a survey and approximately 25% of the clinics either passed out cards or letters as a "free pass" to gain base entry when the systems were triggered. As a result of the RIC's proactive identification of a potential issue, all radiation safety officers (RSOs) at medical permitted facilities were provided guidance documents and instructions. Other examples that were addressed by the RIC, included the compressed 12-hour RSO training course which focused on specific requirements for the Bioenvironmental and Readiness communities, building a database of all the historical waste sites that existed during the 1950's, discussion of decommissioning issues, and ensuring the final status surveys were properly performed in accordance with MARSSIM.

Documents Reviewed:	NRC License 42-23539-01AF, Letter of Understanding dated 7/1/87, Item 11; AFI 40-201 "Managing Radioactive Materials in the US Air Force" September 1, 2000

Category: Organization & Control **Topic:** Distributing Information Notices

Reference: License Condition 19.D.

Requirement: The USAF Radioisotope Committee Secretariat will screen the information contained in NRC Bulletins and Information Notices and retransmit applicable parts to permittees by the method deemed most practicable.

Finding: AFI 40-201, "Managing Radioactive Materials in the US Air Force, " September 1, 2000, implemented the requirement in the license to provide information to permittees. This instruction documented that the RIC was the single point of contact for the MML and was responsible for setting up administrative controls to receive, possess, use, distribute, store, transport, transfer, and dispose of or otherwise manage radioactive materials. Additionally, the instruction identified the RIC Secretariat as being responsible for handling all RIC correspondence. Several documents were reviewed to determine if the information was disseminated to pertinent bases. The RIC Secretariat screened information and sent the information to the appropriate permit holders through the Action Officers. Information reviewed included, Information Notices; information contained in the NMSS Newsletters; journals, such as American Association of Physicists in Medicine; and changes in NRC regulatory requirements such as 10 CFR 30.34 (Portable gauge security) and 10 CFR Part 35 (Medical Use of Byproduct Materials). The RIC adequately demonstrated that they had provided information to permittees as required by license condition.

Documents Reviewed: AFI 40-201, "Managing Radioactive Materials in the US Air Force, " September 1, 2000

Category: Organization & Control **Topic:** Financial Assurance

Reference: 10 CFR 30.35

Requirement: The MML must establish and maintain funds to decommission all of its permitted facilities. The MML may treat each permittee's facility independently and sum the amounts of financial assurance needed for each individual permittee to determine the total amount of financial assurance required to meet the regulations.

Finding: There were nine Air Force permits which required financial assurance in accordance with 10 CFR 30.35. Six of the nine permit holders submitted decommissioning funding plans and the remaining three permits issued a Statement of Intent, dated May 6, 2006. The NRC reviewed the decommissioning financial assurance submittal dated May 17, 2005, and acknowledged by letter dated October 13, 2005, that no further deficiencies were identified. The MML satisfactorily met the requirements of 10 CFR 30.35.

Documents Reviewed: Air Force Letter, dated May 17, 2005 (ML052860429);
NRC Acceptance Letter, dated October 13, 2005

Category: Organization & Control **Topic:** Fingerprinting and Criminal History Check

Reference: EA 06-155 Order dated August 21, 2006

Requirement: Controls for Order Imposing Fingerprinting and Criminal History Check Requirements

for Access to Safeguards Information

Finding: Fingerprinting and associated criminal history checks were required by order (EA 06-155) on August 21, 2006, for any individual with unescorted access to safeguards information or unescorted access to radioactive materials possessed under the safeguards order (EA 05-006) issued on August 2, 2006. The respective safeguards order, RAMQC, required the Air Force to comply with specific, additional security measures to enhance the security for transport of certain radioactive material quantities of concern. The Air Force indicated that they were not planning to transport radioactive materials that met the threshold for requiring the safeguards RAMQC Order issued on August 2, 2006. Therefore the Air Force was not subject to implementation of the Fingerprinting Order. The Air Force notified the four permit holders on September 28, 2006, who possessed radioactive materials in quantities of concern, that the RAMQC Order and Fingerprinting Order did not apply until such time as the respective permit holders were required to transport their respective sources. By permit condition, the respective permit holders were required to notify the RIC, 120 days prior to moving or shipping the radioactive material quantities of concern. The 120 day requirement in the permit condition would provide adequate time for the RIC to notify the NRC as required by increased control (IC 3) requirement, and subsequently implement the necessary requirements prior to shipping RAMQC.

Documents Reviewed: Interviews with RIC Staff

Category: Organization & Control **Topic:** Generally Licensed Devices

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 7

Requirement: The USAF Radioisotope Committee, at its discretion, may issue a permit to organizations or units possessing items distributed under a general license issued by the NRC or by an Agreement State, or an exempt distribution license issued by the NRC. However, for items widely distributed to AF organizations or units presenting a minimal radiation hazard, as evaluated by the USAF Radioisotope Committee, a permit will not be issued for each location of use, but rather, a permit shall be issued to the control and accountability unit (Item Manager).

Finding: The RIC did not issue permits for generally licensed devices (GLDs) during the inspection period. GLDs were purchased and utilized at the base level and therefore not specifically licensed. Under the RIC's charter, the RIC permitted byproduct, source and special nuclear materials for specifically authorized uses. Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," September 1, 2000, Section 3.3, addressed whether certain items should be permitted or whether the item did not require a permit. The instruction specified that when a generally licensed device was managed in accordance with 10 CFR 31.5, "Certain detecting, measuring, gauging, or controlling devices and certain devices for producing light or an ionized atmosphere," then a permit was not required.

The exception to this policy was when the Air Force specifically permitted "registerable" GLDs. One example was the Inflight Blade Inspection System (IBIS) or helicopter blade failure detection gauge, which was a registerable GLD and due to business reasons, the Air Force specifically permitted this device.

Documents Reviewed:	NRC License 42-23539-01AF; Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," September 1, 2000

Category:	Organization & Control **Topic:** List of Locations of Use
Reference:	License Cond. 19.A, Appl dtd 4/12/85, page 5
Requirement:	The USAF Radioisotope Committee will maintain a current list of locations where licensed material is received/acquired, possessed, used, or stored.
Finding:	The RIC maintained the Radioactive Material Management Information System (RAMMIS), which was an application tool and database that managed all licensed radioactive materials, locations of use, generation of permits and supporting administrative functions. The RAMMIS system was used by the RIC to ensure compliance with NRC guidance and regulations. The RAMMIS system also supported the requirement that the RIC would maintain a current list of locations where licensed material was received/acquired, possessed, used or stored.
Documents Reviewed:	RAMMIS Administrator's and User's Guide, Version 1.0, November 15, 2005; NRC License 42-23539-01AF

Category:	Organization & Control **Topic:** Reporting Requirements
Reference:	Letter of Understanding, Item 2 & 10 CFR 30.51
Requirement:	Response to events and incidents and safety concerns and allegations.
Finding:	AFI 40-201, "Managing Radioactive Materials in the US Air Force," September 1, 2000, provided the procedure for responding to events and incidents and provided the appropriate follow-up and disposition instructions for handling events. During off-duty hours, the RIC maintained an on-call Action Officer available to take the initial call for any incident or concern. During the biennial review period, there were three reportable incidents made to the NRC. The reported incidents involved loss of either a chemical agent monitor, chemical agent detector, or ion track vapor tracer, in which inventory or inadequate documentation during transfer were the causes for the loss of radioactive materials. Each of the required 30-day written reports was received by the RIC and it appeared that adequate corrective actions were taken by the permit holder. The number of incidents involving radioactive materials provided an indication of the quality of policies, effectiveness of training, condition of facilities and level of security and control. Based on the number of devices authorized throughout the Air Force and the respective circumstances for each of the three reported radioactive materials incidents, it appeared that the control of radioactive materials in the Air Force was satisfactory. There were no safety concerns or allegations received during the biennial review period.
Documents Reviewed:	AFI 40-201, "Managing Radioactive Materials in the US Air Force," September 1, 2000

Category: Organization & Control **Topic:** Safety Conscious Work Environment

Reference: Letter of Understanding, Item 2 & RIS 2005-18

Requirement: The USAF will periodically update its regulations and procedures to reflect the most current NRC or other applicable regulations.

Regulatory Issue Summary 2005-18 provides guidance for establishing and maintaining a safety conscious work environment (SCWE). A SCWE is defined by the NRC as an environment in which "employees feel free to raise safety concerns, both to their management and to the NRC, without fear of retaliation." The NRC also recognizes that an employee's willingness to identify safety concerns can also be affected by other factors such as the effectiveness of the licensee's processes for resolving concerns or senior management's ability to detect and prevent retaliatory actions.

Finding: The Air Force has broad authority to implement a radiation control program for the use of radioactive materials, including those regulated by the NRC under the MML. One aspect of a radiation control program is what the agency terms as a safety conscious work environment, which is an environment where employees are free to raise safety concerns without fear of retaliation. The licensee indicated that it is the commander at a base who creates a "safety environment" or implements an operational risk management (ORM) program. The ORM was a formally established program through the Department of Defense that systematically evaluated possible courses of action, identified risks and benefits, and determined the best course of action for any situation encountered. The USAF radiation safety program and procedures encouraged personnel to report and identify safety and compliance issues through their chain of command or directly to either the RIC or NRC. During this review period, there were no safety concerns or allegations raised to the level of the RIC or NRC.

Documents Reviewed:
Air Force Policy Directive 40-2, "Radioactive Materials" April 8, 1993;
Air Force Instruction, 40-201, "Managing Radioactive Materials In the US Air Force" September 1, 2000;
Draft SOP RIC-SE-5, "September 4, 2006;
Air Force Policy Directive 90-9, "Operational Risk Management" April 1, 2000;
Air Force Instruction 90-901, "Operational Risk Management" April 1, 2000;
AFMC Instruction 90-902, "Operational Risk Management" September 1, 2001

Category: Organization & Control **Topic:** Staffing

Reference: Letter of Understanding 7/1/87, Item 12

Requirement: The RIC will maintain an adequate level of professional and clerical staffing to carry out its responsibilities under the license.

Finding: The RIC was staffed with both military personnel and civilian contractors to administer the program and manage approximately 400 permit holders under the Master Materials License. All staff members at the RIC minimally have a master's degree, prior work experience as either a permit RSO or worked in large programs permitted by the RIC. Staff members were hand selected based on their past performance and typically were assigned to the RIC for a three year period. Civilian contractors were used as needed to augment the program or meet specific program needs.

Inspections were performed by an inspector from the AFIA. Only one inspector was assigned to perform inspections under the MML. Typically, the AFIA inspector performed an average of 90 inspections per year world wide. In some years, he performed as low as 60 inspections per year or as high as 120 inspections per year. The variation depended upon a variety of factors, which included inspections due, follow-up inspections, and clustering of inspections to increase cost efficiency.

Interviews with staff and a review of program activities, indicated that a backlog of licensing actions had been reduced since the last inspection and there were no overdue inspections. The three RIC Action Officers were assigned regions within the United States and assigned specific program codes, to where each Action Officer was assigned approximately 100 to 166 permit files. There were significant number of permit actions (approximately 1063) completed by the RIC during the biennial review period. The completed actions varied between 40 to 155 permit actions each quarter. Based on the status of the permitted actions completed, the minimum number of outstanding actions, and the radiation protection program implemented by the RIC, the staffing at the current levels was sufficient to adequately maintain and administer the Master Materials License.

Documents Reviewed: NRC License 42-23539-01AF, Letter of Understanding dated 7/1/87, Item 12

Category: Organization & Control **Topic:** USAF SSDR

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 6

Requirement: Sources and devices not listed in the SSDR will be submitted to the NRC for evaluation and approval before use, except as specified in NRC policy directive.

Finding: The RIC had two sealed source device registries that had been approved previously by the NRC. One registered device was authorized under NR-121-D-103-S and the second device was authorized under NR-0121-D-101-S. The Air Force was not acquiring any more of these devices and was maintaining legacy of the current ones. At this time, the Air Force did not have any plans to pursue further sealed source device registries.

The RAMMIS allows the entry of the sealed source device registry number; however it was not a required field for permit authorization. The RIC Action Officer required the permit holder to submit the sealed source device registry number as part of the permit request and the information was verified as part of the permit review process.

Documents Reviewed: NRC License 42-23539-01AF

Category: Permits **Topic:** Commodities

Reference: Letter of Understanding dtd 7/1/87, Item 3

Requirement: The USAF Radioisotope Committee will maintain a list of those items or "commodities" for which permits are not required under the USAF's permit program. This list shall be made available when requested by the NRC. Permits will be issued for cesium-137 calibration sources. Commodity accountability procedures will be reviewed by the RIC in coordination with the NRC.

Finding: The RIC maintained a list of commodities (generally licensed radioactive material) for

which permits were not required. The commodity accountability program was maintained by the Air Force Medical Support Agency (AFMSA), Radiation Protection Division. The only GLDs that fall under 10 CFR 31.5 registration with the NRC were IBIS indicators and a few fixed gauges. The RIC elected to issue permits for the IBIS indicators. With exception of these devices, the AFMSA registered all 10 CFR 31.5 devices. The registration of these GLDs were used for inventory control and educational purposes for base personnel on the requirements of 10 CFR 31.5. Additionally, permits were issued for cesium-137 calibration sources as required by license condition.

During the biennial inspection period, the NRC performed an in-office inspection and issued an inspection report, with a Severity Level IV violation on September 29, 2006, directly to Nellis Air Force Base, 99th Mission Support Group, for improperly transferring a GLD. The GLD was turned in to the Defense Redistribution and Marketing Organization (DRMO) where it was sold to an unlicensed individual who subsequently sold the device on eBay to another individual who did not have a specific license. The NRC concluded that the corrective actions taken by Nellis AFB to redistribute the GLD and the planned long-term corrective actions were sufficient to prevent recurrence of an unauthorized transfer. The long-term corrective actions included that all future purchases of laboratory equipment at Nellis AFB must use the acquisition procedures and go through Nellis AFB Base Radiation Safety Officer (RSO) for approval and tracking of GLDs, registering all approved GLDs with the Defense Logistic Agency's database, and performing an annual review of the management of all GLDs possessed at the base. Additionally, the draft Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force" was reviewed. The NRC concluded that if the guidance in the procedure was properly implemented, then all bases would meet the regulatory requirements for handling and disposing of GLDs. The NRC took the necessary enforcement actions described above, directly with Nellis AFB.

Documents Reviewed: General License Registration Listing;
Radiation Protection Division Guidance on Generally License Devices Article

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Category: Permits **Topic:** Decay in Storage

Reference: License Condition 19.M (Ltr dtd May 2, 1994)

Requirement: Medical permittees will continue to decay-in-storage as specified in 10 CFR 35.92 for radioisotopes with physical half lives less than 120 days.

Non-medical permittees wishing to decay-in-storage for radioisotopes with physical half lives less than 120 days under 10 CFR 20.2001(a)(2), the following procedures are required:
a. Material must be held in storage for a minimum of 10 half-lives
b. Radioactive waste must be surveyed with an appropriate instrument to ensure that it cannot be distinguished from normal background
c. Radiation labels must be removed or obliterated
d. Materials would then be disposed of as normal trash
e. Records of waste disposal would be maintained for 3 years after disposal

Finding: Several medical and non-medical permits were reviewed which contained a license condition for decay-in-storage (DIS) for radioisotopes with physical half lives less than

120 days. The DIS license condition currently used by the Air Force was similar to the DIS condition previously used by the NRC. The DIS condition included: 1) storing material for a minimum of 10 half-lives, 2) surveying RAM with an appropriate instrument, 3) removing or obliterating radiation labels prior to disposal, and 4) maintaining records. The RIC was not aware of the new NRC guidance on DIS and therefore, had not amended their NRC license condition to authorize the new guidance.

Documents Reviewed: Medical and Non-Medical Permits

Category: Permits **Topic:** Disposal

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 10

Requirement: Radioactive materials may be disposed of only by using alternatives in 10 CFR Part 20. The Committee shall approve specific procedures for each permit.

Finding: One request for disposal of radioactive materials using an alternative method described in 10 CFR 20.2002, "Method for obtaining approval of proposed disposal procedures" was submitted to the NRC during the biennial review period. By letter dated June 23, 2004, the RIC requested the NRC to approve the burial of four M-47 tanks containing depleted uranium at the US Ecology Hazardous Waste Treatment and Disposal Facility in Idaho. The licensee calculated the dose to the transport driver, disposal facility worker, and long-term impact(s) to a residence, to be less than one mrem total dose for each type of analysis performed. The agency verified the calculations and determined that the disposal posed no danger to public health and safety and would not impact the common defense and security of the United States. Additionally, it was in the public interest to dispose of wastes in a controlled environment. The NRC documented a safety evaluation report on August 5, 2005, and published an environmental assessment with a finding of no significant impact on October 25, 2005, in the Federal Register (70 FR 61649). An amendment to the MML was approved by the NRC on October 25, 2005, which authorized the disposal of the four M-47 tanks in accordance with 10 CFR 20.2002, alternate disposal procedure and exempted the low contaminated material from further Atomic Energy Act (AEA) and NRC licensing requirements. At the time of the inspection, the four M-47 tanks were located in a staging area at Nellis AFB, awaiting resolution of a Rocky Mountain Compact issue in order to ship the tanks to US Ecology, Idaho.

Documents Reviewed: AFI-40-201, "Managing Radioactive Materials in the Air Force" Section 3.9, "Managing and Securing Radioactive Waste and Excess Materials." (Revised January 2006)

Category: Permits **Topic:** Effluent Releases

Reference: Letter of Understanding dtd 7/1/87, Item 6

Requirement: Effluent releases of licensed material to the environment will comply with the NRC's regulations and will be as low as reasonably achievable.

Finding: There were no effluent releases of licensed materials to the environment during the biennial review period. For any future effluent release requests, the RIC indicated that they would maintain the effluent releases to the environment as low as reasonably achievable and utilize the guidance in the NRC NUREG 1556 Series, for the applicable program.

Documents Reviewed:	None- no effluent releases

Category:	Permits	**Topic:**	Exemption to Servicing Teletherapy Units

Reference: License Condition 16

Requirement: The United States Air Force Radioisotope Committee may grant, for good cause on a case-by case basis, an exemption to 10 CFR 35.655 authorizing an Air Force permittee to delay by not more than 6 months the required 5-year inspection and servicing of a teletherapy unit.

Note: It should be understood that "good cause" does not include instances resulting from poor planning such as a request for delay because inspection and servicing was not scheduled in time. An example of "good cause" would include an instance whereby inspection and servicing would be delayed in order to occur coincident with a source exchange.

Finding: The USAF RIC had not received or granted any permit request for exemptions regarding the required 5 year inspection and service on the teletherapy unit.

Documents Reviewed: None- no exemptions granted;
Discussions with staff

Category:	Permits	**Topic:**	Facilities & Equipment

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 4

Requirement: Before granting a permit, the USAF Radioisotope Committee will ensure that users have adequate facilities, equipment and procedures for the proposed use of licensed materials and that they possess adequate radiation detection and monitoring equipment.

Finding: The RIC Action Officers utilized the guidance in the NRC NUREG 1556 Series to verify that the new applicant or permittee had adequate facilities, equipment and procedures for the proposed use of licensed materials. Additionally, the Action Officers verified that the new applicant or permittee possessed adequate radiation detection and monitoring equipment as specified in the guidance document NUREG 1556 series for the respective application. This verification was performed during the permit review process.

Documents Reviewed: Discussions with staff

Category:	Permits	**Topic:**	Release of Materials to the Environment

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 8

Requirement: The USAF Radioisotope Committee will not authorize without prior NRC concurrence activities involving the intentional release of licensed material to the environment not otherwise specified in 10 CFR 20. The intent is to obtain NRC concurrence on experiments involving release of materials at offsite locations.

Finding: The RIC had not permitted the release of materials directly to the environment. There were seven permits for research and development which were reviewed and it was confirmed that the permit holders had not been authorized to release radioactive materials to the environment. Through the permit process, the USAF had not been

engaged in activities that involved the intentional release of permitted radioactive materials to the environment not otherwise specified in 10 CFR Part 20. Based on discussions with the staff, it was confirmed that the RIC was aware that they must obtain NRC concurrence on experiments involving off-site releases of permitted material.

Documents Reviewed: Discussions with staff;
Review of research and development permits

Category: Permits **Topic:** SNM Limits

Reference: Letter of Understanding 7/1/87, Item 9

Requirement: The RIC will assure that possession limits of Special Nuclear Material will not exceed the critical mass quantities, as determined by the procedures specified in 10 CFR 150.11(a), at any site or for any permit.

[Uranium enriched in the isotope U-235 in quantities not exceeding 350 grams of contained U-235; uranium-233 in quantities not exceeding 200 grams; plutonium in quantities not exceeding 200 grams; or any combination of the above in accordance with the following unity rule:
(175 (grams contained in U-235/350) + (50 grams U-233)/200) + (50 grams Pu/200) = 1

Finding: The USAF authorized one permit holder with SNM material, Wright-Patterson AFB. The possession of SNM material authorized on the permit was limited in a manner to ensure that the amount of material possessed would not exceed the critical mass quantities specified in 10 CFR 150.11(a).

Documents Reviewed: Wright-Patterson AFB permit;
Verified that the possession limit on the permit did not exceed the critical mass quantities

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Category: Permits **Topic:** SUNSI Criteria

Reference: License Cond. 19.A, Appl dtd 4/12/85, Section 10.d

Requirement: When practical, the wording, style and content of permits will approximate that of licenses issued by the NRC.

Finding: Several Air Force MML permits were reviewed and it was confirmed that the permits met the criteria for sensitive unclassified non-safeguards information (SUNSI) as defined in RIS 2005-31, "Control of Security-Related Sensitive Unclassified Non-Safeguards Information Handled by Individuals, Firms, and Entities Subject to NRC Regulation of the Use of Source, Byproduct, and Special Nuclear Material." The documents reviewed contained the following marking, "Security-Related Information - Withhold Under 10 CFR 2.390" which was located on the cover page of the permit documentation file. Most of the licensing permits and cover letters did not individually contain the markings; however, the files were adequately marked in accordance with the guidance in RIS 2005-31.

Documents Reviewed: USAF permits requiring SUNSI markings;
Draft SOP No. RIC-SE-UN-1, "Standing Operating Procedure for the Handling of Sensitive Unclassified Information and Official Use Only Information" September 26, 2006

Category: Permits **Topic:** Technical Quality of Permits

Reference: Appl dtd April 12, 1985, Section 10.d.

Requirement: When practical, the wording, style, and content of permits will approximate that of licenses issued by the NRC; however, condition of use on permits will not be less restrictive than those required by the NRC.

Finding: The USAF RIC maintained oversight for 389 permits in the United States and overseas. The typical types of permits currently authorized under the USAF MML included: medical broadscope and limited specific scope, research and development, fixed and portable gauges, calibration service, source material and other measuring systems.

Twenty-six completed permit actions were examined and interviews were conducted with the RIC Action Officers. The casework was selected to provide a representative sample of permit actions that were completed during the biennial review period. The selected casework focused on the USAF's new permittees, amendments, renewals, and terminated permits. Licensing permit actions were evaluated for completeness, consistency, accuracy, and adequacy of facilities and equipment, training and experience, and the use of operating and emergency procedures for the radionuclides and quantities used. Permits were evaluated for overall technical quality, including license conditions and tie-down conditions. Casework was evaluated for timeliness, adherence to good health physics practices, reference to appropriate regulations, adherence to sealed source and device registration, and consideration of enforcement history on renewals. The permit files were checked for retention of documents required to support the licensing action.

During the period from April 2004 to September 2006, the RIC Action Officers completed a total of 669 permit actions, which included 38 new permits, 207 amendment requests, 210 renewal applications, 53 terminations, and 161 other requests during the review period. The permit casework was selected to provide a representative sample of licensing permit actions which were completed during the review period. The sampling included the following types: medical broadscope; fixed and portable gauges; self-shielded irradiators; medical institution; analytical instruments; research and development; source material; decommissioning; and byproduct material-possession only. Types of licensing actions selected for evaluation included 3 new permits, 6 renewals, 13 amendments, and 4 terminations. Detailed information regarding the permits evaluated is provided in Attachment 3.

The RIC maintained the licensing permits in two unique filing systems, one for "template" standardized permits for sealed sources and devices and another filing system for all other types of permits. The permit files were maintained in an orderly and consistent manner.

Overall, the licensing permit actions were thorough, complete, of good quality, and properly addressed health and safety issues. The files generally contained appropriate licensing documentation to support the licensing action. The permittees' compliance history was taken into account when reviewing renewal applications and amendments. Discussions with the RIC Action Officers confirmed that NRC licensing guidance in the NUREG-1556 series was being used. In addition, it was determined that the Action

Officers followed NRC guidance documents, Regulations, Regulatory Issues Summaries, and Regulatory Guides.

The permit deficiencies identified were primarily minor, isolated, or administrative in nature, with many items corrected during the on-site visit.

Two cases were identified where the training and experience documentation submitted by the permit holders was insufficient to adequately approve the physicians as authorized users of licensed material in accordance with 10 CFR Part 35. Specifically, the regulations in 10 CFR Part 35 requires that an authorized user be a physician who has completed a specific number of hours of training and experience, including work or practical experience and supervised clinical case experience. However, the permit holders were documenting the "dates" rather than the "hours" of the proposed physician's training and experience on the NRC Form 313A, specified in NUREG 1556, Vol 9, Rev. 1, "Program-Specific Guidance About Medical Use Licenses." Each case was discussed with the RIC Action Officer, and appropriate steps were taken, in the form of a memorandum disseminated to all permit holders and RIC Action Officers, to ensure that the permit holders documented the training and experience of proposed physicians in accordance with the regulations in 10 CFR Part 35. See Attachment 3 for further details.

Documents Reviewed: USAF permits of various program codes

Category: Permits **Topic:** Waste Incineration

Reference: Letter of Understanding dtd 7/1/87, Item 4

Requirement: The USAF has no locations that are presently authorized for radioactive waste incineration except Keesler AFB (Permits 23-01002-2AFP and 23-01002-4AFP) and Wright-Patterson (Permit 34-00472-2AFP). The RIC must seek NRC approval for any additional radioactive waste incineration facilities or for any changes to these three units in use.

Finding: The RIC did not authorize any new radioactive waste incineration locations during the review period. The three units, Keesler AFB, and Wright-Patterson AFB locations, which were referenced in the Letter of Understanding (LOU), were no longer approved for use.

Documents Reviewed: Discussions with staff

Category: Training **Topic:** Inspector Training

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 9

Requirement: AFISC inspectors will have training and experience in the fundamentals of radiation safety.

Finding: Inspections of Air Force MML permit holders were conducted by the AFIA under the Air Force Inspector General. Typically, persons selected for this assignment had a background in health physics and/or radiation safety operations and served for approximately three years. The current AFIA inspector had experience in health physics based on approximately 20 years in the military and the Kansas Agreement State Program. The AFIA inspector had a master's degree in public health and had previously

been a radiation safety officer for both the Army and the Air Force. Continued training was also required as a function of the position and occurred frequently.

Documents Reviewed: NRC License 42-23539-01AF;
Air Force Instruction 90-201, "Inspector General Activities" November 22, 2004

Category: Training **Topic:** RP Training

Reference: License Cond. 19.A, Appl dtd 4/12/85, page 4

Requirement: Anyone working in or frequenting restricted areas will receive initial and annual refresher training in accordance with the requirements of 10 CFR Part 19 or other parts of NRC's regulations that may apply. The extent of these instructions shall be commensurate with the potential radiological health protection problems in the restricted area.

Finding: Initial training for those individuals entering radiologically controlled areas or working with radioactive materials was the responsibility of the base permit holder and radiation safety officer (RSO). This training was required by Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," dated September 1, 2000. Training for each of the individuals entering radiologically controlled areas or working with radioactive materials was required annually and records were documented on Air Force Form 55, a health and safety training record. Radiation safety training records were reviewed by the Air Force Inspection Agency (AFIA) at the time of inspection. Unless the training was identified as a finding during the inspection, it was not documented by the AFIA on the inspection report.

Documents Reviewed: NRC License 42-23539-01AF;
Air Force Instruction 40-201, "Managing Radioactive Material in the US Air Force," September 1, 2000

Attachment 3

License Casework Reviews

NOTE: CASEWORK LISTED WITHOUT COMMENT ARE INCLUDED FOR COMPLETENESS ONLY.

File No.: 1
Permittee: Kirtland AFB, New Mexico
Type of Action: Amendment
License Type: Medical Broadscope
Date Issued: 2/03/06

License No.: NM-03110-02/03 AFB
Amendment: 03
License Reviewer: RB

File No.: 2
Permittee: Fort Wayne, Indiana
Type of Action: Renewal
License Type: Chemical Agent Monitors (CAMS)
Date Issued: 3/24/06

License No.: IN-30532-02/00 AFB
Amendments: 00
License Reviewer: CA

Comment:

a) Temporary permittee renewals are to be issued within 30 days. Renewal received October 7, 2004 and issued March 24, 2006. Reviewer attributed extended time frame to the transition of the RIC permit reviewers.

File No.: 3
Permittee: Hurlburt Field, Florida
Type of Action: Amendment
License Type: Portable Gauges
Date Issued: 3/30/06

License No.: FL-30023-02/03 AFB
Amendments: 03
License Reviewer: CA

File No.: 4
Permittee: Malmstrom, Montana
Type of Action: Renewal
License Type: Portable Gauges
Date Issued: 7/10/06

License No.: MT-00616-01/01 AFB
Amendment: 01
License Reviewer: RR

File No.: 5
Permittee: Keesler AFB, Mississippi
Type of Action: Amendments
License Type: Medical Institution/Blood Irradiator
Dates Issued: 6/28/06, 7/24/06

License No.:MS-01002-02/05 AFB
Amendments: 04 - 05
License Reviewers: CA

File No.: 6
Permittee: Elmendorf AFB, Alaska
Type of Action: Amendments
License Type: Medical Institution
Dates Issued: 3/03/06, 7/28/06

License No.: AK-01810-02/03 AFB
Amendments: 02 - 03
License Reviewers: RR

Comments:

a) The preceptor forms provided for three authorized userphysicians did not contain the training and experience (i.e., clock hours of clinical training) as stated in the regulations in 10 CFR Part 35.

b) The preceptor form for one authorized userphysician did not contain confirmation that the proposed physician was a physician licensed by the state as specified in 10 CFR Part 35.

File No.: 7
Permittee: Brooks City-Base, Texas
Type of Action: Amendment
License Type: R & D- Broadscope-Type B
Date Issued: 3/03/06

License No.: TX-30168-02/16 AFB
Amendment: 16
License Reviewers: RR

File No.: 8
Permittee: Eglin AFB, Florida
Type of Action: Renewal
License Type: Research and Development
Date Issued: 6/06/06

License No.: FL-00126-00/00 AFB
Amendment: 00
License Reviewer: CA

File No.: 9
Permittee: Scott AFB, Illinois
Type of Action: Renewal
License Type: Medical Institution
Date Issued: 4/18/06

License No.: IL-04762-02/00
Amendments: 00
License Reviewers: RR

File No.: 10
Permittee: Lackland AFB, Texas
Type of Action: Renewal
License Type: Medical Broadscope
Date Issued: 8/24/06

License No.: TX-02682-03/00 AFB
Amendments: 00
License Reviewer: RR

Comment

a) Permittee file incomplete; three tie-down documents missing from the file.

File No.: 11
Permittee: Travis AFB, California
Type of Action: Amendments
License Type: Medical Institution
Dates Issued: 7/12/06, 8/30/06

License No.: CA-07840-0/02 AFB
Amendments: 01, 02
License Reviewer: RB

File No.: 12
Permittee: Elmendorf AFB, Alaska
Type of Action: New
License Type: Analytical Instruments
Date Issued: 3/15/06

License No.: AK-00115-00/00 AFB
Amendment: 00
License Reviewers: RB

File No.: 13
Licensee: Wright-Patterson AFB, Ohio
Type of Action: Renewal
License Type: Measuring Systems Other
Dates Issued: 9/28/05

License No.: OH-00755-00/00 AFB
Amendments: 00
License Reviewers: CA

Comment:

a) The application did not adequately address the training program. Specifically, the training did not include the type of training to be provided to the users of licensed material.

File No.: 14
Permittee: Tinker AFB, Oklahoma
Type of Action: Termination
License Type: Decommissioning of Source Material
Date Issued: 7/13/05

License No.: OK-30117-01/01 AFB
Amendment: 01
License Reviewer: RR

File No.: 15
Permittee: Hill AFB, Utah
Type of Action: Amendment
License Type: Self-Shielded Irradiator
Date Issued: 4/28/06

License No.: UT-00696-00/01 AFP
Amendment: 01
License Reviewer: RB

Comments:

a) Permittee License Number was not found on the completed license amendment.

b) Several revisions were made to the completed license amendment that were not included in the original license request. In addition, the cover letter did not provide an explanation of the revisions made.

File No.: 16
Licensee: Andrews AFB, Maryland
Type of Action: Termination
License Type: Analytical Instruments
Date Issued: 3/24/06

License No.: MD-00564-00/03 AFB
Amendment : 03
License Reviewer: CA

File No.: 17
Permittee: Elmendorf AFB, Alaska
Type of Action: Amendment
License Type: Analytical Instruments
Date Issued: 8/08/06

License No.: AK-00115-00/01 AFB
Amendment: 01
License Reviewers: RB

File No.: 18
Permittee: Fresno (ANGB), California
Type of Action: New
License Type: Measuring Systems Other
Date Issued: 3/16/06

License No.: CA-00109-00/00 AFB
Amendment:: 00
License Reviewer: RB

Comment:

a) The application did not adequately address the training program. Specifically, the training did not include the type of training to be provided to the users of licensed material.

File No.: 19
Licensee: Elgin AFB, Florida
Type of Action: Renewal
License Type: Source Material Military Munition
Date Issued: 1/09/06

License No.: FL-00643-00/00 AFB
Amendment : 00
License Reviewer: CA

File No.: 20
Licensee: McClellan AFB, California
Type of Action: Termination
License Type: Decommissioning of Byproduct Material
Date Issued: 4/28/05

License No.: CA-10117-01/02 AFB
Amendment: 02
License Reviewer: RB

File No.: 21
Licensee: Wright-Patterson AFB, Ohio
Type of Action: Amendment
License Type: Research and Development
Date Issued: 8/05/05

License No.: OH-30158-01/05 AFB
Amendment: 05
License Reviewer: CA

Comment:

a) License permit issued with a sealed source and device model number different from the permittee's request. The sealed source and device model number change was not addressed in the cover letter.

File No.: 22
Licensee: Fort Worth, Texas
Type of Action: Termination
License Type: Measuring Systems Other
Dates Issued: 8/11/04

License No.: TX-00522-01/01 AFB
Amendment: 01
License Reviewer: RB

File No.: 23
Licensee: Maxwell AFB, Alabama
Type of Action: Amendment
License Type: Portable Gauge
Dates Issued: 10/02/06

License No.: AL-30460-02/01 AFB
Amendment: 01
License Reviewer: CA

Comment:

a) Referenced telephone conversation record not found in permit file.

b) Permit issued with incorrect model number of sealed source.

Department of the Air Force

bcc w/enclosure (via ADAMS e-mail distrib):
LDWert
CLCain
JEWhitten
RSBrowder
RRErickson
CFFrazier
RKStruckmeyer, NMSS/IMNS/MSIB (rks@nrc.gov)
KEGardin
NMIB File
5th Floor Docket File

SUNSI Review Completed: RSB

ADAMS: ■Yes ☐ No Initials: RSB
■ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ■ Non-Sensitive

DOCUMENT NAME: S:\DNMS\!Nmlb\!RSB\Air Force Report Final rsb.wpd

RIV:DNMS:FCDB	RIV: SAO	RIII:NMLB	C:NMLB
RSBrowder	RRErickson	CFrazier	JEWhitten
RSBrowder	per email RSB	per email RSB	
11/21/06	11/20/06	11/20/06	11/27/06

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