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APPENDIX A

INDUSTRIAL/ACADEMIC/RESEARCH INSPECTION RECORD

Region 3

Inspection Report No. 00-001  
Licensee (Name and Address):

License No. 21-13658-01  
Docket No. 030-00830

**Kalamazoo College**  
**1200 Academy Street**  
**Kalamazoo, MI 49006**

Licensee Contact: Carolyn Newton, Ph.D., RSO Telephone No. 616-337-7156

Priority: E-5 Program Code: 3620

Date of Last Inspection: 1/14/99

Date of This Inspection: 9/13/00

Type of Inspection: ( ) Announced ( x ) Unannounced  
(X) Routine ( ) Special  
( ) Initial

Next Inspection Date 10/2005 ( x ) Normal ( ) Reduced ( ) Extended  
Justification for change in normal inspection frequency:

**Not extended due to previous poor inspection history in 1996 and 1999.**

Summary of Findings and Actions:

- (X) No violations cited, clear U.S. Nuclear Regulatory Commission (NRC) Form 591
- ( ) Non-cited violations (NCVs)
- ( ) Violation(s), Form 591 issued
- ( ) Violation(s), regional letter issued
- (X) Followup on previous violations

Inspector(s) /RA/

Date 9/20/00

(Sign Name)

**S.J. Mulay, Radiation Specialist**

Approved /RA/

Date 9/21/00

**G. C. Wright, Chief, Materials Inspection Branch**

**PART I-LICENSE, INSPECTION, INCIDENT/EVENT, AND ENFORCEMENT HISTORY**

- 1. AMENDMENTS AND PROGRAM CHANGES:  
(License amendments issued since last inspection, or program changes noted in the license)

AMENDMENT #      DATE      SUBJECT

**No changes since the last inspection.**

- 2. INSPECTION AND ENFORCEMENT HISTORY:  
(Unresolved issues; previous and repeat violations; Confirmatory Action Letters; and orders)

**Inspection conducted January 14, 1999 identified four violations for:**

**Failure to calibrate a Ludlum-3 survey meter used for quantitative measurements.**

**Failure to perform monthly wipe tests in active labs.**

**Failure to perform wipe tests at the conclusion of experiments.**

**Failure to perform wipe tests of storage area.**

**Through a record review and statements made by the authorized user, the above items may be considered closed.**

- 3. INCIDENT/EVENT HISTORY:  
(List any incidents, or events reported to NRC since the last inspection. Citing "None" indicates that regional event logs, event files, and the licensing file have no evidence of any incidents or events since the last inspection.)

**None per Dr. Langland.**

**PART II - INSPECTION DOCUMENTATION**

\* References that correspond to each inspection documentation topic are in Inspection Procedure 87110, Appendix B, "Industrial/Academic/Research Inspection References."

*The inspection documentation part is to be used by the inspector to assist with the performance of the inspection. Note that not all areas indicated in this part are required to be addressed during each inspection. However, for those areas not covered during the inspection, a notation ("Not Reviewed" or "Not Applicable") should be made in each section, where applicable.*

*All areas covered during the inspection should be documented in sufficient detail to describe what activities and procedures were observed and/or demonstrated. In addition, the types of records that were reviewed and the time periods covered by those records should be noted. If the licensee demonstrated any practices at your request, describe those demonstrations. The observations and demonstrations you describe in this report, along with measurements and some records review, should substantiate your inspection findings. Attach copies of all licensee documents and records needed to support violations.*

1. ORGANIZATION AND SCOPE OF PROGRAM:

(Management organizational structure; authorized locations of use, including field offices and temporary job sites; type, quantity, and frequency of material use; staff size; delegation of authority)

**James Jones, Ph.D., President**

**Gregory Mahler, Ph.D., Provost**

% **Carolyn Newton, Ph.D., Asst. Provost, RSO**

**Thomas Askew, Ph.D., Asst. Prof. Of Physics**

# \* **James Langland, Ph.D., Asst. Prof. Of Biology/Authorized User**

# Individual(s) present at entrance meeting

\* Individual(s) present at exit meeting

% Contacted by telephone on 9/20/00

**SCOPE OF PROGRAM**

**The licensee is a small program utilizing microcurie quantities of P-32 for laboratory research experiments and student instruction. According to Dr. Langland, the only user currently, only 50-100uCi of P-32 are used per procedure. Approximately four labs are authorized for use of licensed material, however, only Dr. Langland uses material in Room 312, Dow Science Center (DSC). Current inventory of P-32 is ~ 35uCi. A maximum of 250 uCi P-32 is usually received at any one time. No other unsealed licensed material is currently used.**

**The licensee also maintains (in storage) a 0.62 millicurie cobalt-60 sealed source in the Olds/Upton Bldg of the Dept. of Physics. The source is used for periodic survey meter response checks, as needed, and is not removed from its storage location.**

2. MANAGEMENT OVERSIGHT:  
(Management support to radiation safety; Radiation Safety Committee (RSC); Radiation Safety Officer (RSO); program audits, including annual reviews of program and as low as is reasonably achievable (ALARA) reviews; control by authorized users)

**The RSO is also the Asst. Provost for the college and according to Dr. Langland, frequent discussions regarding licensed activities are conducted.**

**Dr. Langland is responsible for laboratory surveys and wipes on a day of use and monthly basis.**

3. FACILITIES:  
(Facilities as described; uses; control of access; engineering controls; calibration facilities; shielding; air flow)

**Licensed material is used and stored in accordance with current license procedures. Security was adequately maintained in use and storage locations at the time of inspection.**

4. EQUIPMENT AND INSTRUMENTATION:  
(Operable and calibrated survey equipment; procedures; 10 CFR Part 21)

**The licensee possesses a Ludlum-3 survey instrument used for room survey and personal frisk at the completion of use. Calibration of the unit was performed on 2/11/00. The unit was operable and compared well with the NRC unit.**

**Pt. 21 was not reviewed.**

5. MATERIAL USE, CONTROL, AND TRANSFER:  
(Materials and uses authorized; security and control of licensed materials; and procedures for receipt and transfer of licensed material)

**Materials and uses are in accordance with current license requirements. Licensed material was adequately secured.**

**Dr. Langland is responsible for the ordering, receiving, inventory and disposal of radioactive material used in his laboratory. According to Dr. Langland, doors to**

use areas are locked after hours and are checked by campus security.

The licensee received two shipments (5/8/00 and 6/28/00 of P-32, 250uCi each) as limited quantity. No problems were noted.

6. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL:  
(Radiological surveys; air sampling; leak tests; inventories; handling of radioactive materials; contamination controls; records; and public doses)

**Inventories of non-sealed material is performed on an ongoing basis as used. The RSO performs surveys of use areas within room 312 before during and at completion of use. Area wipes after material is used and monthly area also performed by Dr. Langland in the research lab. A review of use logs indicated that surveys/wipes had been performed as required.**

7. TRAINING AND INSTRUCTIONS TO WORKERS:  
(Training and retraining requirements and documentation; interviews and observations of routine work; staff knowledge of all routine activities; 10 CFR Parts 19 and 20 requirements; emergency situations; and supervision by authorized users)

**Dr. Langland provides training to students using material under his supervision throughout the year. Training records reviewed indicated adequate training content for classes conducted in the summer 2000.**

8. RADIATION PROTECTION:  
(Radiation protection program with ALARA provisions; external and internal dosimetry; exposure evaluations; dose and survey records and reports; annual notifications to workers; bulletins and other generic communications)

**Personal dosimetry is not required under current usage.**

9. RADIOACTIVE WASTE MANAGEMENT:  
(Disposal; effluent pathways and control; storage areas; transfer; packaging, control, and tracking procedures; equipment; incinerators, hoods, vents, and compactors; license conditions for special disposal method)

**Solid and liquid radwaste (P-32) is stored in a dedicated room in the basement of DSC. The RSO indicated that waste is held approximately one year prior to release. Solid waste is disposed in normal trash. Liquid waste is disposed via sanitary sewer. Based on the licensee's use logs, disposal does not appear to exceed 10 CFR Part 20 limits. The DSC waste storage room was toured and was well secured at time of inspection. Waste disposal records were not reviewed.**

**Radwaste is also adequately stored in the only use lab (room 312) housed in a plexiglass container prior to deposit in the main storage room.**

10. DECOMMISSIONING:  
(Records relevant to decommissioning; decommissioning plan/schedule; notification requirements; cost estimates; funding methods; financial assurance; and Timeliness Rule requirements; changes in radiological conditions since decommissioning plan was submitted)

**Not Reviewed**

11. TRANSPORTATION:  
(Quantities and types of licensed material shipped; packaging design requirements; shipping papers; hazardous materials (HAZMAT) communication procedures; return of sources; procedures for monitoring radiation and contamination levels of packages; HAZMAT training; and records and reports)

**Not applicable. Radioactive material is not transported by the licensee.**

12. NOTIFICATIONS AND REPORTS:  
(Reporting and followup of theft; loss; incidents; overexposures; change in RSO, authorized user; and radiation exposure reports to individuals)

**The licensee did not report thefts, loss or incidents since the last inspection. RSO has remained Dr. Newton. The only authorized user has not changed since the last inspection.**

13. POSTING AND LABELING:  
(Notices; license documents; regulations; bulletins and generic information; posting of radiation areas; and labeling of containers of licensed material)

**NRC 3 was conspicuously posted in use area. Use and storage areas were posted CRM in DSC.**

14. INDEPENDENT AND CONFIRMATORY MEASUREMENTS:  
(Areas surveyed, both restricted and unrestricted, and measurements made; comparison of data with licensee's results and regulations; and instrument type and calibration date)

**Maximum readings in room 312 (DSC) were ~ 0.05mr/hr. Waste storage area in DSC was 0.5mr/hr maximum.**

**Co-60 sealed source (in storage) maximum 0.5mr/hr (surface). Area around the leaded storage cave was 0.04mr/hr. Background was 0.02mr/hr.**

**Based on these readings, it is unlikely that exposures to workers or members of the general public are being exceeded.**

15. VIOLATIONS, NCVs, AND OTHER SAFETY ISSUES:  
(State requirement and how and when licensee violated the requirement. For NCVs, indicate why the violation was not cited. Attach copies of all licensee documents needed to support violations.)

**None**

16. PERSONNEL CONTACTED:  
[Identify licensee personnel contacted during the inspection (including those individuals contacted by telephone).]

**See Section 1.**

17. PERFORMANCE EVALUATION FACTORS (PEFs):
- |    |  |                     |
|----|--|---------------------|
| A. | Lack of senior management involvement with the radiation safety program and/or RSO oversight | ( ) Y (x) N         |
| B. | RSO too busy with other assignments  | ( ) Y (x) N         |
| C. | Insufficient staffing  | ( ) Y (x) N         |
| D. | RSC fails to meet or functions inadequately  | (X) N/A ( ) Y ( ) N |
| E. | Inadequate consulting services or inadequate audits conducted                                | ( ) N/A ( ) Y (x) N |

Remarks (Consider the above assessment and/or other pertinent PEFs with regard to the licensee's oversight of the radiation safety program.):

**The RSO is also the Assistant Provost for the college. According to Dr. Langland, ongoing discussions are conducted with the RSO as to program activities.**

8. SPECIAL CONDITIONS OR ISSUES:  
(Special license conditions; year-2000 effects of computer software and embedded systems)

**PART III - POST- INSPECTION ACTIVITIES**

1. REGIONAL FOLLOWUP ON PEFs:

**NA**

2. DEBRIEF WITH REGIONAL STAFF:

[Post-inspection communication with supervisor, regional licensing staff (if separate), Agreement State Officer; and/or State Liaison Officer]

**Branch Chief**

3. YEAR-2000 ISSUES:

(Convey, to the NMSS Year-2000 Coordinator, all year-2000 licensee-identified problems and corrective actions taken.)

**Not Reviewed.**

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