

September 5th, 2019

U.S. Nuclear Regulatory Commission
Region IV
1600 E. Lamar Blvd
Arlington, Texas 76011-4511

RE: Reply to a Notice of Violation

The Nuclear Regulatory Commission performed an inspection on Madison Engineering on June 12th, 2019. The inspection was an examination of activities conducted under our license as they relate to public health and safety, to confirm compliance with the U.S. Nuclear Regulatory Commission's rules, regulations, and with the conditions of our license.

Madison Engineering recorded the following violations:

- 1.) Failure to perform contamination leak tests every six months.
- 2.) Ensure hazmat employees receive recurrent hazmat training at least every 3 years in accordance with the requirements in Title 49 Code of Federal Regulations (CFR) Part 172, Subpart H.
- 3.) Failure to periodically (at least annually) review the radiation protection program content and implementation in accordance with 10 CFR 20. 1101 (c).

Madison Engineering's Corrective Actions:

- 1.) Contamination Leak tests were performed and completed to ensure up to date paperwork.
(See Attachment #1 Updated Leak Tests)
- 2.) Employees that have not received recurrent hazmat training at least within the last 3 years were given an oral training session to ensure proper guidance and regulations are being followed.
(See Attachment #2 Hazmat Certifications)
- 3.) Annual Audit was performed and reviewed with nuclear gauge employees.
(See Attachment #3 Annual Audit)

Summary:

Madison Engineering has informed management personnel along with all nuclear gauge employees of the violations and has taken the proper actions to ensure each violation was corrected. Nuclear gauge employees were informed of the updated paperwork that needs to take place every 6 and 12 months. They were also shown where updated signs and markings were placed in the office as well as on each individual portable storage case. Checklists (See Attachment #4 Checklists) and digital reminders were created to ensure the review of programs, procedures, audits and records have been adequately documented.

Cause of Violations:

These violations were in part due to the unexpected departure of the previous Radiation Safety Officer (RSO) at Madison Engineering. The previous RSO failed to follow procedures regarding paperwork and inadequate attention to detail to carry out an activity within a timely matter.

When a new RSO was appointed corrective actions were immediately taken to ensure timely leak tests are performed, annual audits are performed and employees received the proper hazmat training.

Date of full compliance:

Madison Engineering achieved full compliance based off corrective paperwork and Allyce Bolger of the NRC's guidance on August 23rd, 2019.

The following actions were taken:

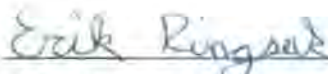
- Updated Nuclear Gauge Leak Tests.
- Updated Hazmat Training Certificates.
- Annual Audit was performed.
- Updated RSO verification.

Conclusion:

Madison Engineering had an unannounced inspection conducted on June 12th, 2019 in Bozeman, Montana. Allyce Bolger of the NRC performed the inspection and informed Madison engineering of the violations and how to take the corrective actions. The in-office review lasted until August 23rd, 2019 when Madison Engineering was fully compliant with the NRC guidelines and regulations. Madison Engineering has informed the proper personnel and nuclear gauge employees of the violations and how to prevent these violations from happening again in the future.

If you have any additional questions or need any additional information feel free to ask us at (406)-586-0262

Sincerely,



Erik Ringsak, RSO
Madison Engineering, LLC

Attachment #1

Seaman Nuclear Corporation

7315 South First Street Oak Creek, WI 53154 USA

Tel 414-762-5100 Fax 414-762-5106

info@seamannuclear.com

Leak Test Certificate

A leak test has been performed on meter, serial number **A770**, a model C-200, containing the radionuclide Ra 226

Owned By: Madison Engineering LLC
895 Technology Blvd., Suite 203
Bozeman, MT 59718

Date Sample Collected: 6/10/19
Collected By: Erik R
Date Sample Analyzed: 6/13/19
Analyzed By: HJS

Most regulatory agencies consider a source to be leaking if a leak test reveals the presence of more than 0.005 microcurie of removable contamination.

Analysis found contamination of less than 0.005 microcurie.

Analysis authorized by Wisconsin license 079-1257-01.

LEAK TEST DUE: 12/10/19



Scott C. Seaman
Radiation Safety Officer
Seaman Nuclear Corporation

Seaman Nuclear Corporation

7315 South First Street Oak Creek, WI 53154 USA

Tel 414-762-5100 Fax 414-762-5106

info@seamannuclear.com

Leak Test Certificate

A leak test has been performed on meter, serial number **21370**, a model C-300 DT, 12", containing the radionuclide Ra 226

Owned By: Madison Engineering LLC
895 Technology Blvd., Suite 203
Bozeman, MT 59718

Date Sample Collected: 6/10/19
Collected By: Erik R
Date Sample Analyzed: 6/13/19
Analyzed By: HJS

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LEAK TEST DUE: 12/10/19



Scott C. Seaman
Radiation Safety Officer
Seaman Nuclear Corporation

Attachment #2

**MADISON
ENGINEERING**

June 20th, 2019

RE: Transportation of Hazardous Material – Hazmat Training

The intent of Hazmat training is to provide knowledge of completion of paperwork, packaging and labeling requirements, and safe handling and emergency procedures.

Madison engineering performed an oral exam of Hazmat training which includes:

- Private Transportation of Meters
- Shipping Checklist
- Emergency Response Information
- What to do in the event of an Accident

Madison engineering ensures that untrained employees do not perform any duties requiring training. A 90-day grace period applies, if they work under supervision of trained employees. Training is adequate and employees are tested every three years. Records are maintained.

Madison Engineering
License No. 25-35260-01



Colene Sinclair, PE
Madison Engineering

Madison Engineer, LLC
895 Technology Blvd, Ste 203
Bozeman, MT 59718
406-586-0262



Erik Ringsak, RSO
Madison Engineering

cc: file

**MADISON
ENGINEERING**

June 20th, 2019

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Madison Engineering
License No. 25-35260-01


Derek Dennehy, EI
Madison Engineering


Erik Ringsak, RSO
Madison Engineering

Madison Engineer, LLC
895 Technology Blvd, Ste 203
Bozeman, MT 59718
406-586-0262

cc: file

Attachment #3

Portable Gauge Audit Checklist

Note: All areas indicated in audit notes may not be applicable to every license and may not need to be addressed during each audit. For example, licensees do not need to address areas that do not apply to their activities, and activities that have not occurred since the last audit need not be reviewed during the next audit.

Licensee's name Madison Engineering License No. 25-35260-01
Date of This Audit 6/10/19 Date of Last Audit 7/25/18
Audit Date Range 11 months

Erik Ringsak Erik Ringsak 6/10/19
Auditor Signature Auditor Printed Name Date
[Signature] CHAS G. PUNESSE 6/13/19
Management Signature Management Printed Name Date

1. AUDIT HISTORY

- a. Were previous audits conducted periodically (at least annually)? (10 CFR 20.1101) Y
- b. Were records of previous audits maintained? (10 CFR 20.2102) Y
- c. Were any deficiencies identified during the last two audits or 2 years, whichever is longer? Yes, paperwork needs to be more clear
- d. Were corrective actions taken? (Look for repeated deficiencies) Y

2. ORGANIZATION AND SCOPE OF PROGRAM N/A

- a. If the mailing address or places of use and/or storage changed, was the license amended? [License Condition (L/C)] N/A
- b. If ownership changed or bankruptcy was filed, did the licensee obtain prior U.S. Nuclear Regulatory Commission (NRC) consent or notify the NRC? [10 CFR 30.34(b)]
- c. If the licensee changed the radiation safety officer (RSO), was the license amended? (L/C) In the process
- d. Sealed Sources and Devices
 - 1. Does the license authorize all of the NRC-regulated radionuclides contained in the gauges possessed? (L/C)
 - 2. Are the gauges as described in the Sealed Source and Device (SSD) registration certificate? (L/C)
 - 3. Are copies of (or access to) SSD registration certificates available?

4. Are manufacturer's manuals for operation and maintenance available?
(10 CFR 32.210) *Yes, note gauge box + binders*
5. Are the actual uses of gauges consistent with the authorized uses listed on the license? (L/C) *Yes*
6. Are the locations of use of the gauges compatible with the "Conditions of Normal Use" and "Limitations and/or Other Considerations of Use" on the SSD registration certificates? (L/C) *Yes*
7. Is the current inventory of material below the possession limits listed on the license? (L/C) *Yes*

3. TRAINING AND INSTRUCTIONS TO WORKERS

- a. Were all workers who are likely to exceed 1 mSv [100 mrem] in a year instructed per 10 CFR 19.12? Was refresher training provided, as needed? Were records maintained? *Yes*
- b. Is each gauge operator trained in accordance with license requirements? (L/C) *Yes*
- c. Are training records maintained for each gauge operator? *Yes*
- d. Did interviews with operators reveal that they know the operating, emergency and security procedures? *Yes*
- e. Did this audit¹ include observation of operators using the gauge in a field situation? Operating the gauge? Performing routine cleaning and lubrication? Transporting the gauge? Storing the gauge? Was the use of the gauge in accordance with regulations? *Yes*
- f. Did the operator demonstrate safe handling and security during transportation, use, and storage? *Yes*
- g. Was U.S. Department of Transportation (DOT) hazardous material (HAZMAT) training (required at least once every 3 years) provided as required? (49 CFR 172.700, 49 CFR 172.701, 49 CFR 172.702, 49 CFR 172.704) *Not required*

4. RADIATION SURVEY INSTRUMENTS

- a. If the licensee possesses its own survey meter, does the survey meter meet NRC requirements? (10 CFR 20.1501(c)) *N/A*
- b. Are calibration records maintained, if applicable? (10 CFR 20.2103(a)) *Yes, (300 only one calibrated)*
- c. If the licensee does not possess a survey meter, are specific plans made to have one available in the event of an emergency? *Allied Engineering has a survey meter we can borrow*

¹The auditor should consider performing a performance-based review consisting of field observations and tours.

5. GAUGE INVENTORY

- a. Is a record kept showing the receipt of each gauge? [10 CFR 30.51(a)(1)] **Yes**
- b. Are all gauges physically inventoried every 6 months or at other intervals approved by the NRC? (L/C) **Yes**
- c. Are records of inventory with appropriate information maintained? (L/C)

6. PERSONNEL RADIATION PROTECTION

- a. Are considerations for keeping doses as low as is reasonably achievable (ALARA) incorporated into the radiation protection program? [10 CFR 20.1101(b)] **Yes**
- b. Were prospective evaluations performed showing that unmonitored individuals receive less than the limits in 10 CFR 20.1502(a)? Did these evaluations consider doses to **Yes** minors [10 CFR 20.1502(a)(2)] and declared pregnant women [10 CFR 20.1502(a)(3)]?
- c. Did unmonitored individuals' activities change during the year in a way that could put them over the limits in 10 CFR 20.1502(a)? If yes, was a new evaluation performed? **No**
- d. If external dosimetry is required [i.e., when individuals are likely to receive greater than the limits in 10 CFR 20.1502(a)], is dosimetry provided to these individuals? If yes, address the following:
 - 1. Is the dosimetry supplier approved by the National Voluntary Laboratory Accreditation Program? [10 CFR 20.1501(c)]
 - 2. Are the dosimeters exchanged at the appropriate frequency?
 - 3. Are dosimetry reports reviewed and signed by the RSO when they are received?
 - 4. Are the records based on NRC forms or the equivalent? [10 CFR 20.2104(d), 10 CFR 20.2106(c)]
 - Is NRC Form 4, "Cumulative Occupational Exposure History," completed?
 - Is NRC Form 5, "Occupational Dose Record for a Monitoring Period," completed?
- e. Are there any declared pregnant workers?
 - 1. If a worker declared her pregnancy, did the licensee comply with 10 CFR 20.1208, "Dose equivalent to an embryo/fetus"? **N/A**
 - 2. Were records kept of embryo/fetus dose per 10 CFR 20.2106(e)? **N/A**
- f. Are records of exposures, surveys, monitoring, and evaluations maintained? (10 CFR 20.2102, 10 CFR 20.2103, 10 CFR 20.2106)

7. PUBLIC DOSE

- a. Are gauges stored in a manner to keep doses to members of the public below 1 millisievert (mSv) (100 mrem) in a year? [10 CFR 20.1301(a)(1)] **Yes**
- b. Has a survey or evaluation been performed per 10 CFR 20.1501(a)? Have there been any additions or changes to the storage, security, or use of the surrounding areas that would necessitate a new survey or evaluation? **No**
- c. Do unrestricted area radiation levels exceed 0.02 mSv (2 mrem) in any one hour? [10 CFR 20.1301(a)(2)] **No**
- d. Are gauges being stored in a manner that would prevent unauthorized use or removal? (10 CFR 20.1801) **Yes**
- e. Are records of surveys maintained? (10 CFR 20.2103, 10 CFR 20.2107) **Yes**

8. OPERATING, EMERGENCY, AND SECURITY PROCEDURES

Note: An ideal way to assess the adequacy and adherence to operating procedures is by observing work in progress.

- a. Have operating, emergency, and security procedures been developed and updated to incorporate any new elements, practices, or requirements? **N/A**
- b. Does each operator have current copies of the operating, emergency, and security procedures, including current emergency telephone numbers? **Yes**
- c. Did any emergencies occur? **N/A**
 - 1. If so, were they handled properly?
 - 2. Were appropriate corrective actions taken?
- d. Were gauges properly controlled or secured during use or storage? (10 CFR 20.1801, 10 CFR 20.1802) Are the gauges in storage being secured with two independent physical controls? [10 CFR 30.34(i)]

9. LEAK TESTS

- a. Were sealed source leak tests performed every 6 months or at other authorized intervals? (L/C) **Yes, recently submitted for proper verification**
- b. Were leak tests performed in accordance with license requirements? (L/C) **Yes**
- c. Are records of leak test results retained with all of the required information included? (L/C) **Yes**
- d. Were any sources found to be leaking, and if yes, was the NRC notified? (L/C)

No

10. MAINTENANCE OF GAUGES

- a. Are manufacturer's procedures followed for routine cleaning and lubrication of the gauge? **Yes**
- b. Does the source rod remain attached to the gauge during cleaning? (LIC) **No rod**
- c. Is nonroutine maintenance performed where the source or source rod is detached from the gauge? If yes, was it performed according to license requirements (e.g., extent of work, individuals performing the work, procedures, dosimetry, survey instrument, compliance with limits under 10 CFR 20.1301, "Dose limits for individual members of the public")? **No, No rod**
- d. Are labels, signs, and postings identifying gauges containing radioactive material, radiation areas and warnings clean and legible? **Yes**

11. TRANSPORTATION

- a. Were U.S. Department of Transportation (DOT)-7A or other authorized packages used? [49 CFR 173.415, 49 CFR 173.416(b)] **Yes**
- b. Are Type A package, engineering drawings, and performance test records on file? [49 CFR 171.2 (a, b, e), 49 CFR 173.415(a)] **Yes**
- c. For any special form source, is the International Atomic Energy Agency Certificate of Competent Authority or other safety analysis documentation maintained on file? [49 CFR 173.476(a)] **Yes**
- d. Were packages properly labeled? (49 CFR 172.400, 49 CFR 172.403, 49 CFR 172.406, 49 CFR 172.407) **Yes**
- e. Were packages properly marked? (49 CFR 172.301, 49 CFR 172.304, 49 CFR 172.310, 49 CFR 172.324) **Yes**
- f. Were packages closed and sealed (e.g., locked) during transport? [49 CFR 173.475(f)] **Yes**
- g. Were shipping papers prepared and used? [49 CFR 172.200(a)] **Yes**
- h. Did the shipping papers contain proper entries (e.g., proper shipping name, hazard class, identification number [United Nations (UN)] number, total quantity, package type, nuclide, reportable quantity (RQ)(if applicable), physical and chemical form, activity (International System of Units required), category of label, Transportation Index (TI), shipper's name, certification and signature, emergency response phone number, and cargo aircraft only (if applicable))? (49 CFR 172.200, 49 CFR 172.201, 49 CFR 172.202, 49 CFR 172.203, 49 CFR 172.204, 49 CFR 172.604) **Yes**
- i. Were the shipping papers within the driver's reach and readily accessible during transport? [49 CFR 177.817(e)] **Yes**
- j. Were packages secured against movement? (49 CFR 177.834) **Yes**

- k. Were placards on the vehicle, if needed? (49 CFR 172.504) *Y*
- l. Were overpacks, if needed, used properly? (49 CFR 173.25) *N/A*
- m. Were any incidents reported to the DOT? (49 CFR 171.15, 49 CFR 171.16) *N/A*

12. AUDITOR'S INDEPENDENT SURVEY MEASUREMENTS (IF MADE)

Describe the type, location, and results of the measurements. Does any radiation level exceed regulatory limits? [10 CFR 20.1501(a), 10 CFR 20.1502(a)] *Not made*

13. NOTIFICATION AND REPORTS *N/A*

- a. Did any reportable incidents occur? Were the appropriate notifications made to the NRC Emergency Operations Center (301-816-5100)? Examples of incidents with notification requirements are as follows:
 - 1. Lost or stolen radioactive material (10 CFR 20.2201)
 - 2. Overexposures or high radiation levels (10 CFR 20.2202)
 - 3. Gauge is disabled or fails to function as designed [10 CFR 30.50(b)(2)]
 - 4. Generic equipment issues identified by the licensee (10 CFR 21.21)
- b. Were the required written reports made as followups to the events?

14. POSTING AND LABELING

- a. Is NRC Form 3, "Notice to Employees," posted? (10 CFR 19.11) *Online*
- b. Are NRC regulations and license documents posted, or is a notice posted stating where these documents are located? (10 CFR 19.11, 10 CFR 21.6) *Online*
- c. Are any other posting and labeling requirements met? (10 CFR 20.1902, 10 CFR 20.1904)

15. DECOMMISSIONING *N/A*

- a. Were any locations of use or separate buildings decommissioned since the last audit? Were appropriate notifications made or license amendments requested? (10 CFR 30.36)
- b. Are records kept of information important to decommissioning? [10 CFR 30.35(g)]
- c. Do records include all information outlined in 10 CFR 30.35(g)?

16. GENERIC COMMUNICATIONS AND NEWSLETTER

- a. Are NRC Regulatory Issue Summaries, NRC Information Notices, and Office of Nuclear Material Safety and Safeguards quarterly newsletters received? *No*
- b. Is appropriate training and action taken in response to these? *Yes*

17. SPECIAL LICENSE CONDITIONS OR ISSUES

Did the auditor review special license conditions or other issues (e.g., nonroutine maintenance)? (U/C) *Y*

18. EVALUATION OF OTHER FACTORS

- a. Is senior licensee management appropriately involved with the radiation protection program and/or RSO oversight? *Y*
- b. Does the RSO have sufficient time to perform his or her radiation safety duties? *Y*
- c. Does the licensee have sufficient staff to support the radiation protection program? *Y*

19. DEFICIENCIES IDENTIFIED IN AUDIT AND CORRECTIVE ACTIONS

- a. Summarize problems and/or deficiencies identified during the audit. *N/A*
- b. If problems and/or deficiencies were identified in this audit, describe the corrective actions planned or taken. Are corrective actions planned or taken at all licensed locations (not just the location audited)? Include date(s) when corrective actions are implemented. *N/A*
- c. Provide any other recommendations for improvement. *clean + clear paperwork easily accessible*
- d. Describe communication with management about deficiencies.
Binder was created/improved

Attachment #4

Nuclear Densometer Checklist

Every 6 Months

- **Leak Test**

Wipe nuclear gauge with leak tests kits or with cotton swaps and mail to nuclear seamen

Seaman-Nuclear Corporation
7315 S 1st Street
Oak Creek, WI 53154

- **Inventory**

Take inventory, count everything that is used. Format in folder (G:\MADISON ENGINEERING\NUCLEAR GAUGE).

Example: C-200, C-200 Case, C-300, C-300 Case, up to date leak tests, Dosimetry tests, Audits, nuke gauge certificates, log books, proper procedures being implemented (transporting/locking/logging), etc

Annually

- **Audit**

Self-certified audit which certifies the proper procedures and practices are being enforced and maintained. Follow NRC checklist (G:\MADISON ENGINEERING\NUCLEAR GAUGE).

Dosimetry

- Show calculations stating dosimetry is less than 10%.
Show phone memo with Scott Seaman also.