



# Rio Algom

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**Subject:      Reply to a Notice of Violation**  
**License No.: SUA-1548**  
**Docket No.: 40-8964**  
**Smith Ranch Facility**

To Whom It May Concern:

Rio Algom Mining Corp. is replying to a Notice of Violation dated February 11, 2000. Attached to this letter is the response to the Notice of Violation from Rio Algom Mining Corp.

The Notice of violation cites that Rio Algom failed to follow the requirements of license conditions 9.10 requiring the use of written Standard Operating Procedures, (SOP). Rio Algom is disputing the severity of this Notice of Violation. The basis of this dispute can be found on the attached response to the Notice of Violation. Rio Algom has instituted corrective actions to bring the facility in to compliance with the license conditions.

If you have any questions, please call me at (405) 858-4807.

Sincerely,

William Paul Goranson, P.E.  
Manager, Radiation Safety, Regulatory  
Compliance and Licensing

Enclosures

CC:      Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C.  
         20555-0001 (Cert. Mail Z579 114 125)  
         Director, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan  
         Plaza, Suite 400, Arlington, TX 76011 (Cert. Mail: Z 579 114 123)  
         Phillip Ting, U.S. Nuclear Regulatory Commission, (Cert. Mail: Z 579 114 128)  
         John Wagner, Wyoming Dept. of Environmental Quality - Land Quality Division  
         Marvin Freeman, Rio Algom Mining Corp.  
         Bill Ferdinand, Rio Algom Mining Corp.  
         John McCarthy, Rio Algom Mining Corp.  
         John Cash, Rio Algom Mining Corp.

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**RIO ALGOM MINING CORP.  
Docket Number: 40-8964  
License Number: SUA-1548  
SMITH RANCH FACILITY**

**Response to NRC Inspection Violation  
Letter Dated August 11, 2000**

During a NRC inspection conducted on July 13-14, 2000, a possible violation was identified by the inspector and has been subsequently issued as a violation dated August 11, 2000. Rio Algom Mining Corp. (RAMC) is disputing this Notice of Violation.

**1. Notice of violation**

“License condition 9.10 states, in part, that written procedures shall be established for non-operational activities to include in-plant monitoring and instrument calibration.

Contrary to the above, on June 7, 2000, the radiation safety technician calibrated the alpha radiation counter without following the established written procedure “Calibration of Scintillation Counter”. Consequently, the technician did not conduct the counter efficiency calibration or establish the instrument operating voltage as stated in the written procedure.”

“This is a Severity Level IV violation”

**Rio Algom’s Response to the Notice of Violation**

**1. The Basis for Disputing the Violation**

RAMC is disputing the severity of this violation. The basis of this dispute is that the company believes that though the Radiation Safety Technician did not conduct the calculation of the instrument efficiency in the exact manner described in the procedure, worker safety was not compromised as a result. RAMC believes that a Severity IV violation is too severe for deviation from procedure since the results from the process performed by the RST compared to those derived from the exact procedure are very nearly equal. Therefore, RAMC believes that worker safety was not compromised as alleged in the cover letter of the inspection report and the violation. Shown below is a description of incident that caused the violation and the results of the investigation.

The violation was a result of the radiation technician establishing an efficiency for an alpha scaler and attached 5” drawer using an average of 13 one minute counts as opposed to the average of 13 three minute counts divided by 3, as stated in the written procedure. The high voltage determination is established by dividing the alpha plateau into one thirds and setting the high voltage at a point one third from the beginning of the plateau.

The first step in the calibration of a survey-counter instrument is the high voltage determination. By procedure, the high voltage is established by averaging three one minute counts as the voltage is increased from no response to where a second sharp rise in counts is noted. The results are then plotted on graph paper resulting in a graph that shows a sharp rise in counts versus voltage, a relative level zone called the plateau, and then a second sharp rise in counts is observed. The plateau is then divided into thirds. This can be accomplished either visually from the graph or mathematically. The high voltage is set at a point located on the plateau at the one-third point nearest to where the counts over voltage bend into the first plateau, which is commonly called

the knee. The plateau is not level but rises gently from the knee to the second sharp rise in counts. As a result of this mild increase in response, the setting of the high voltage is not critical and precision is not imperative. During the second step in the calibration phase any variation in the voltage setting will be compensated by the efficiency determination which is determined against a known standard. If the voltage is set slightly low the efficiency will be lower and the resulting disintegration's per minute (DPM) will be higher (counts / efficiency = DPM) and if the voltage is set slightly higher the efficiency will be higher and the resulting DPM will be lower. The radiation safety technician followed the procedure and the high voltage was established properly.

The second step in calibration is the efficiency determination phase. The efficiency is established by counting a known source arriving at a statistical average count divided by a known activity of the source. The NRC inspector noted that a calibration performed on June 7, 2000 used thirteen one-minute counts to arrive at a statistical average rather than thirteen three-minute counts divided by three as stated in the procedure and as a result, concluded that employee safety may have been jeopardized by an improper efficiency.

**2. The corrective steps that will be taken to avoid further violations.**

A possible violation was conveyed to all in attendance during the exit interview by the NRC inspector. Upon learning of the possible violation, it was determined by the General Manager that an Operational Review Committee (ORC) would be convened to investigate the events leading to the findings. The ORC met after completion of the exit interview and the NRC inspector was invited to attend the meeting and observe our corrective actions procedure. In attendance was the General Manager, Plant Operation Manager, Supervisor - Environmental and Regulatory Affairs (SERA), Radiation Safety Officer (RSO), and the NRC inspector. It was determined that corrective steps could not be taken until additional facts were gathered. The RSO was assigned the immediate task of re-calibration of the scaler and 5" drawer using the written procedures to verify the June 7<sup>th</sup> calibration did not compromise employee safety or result in potential exposures. The SERA was assigned the task of interviewing the Technician in an attempt to determine why and how he calibrated the instrument and if he was aware of the written procedures.

A verification calibration was conducted by the RSO on July 14, 2000. The written procedures were followed and an average of three-minute counts taken resulted in an efficiency of 28.4% as opposed to the June 7<sup>th</sup> efficiency of 28.3% calculated by the RST. The RSO concluded and verified that employee safety was not compromised as a result of the June 7<sup>th</sup> calibration.

The SERA conducted an interview with the technician on July 17, 2000. The technician stated that he had only calibrated the instrument once and that was the calibration in question. He had indeed conducted thirteen one-minute counts rather than thirteen three-minute counts. After the inspection, the technician read the procedure and verified that the count interval was the only step in the procedure not followed.

The ORC was again convened on July 21, 2000 to review the findings and make corrective action recommendations. The committee consisted of the General Manager, Plant Operation Manager, Supervisor - Environmental and Regulatory Affairs (SERA), Radiation Safety Officer (RSO), and the Safety Engineer. The ORC concluded the following:

1. That the efficiencies calculated using a one minute count and three minute count were the same and therefore, exposures would not need to be recalculated and employee safety was not compromised;
2. That there was a documented procedure used and the RST understood and followed the procedure with the exception of the step causing the violation;

3. That all employees have access to the Health Physics Manual;
4. The procedure had been reviewed was in August 1999, and the RST was assigned in January 2000. There had been no additional verification of the procedure to ensure that it was being followed completely by the RST.
5. Prior to the June 7<sup>th</sup> instrument calibration, all previous calibrations had been performed as per the written procedure.

As a corrective action, the ORC recommended the following actions to prevent future deviations from written procedures:

1. Periodic Planned Task Observations (PTO) are needed to ensure that the employee has not developed bad habits that deviate from the written procedure.
2. A formalized documented task training program should be designed and implemented for all environmental and health physics procedures.
3. The RSO should conduct two additional calibrations using both the one and three minute count intervals to re-verify efficiencies. This work is shown below on Table 1 and verifies that there is no significant difference between the results using the written procedure and the procedure used by the RST for the June 7<sup>th</sup> calibration.
4. Perform a systematic review of the Health Physics Manual to ensure that current practices are consistent with the written procedure. This is to be conducted during the regular Annual Review.

**Table 1:** The results of the verification calibrations

Date	1 minute count	3 minute count	Efficiency
6/7/00	Yes	No	.283
7/14/00	No	Yes	.284
7/21/00	Yes	No	.282
7/21/00	No	Yes	.282
8/2/00	Yes	No	.281
8/2/00	No	Yes	.281

**3. The date when full compliance will be achieved.**

The Radiation Safety Technician will use the calibration procedures as written and began doing so July 17, 2000. The procedure has been reviewed and changes recommended. If the changes are approved by the ORC, a revised procedure will be issued during the month of September.