STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

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November 9, 2004

Re: Reply to Notice of Violation & Proposed Imposition of Civil Penalties of $21,000
NRC Inspection report No. 030-07710/01
and Investigation Report No-4-2002-001
Our file: 221-03-0830

Mr. Frank Congel, Director
Office of Enforcement
Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Dear Mr. Congel:

As required by 10 CFR 2.201, this is the Alaska Department of Transportation and Public Facilities' (ADOT&PF's) response to Dr. Mallett's letter of March 15, 2004 and the Notice of Violation attached thereto. By separate cover letter of this date the imposed civil penalty payment of $21,000 is being sent to the NRC.

Introduction:

The NRC and ADOT&PF share a common goal, which is to make ADOT&PF's nuclear radiation program a safe and fully functioning one. It is our goal that ADOT&PF will soon have an exemplary program. Please be assured of our determination to make this a reality.

The three violations identified as A, B, and C in Dr. Mallett's letter arise out of exposures that occurred to three employees over a seven year period of time, from 1994 through 2000 at a warehouse building in Anchorage where nuclear gauges were stored, that was slowly being converted to an office building. The problem was corrected in the spring of 2000 by locating a detached storage facility a safe distance from the building.

Because of inadequate training, lack of communication between the SRSO and management, and lack of understanding of the applicable NRC regulations, ADOT&PF allowed exposures to three of its employees to exceed the 100 millirems per year dosage, the maximum allowed to the general public under NRC regulations. Fortunately, as the NRC has pointed out, none of the exposures occurred at a level that would be expected to cause health problems to the persons exposed.

In response to a growing awareness that there were potentially over-exposures to ADOT&PF employees, ADOT&PF retained Qal-Tek Associates, a nationally recognized radiation safety and testing consultant, to investigate any possible exposures to nine ADOT&PF employees over a seven-year period from 1994 through 2000. The final results of the independent investigation were released in December of 2003. The investigation results showed that none of the nine ADOT&PF employees who had worked in the building in question over the seven-year period were "most likely" exposed to radiation above the minimum limits of 100 millirems per year. (See Qal-Tek December, 2003 report at page 4.) It was only when the consulting firm adjusted the "most likely" exposures two standard deviations to a 95% confidence level, did the exposure level exceed the 100 millirems per year regulatory limit. The 100 millirem threshold for members of the public was exceeded in five instances involving three employees. The highest possible exposure in any given year was 149 millirems.

Radiation workers who regularly work around radiation devices and wear a radiation monitoring badge are permitted to receive up to 5,000 millirems per year of radiation. Unbadged radiation workers who have received training are permitted to receive up to 500 millirems of radiation per year. The threshold for individual members of the public, however, is very low. It is set at 100 millirems per year.

To put these exposure levels in perspective[1].. as you know, background radiation from the environment can range from 50-100 millirems per year in Alaska. Similarly, an X-ray machine at a hospital or medical clinic may expose a person to up to-70 millirems of radiation with each X-ray taken. This would mean that the maximum annual exposure to any member of the public under NRC regulations should be no more than the equivalent of the maximum normal environmental background radiation in Alaska or possibly as few as two hospital X-rays.

Violations A and B:

Turning specifically to Violation A, ADOT&PF admits that there was a violation of 10 CFR 2.130(a)(1), which prohibits exposures to members of the public to exceed 0.1 rems (or 100 millirems) in any one year[2]. However, ADOT&PF denies that there was any willfulness involved. ADOT&PF understands that there is no claim by the NRC or its staff [at this time-delete phrase] that ADOT&PF's conduct or the conduct of any of its employees was intentional or deliberate.

[1] There are possibly errors in the assumptions used by Qal-Tek Associates in making their calculations because they assumed that the orange and yellow boxes located in the radiation equipment storage facility contained nuclear density gauges. It is believed that this equipment may actually have belonged to the State Hydrologist and contained non-radiation equipment. This might affect the true exposures that occurred. Nevertheless, ADOT&PF believes that there should be closure to the investigation and is satisfied that the Qal-Tek report should be accepted by the NRC as a close approximation of the exposures that actually occurred. Should future private litigation in Alaska occur, ADOT&PF reserves the right to further investigate the true exposures that did occur to the individuals who where exposed.

[2] There are possibly errors in the assumptions used by Qal-Tek Associates in making their calculations because they assumed that the orange and yellow boxes located in the radiation equipment storage facility contained nuclear density gauges. It is believed that this equipment may actually have belonged to the State Hydrologist and contained non-radiation equipment. This might affect the true exposures that occurred. Nevertheless, ADOT&PF believes that there should be closure to the investigation and is satisfied that the Qal-Tek report should be accepted by the NRC as a close approximation of the exposures that actually occurred. Should future private litigation in Alaska occur, ADOT&PF reserves the right to further investigate the true exposures that did occur to the individuals who where exposed.

The testimony given by the ADOT&PF managers at the Predecisional Enforcement Conference in November 2003 and in their statements to the NRC investigators shows that there was a lack of understanding of the NRC regulations. But, at the same time, there certainly was no malicious or intentional misconduct on anyone's part. The managers understood that adequate separation of the equipment storage area from the offices was necessary. On a number of occasions, distance measurements were done to check the safety of the operations. The managers attempted to assess the exposures by having the SRSO use dosimeter badges affixed to the walls of each affected office to measure the levels of radiation. The managers understood that radiation readings should be made to determine the safety, and periodically readings were taken with the radiation measurement wand the SRSO used.

The error, which is not disputed, was to have allowed ADOT&PF employees to relocate to or remain in offices in close proximity to the radiation equipment storage area without undertaking formal radiation surveys as required by NRC regulations. No complete, formal surveys were undertaken as required by the NRC regulations. The steps that supervision and the SRSO took to determine exposure levels, while well meaning, were inadequate and did not meet the requirements of the NRC regulations. In addition, communications between the SRSO and management were inadequate.

Turning specifically to Violation B, ADOT&PF admits that it violated 10 CFR 20.1302(a) in that it did not undertake appropriate surveys of radiation levels in unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public.

It admits subparagraph (1) which reads: "Specifically, between 1994 and 2000, at least 9 licensee employees with no assigned duties involving exposure to radiation or to radioactive material began occupying office space in close proximity to a nuclear gauge storage area. Before the individuals began occupying the affected office space, the licensee did not measure the levels of radiation which those individuals would experience or calculate their likely dose from the stored gauges."

With regard to subparagraph (2) it admits in part and denies in part. The first sentence is admitted. This sentence reads: "Specifically, between 1994 and May 2000, at least 9 licensee employees with no assigned duties involving exposure to radiation or to radioactive material occupied office space in close proximity to a nuclear gauge storage area." Turning to the second sentence, it reads as follows: "The licensee did not commence evaluating the radiation dose received by the individuals until after February 2000, soon after one individual ceased occupying the affected office space, and until March 2003 for the eight other individuals." ADOT&PF denies that no efforts were made prior to February 2000 to assess exposures. The following efforts were made prior to February 2000: 1) There were readings taken with the radiation measurement wand; 2) dosimeter badges were issued to some employees; 3) dosimeter badges were placed on the walls of various offices; and 4) these badges were sent out to a laboratory for reading and tabulation. The licensee does admit that because of inadequate training and lack of knowledge, these efforts to assess exposures were insufficient. As indicated above, ADOT&PF believes there was no intentional or malicious misconduct on the part of its employees.

ADOT&PF is appreciative of the fact that the levels of exposure ultimately turned out to be small and caused no harm to anyone. By way of self-evaluation ADOT&PF believes the following:

1) Surveys in accordance with 10 CFR 20.1302(b)(1) were not being conducted as required and personnel should not have been relocated to the new offices in proximity to the radiation equipment storage and testing areas without a more comprehensive evaluation of the safety aspects of relocating the employees.

2) Once the offices were occupied and concerns were raised that there might be exposures above the allowable limits to the employees in those offices, management was not sufficiently pro-active in quickly removing personnel or the radiation equipment while the level of exposure was being determined.

3) There was a lack of effective communication between the SRSO and management regarding the apparent violation and consequences.

4) When the potential problems were identified, management did not respond to a need for change in accordance with 10 CFR 20.1302(b)(1).

5) There was inadequate training of the RSO's and management in radiation safety, NRC regulations and licensee's responsibilities.

Corrective Action Taken and Planned With Respect To Violations A and B:

The following outline sets out the corrective action that has been taken or will be taken to attempt to prevent the deficiencies that led to this NRC Notice of Violation.

1) SAFE SEPARATION: In Anchorage, the nuclear gauges are now being stored properly and safely at a sufficient distance from nearby offices. A policy is now in place that requires a survey to be performed within twenty-four hours of the establishment of any new equipment storage facility. (*See* discussion at paragraph 6. a. below)

2) HIRING OUTSIDE EXPERT ASSISTANCE

   a) Qal-Tek Associates, an outside contractor, was hired to assist ADOT&PF in evaluation of the current nuclear gauge storage areas.

   b) ECPF, Inc., an outside contractor, was hired to assist ADOT&PF to develop a long term SCWE pan and conduct training as provided in the Confirmatory Order.

   c) Qal-Tek Associates, an outside contractor, now performs the non-routine maintenance and the calibrations of the density gauges used by ADOT&PF.

3) TRAINING:

a) Forty hour training on radiation safety was provided to the Statewide Radiation Safety Officer and the three Regional Radiation Safety Officers at the Radiation Safety Academy in Gaithersburg, Maryland in January, 2003.

b) Forty hour training on radiation safety was provided to the new Statewide Radiation Safety Officer, the new Northern Region Radiation Safety Officer and the Statewide Materials Engineer by Qal-Tek Associates in July 2004.

c) In accordance with the Confirmatory Order in the companion case dealing with discrimination, half-day training was given during this year's summer construction season to all available nuclear gauge technicians, their supervisors and managers on "the Safety Conscious Work Environment and Protected Activities". A follow-up session was given in September for all those individuals who were not available for the earlier sessions. A Safety Culture Survey was administered at the same time as the training in June was conducted. Training is planed in 2005, in accordance with the Confirmatory Order.

d) Special training on use of a radiation worksheet and spreadsheet was provided to the Southeast Region Radiation Safety Officer on October 4, 2004 to make sure all surveys comply with the requirements of 10 CFR 20.1302(b)(1)[1]

e) One day training was given to ADOT&PF managers the first week in October, 2003 in three Alaska cities: Juneau, Anchorage and Fairbanks.

4) MANAGEMENT EMPHASIS ON RADIATION SAFETY:

a) A letter from Deputy Commissioner John MacKinnon regarding Radiation Safety dated September 5, 2003 was sent to ADOT&PF employees involved in use of nuclear density equipment and managers.

b) A longterm plan has been submitted to the NRC in accordance with the Confirmatory Order.

c) Safety training has been given to ADOT&PF managers involved with radiation equipment.

[1] During a recent inspection in Alaska, the NRC inspectors noted that the surveys conducted in the Southeastern Region did not comply with 10 CFR 20.1302(b)(1) in that the data had not been interpreted to identify the individual who was most likely to receive the highest dose. Training of the southeast Region Radiation Safety Officer to assure his complete understanding of the proper survey methods was conducted by the new Statewide Regional Safety Officer. Correction of the surveys was recently completed.

5) ADOPTION OF A NEW RADIATION PROTECTION PROGRAM: On June 14, 2004, a new and much improved Radiation Protection Program was issued by the Chief Engineer and was implemented by the new Statewide Radiation Safety Officer under the direction of the State Materials Engineer.

6) PROMPT SURVEYS AND PERIODIC INSPECTIONS:

   a) A policy has been established to have surveys completed either by meter or calculation within 24 hours after gauge storage occurs at any given site so as to comply with 10 CFR 20.1302(b)(1). All Regional Radiation Safety Officers have confirmed that all surveys were completed for the 2004 construction season. This information was sent to the NRC on August 23, 2004.[1]

   b) Annual radiation surveys on all permanent storage facilities are now being conducted to determine annual radiation exposure levels.

   c) A worksheet and spreadsheet has been developed for calculating the exposure to the individual most likely to receive the highest dose in accordance with the NUREG 1556, Appendix I. It was distributed by the Statewide Radiation Safety Officer to the Regional Radiation Safety Officers on August 23, 2004.

With Regard to Violations A and B, Full Compliance Has Been Achieved.

At page 3 of the Notice of Violation, ADOT&PF was asked to provide the date by which compliance will be achieved. The licensee believes that it has achieved full compliance with regard to violations A and B, as set forth in the above described actions and training which were initiated in the winter of 2004. It believes that the steps it has taken should prevent the reoccurrence of the problems that resulted in the violations.

Violation C:

Violation C arises out of ADOT&PF's failure to send copies of the exposure reports to the six individuals whose exposure levels were investigated, at the same time the reports were sent to the NRC, in violation of 10 CFR 20.2205.

The allegation reads in part:

> ...[T]he licensee failed to provide copies of reports submitted to the Commission pursuant to the provisions of 10 CFR 20.2205, to six identified members of the public at a time no later than transmittal of the reports to the Commission. Specifically, on August 6, 2003, and August 11, 2003, the NRC received two different reports submitted by the licensee pursuant to the provisions of 10CFR 20.2205. Each report evaluated the radiation exposures to eight employees with

[1] The NRC inspectors discovered that in the Denali area that no survey had been done in a storage facility adjacent to a public parking lot. In order to prevent the re-occurrence of this sort of deficiency, a 24 hour policy was adopted.

no assigned duties involving exposure to radiation or to radioactive material, and concluded that some of them had received radiation exposures in excess of NRC's regulatory limit for members of the public. However, the licensee did not provide copies of the two reports to the affected individuals until September 5, 2003.

ADOT&PF admits this violation occurred; however, it is uncertain whether any conduct of the personnel involved was deliberate or not. There are two timelines that should be examined. The first is the timeline from the date the reports were mailed to the NRC until September 2, 2003, the date that management realized the reports needed to be sent out to the subjects simultaneously. The second timeline is from September 2, to September 5, 2003 when the reports were mailed to the six subjects.

Addressing the first timeline, there is the initial question of whether the SRSO knew of the requirements of 10CFR 20.2205 prior to his sending out the reports to the NRC. Based upon the SRSO's records in November 2001 where he indicated that he hand delivered the report to Subject A on the same day his supervisor sent it out to the NRC, the licensee has concluded he likely did. However, the licensee has also concluded that the SRSO's failure in August, 2003, was likely an oversight on his part.

The SRSO claims that it was his supervisor's responsibility to send out the reports to the subjects during the time the former was on vacation and that he informed his supervisor of this expectation. This seems unlikely since the SRSO worked until midnight when his supervisor was not there. The Licensee has concluded that the SRSO likely did not advise his supervisor, the Statewide Materials Engineer, of the requirement of 10CFR 20.2205 until September 2, 2003 approximately one-month later. But whether it was ultimately the responsibility of the SRSO or his supervisor, the Licensee has concluded that there was apparently a lapse of attention to detail and not a deliberate violation by either one.

When addressing this initial timeline, there is a question of when any member of management first knew of the requirements of 10 CFR 20.2205. There is a comment at page 4 of your cover letter that notes that "a member of management was reminded of this requirement on several occasions." However of the materials sent so far in response to the licensee's FOIA request, no document can be found made contemporaneous with any informal notice of the requirements that supports this. There is a comment made much after the fact by an NRC official who did not have any operational contact with the licensee's managers. The Statewide Materials Engineer, who was the SRSO's direct supervisor during the relevant period of time, does not believe he was told of the existence of 10 CFR 20.2205 until September 2, 2003. His affidavit is attached hereto as Exhibit 1.

While it is possible that the Statewide Materials Engineer may have been told by the NRC inspectors of the requirements to mail the reports to the subjects prior to September 2, 2003, the significance of this requirement was not fully understood or appreciated by him as of the time requirement attached to the mailing of the reports.

The licensee believes that the Statewide Materials Engineer understood for the first time on September 2, 2003 the requirement of 10 CFR 20.2205.

This brings us to the second timeline from September 2, through September 5 when the letters were sent. Upon returning from annual leave in August, the SRSO was tasked with the responsibility to complete a transmittal letter by his supervisor. On September 2, 2003 the supervisor, understanding 10 CFR 20.2205, placed an immediate requirement on the SRSO to complete the transmittal letter and mail out the reports. However, the letter was not forthcoming for three more days. An effort was being made to give some supporting information to the subjects that would give them a perspective of the amount of exposures they had received. Eventually, the SRSO's supervisor retrieved the assignment from the SRSO and completed the cover letters that were sent out on Friday, September 5, 2003. In retrospect, it is clear that reports were not sent out to the subjects until three days after the SRSO supervisor both knew of the NRC requirements.

Corrective Action Taken and Planned with Respect to Violation C.

Many, if not most, of the comprehensive corrective actions taken by the Licensee with respect to Violations A and B also apply to this violation. Specifically, he Statewide Materials Engineer was sent to a forty hour NRC training course. The new SRSO has also received extensive training, including a forty-hour course. It is hoped that the various actions taken by the Licensee (and discussed previously in this letter) will prevent overexposures in the first place, (so that no reports will have to be sent out).

With Regard to Violation C, Full Compliance Has Been Achieved.

With reference to Violation C, ADOT&PF believes that is has achieved full compliance as set out above regarding additional training as well as furnishing the required exposure reports including the reports to all individuals. Both management and the RSO's are knowledgeable in the requirements for simultaneously sending out reports to the subjects and the NRC in accordance with 10 CFR 20.2205.

Sincerely,

Mike Barton

Mike Barton
Commissioner

Enclosure

cc: Bruce S. Mallett, Ph.D.
Doug Starkey
Michael Vasquez

UNITED STATES
NUCLEAR REGULATORY COMMISSION

NRC Inspection report No. 030-07710/01 and
Investigation Report No-4-2002-001

NRC INVESTIGATION OF ALASKA
DEPARTMENT OF TRANSPORTATION &
PUBLIC FACILITIES

AFFIDAVIT OF MICHAEL SAN ANGELO

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

Michael San Angelo, being first duly sworn, deposes and says:

1. I am employed by the State of Alaska, Department of Transportation & Public Facilities, as the Statewide Materials Engineer. I assumed this position in November, 2001.

2. I first became aware of the requirements of 10 CFR 20.2205 on or about September 2, 2003 when the Statewide Radiation Safety Officer at the time, Robert Farmer, informed me of the existence of this regulation and of the requirement that a report must be sent to the subject at the same time it is sent to the NRC.

3. Shortly thereafter on September 2, 2003 or thereabouts, I received a call

EXHIBIT 1 PAGE 1 0F 2

from Dr. Janine Katanic who also informed me of this requirement.

4. While it is possible that someone from the NRC told me about this requirement at an earlier time, I have no recollection of this.

Dated this 9th day of November, 2004.

M. S. Angelo
Michael San Angelo

SUBSCRIBED AND SWORN TO before me this 9th day of November, 2004.

Notary Public in and for Alaska
My Commission Expires: 11/24/07