



DEFENSE NUCLEAR AGENCY

ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE
BETHESDA, MARYLAND 20814-5415

MAY 4 1989

Director
Office of Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Re: Reply to a Notice of Violation

Dear Sir:

This is in reply to USNRC Letter dated March 22, 1989, Subject: Notice of Violation and Proposed Civil Penalty (NRC Inspection Report No. 50-170/88-04).

Our reply is provided pursuant to the provisions of 10 CFR 2.201. It addresses the NRC notice of violation and proposed imposition of a civil penalty as a result of NRC Inspection Report No. 50-170/88-04 and an additional violation not previously addressed by the NRC, specifically, violation D described in the enclosure to the letter. The violations enumerated in the enclosure to the letter have been paraphrased and will be addressed in the same sequence as in the Notice of Violation:

VIOLATION A: Prior to November 1988, changes were made to the facility as described in the current revision (1984 Update) to the AFRRI-TRIGA Safety Analysis Report without performing a written safety evaluation to assure that the changes did not involve an unreviewed safety question as evidenced by the following examples:

- Example 1. In March 1986, a digital voltmeter was installed in the linear channel of the nuclear instrumentation system in lieu of a failed strip chart recorder pen without performing a written safety evaluation; and
- Example 2. In April 1988, a nuclear instrumentation Pulse Ion chamber was replaced with a Cerenkov detector without performing a written safety evaluation.

- (1) The violation is admitted.
- (2) The reasons for this violation:

This violation resulted from an imperfect understanding of 10 CFR 50.59. As will be demonstrated below, neither of the cited changes had any actual effect on reactor safety.

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The digital voltmeter (Example 1) was actually being used with the reactor in 1978. A 50.59 review was conducted at that time. The voltmeter was installed in the linear channel by connecting it to manufacturer-provided voltage measurement test points. It is not a part of any of the safety channels and is in fact electrically isolated from the safety channels. The digital voltmeter measures only the output of the multi-range linear channel, it neither alters the input of the reactor power signal generated by the fission detector to the multi-range linear and log channels, nor affects any of the safety channels. During normal operations, the voltmeter is connected in parallel to the chart recorder. The voltmeter provides a degree of precision that is simply not available from other output measuring devices. This degree of precision is important for conducting radiobiology research, but is not relevant to (or, of course, required for) reactor safety. Under the circumstances, further safety review did not seem necessary, given our understanding of 10 CFR 50.59 prior to January, 1989.

Even with our prior understanding of 10 CFR 50.59 we would have recognized the obligation to conduct a safety review of our intended action if we had actually replaced the "failed" linear pen (in March, 1986) with a digital readout device. As is indicated above, however, the voltmeter was not installed as a replacement for the linear pen.

Our rationale for not accomplishing a separate, written safety analysis for the Cerenkov detector (Example 2) was that it had been in use at AFRRI since the issuance of its first reactor license in 1962. Numerous official reactor documents substantiate its use. The Cerenkov detector's photo diode was unplugged in 1985 from above the core and stored with infrequently used measuring instruments and the like. It is important to note that the cabling, power and mount remained in place and were thus available for use when the photo diode was re-installed in April, 1988. Inasmuch as the detector was re-installed precisely as it had been in 1985, since a 50.59 review had been completed as part of the documentation for the console installation in 1978 as mentioned above, and since the safety implications of the Cerenkov detector had been thoroughly evaluated during the initial licensing and subsequent renewal processes, further formal review was not considered necessary.

(3) Corrective steps taken and results achieved:

Additional specific written safety analyses were immediately performed on both the voltmeter and Cerenkov detector in December, 1988 and these reviews were used to update the Safety Analysis Report. This document was presented to the Reactor and Radiation Facility Safety Committee (RRFSC) on 15 December 1988. The RRFSC reviewed the report and concurred with the Reactor Facility Director's finding that there are no unreviewed safety questions. We have also developed and implemented a new review procedure as described below.

(4) Corrective steps that will be taken to avoid further violations:

In both cases (Example 1 and Example 2), AFRRI's documentation of its 10 CFR 50.59 review process was not specific. We have created a new, more explicit 10 CFR 50.59 review procedure which requires specific documentation. This "Administrative Procedure on Facility Modifications" is now in effect and insures accurate assessment and thorough documentation of modifications. This procedure will be used to review future facility modifications. It requires strict adherence by the reactor staff in determining and documenting what form of review is applicable and necessary under 10 CFR 50.59 before any modification or change is made to the reactor facility. This procedure was approved for implementation by the Reactor Facility Director (RFD) on 3 January 1989. After several improvements, on 15 March 1989 the RRFSC concurred with the RFD in that this procedure is in fact a facility safety enhancement.

(5) The date when full compliance was achieved: Safety reviews were completed on 15 December 1988 and on 15 March 1989 the "Administrative Procedure on Facility Modifications" became effective.

VIOLATION B: Technical Specification 6.3, Procedures, requires written procedures for certain activities (including the conduct of experiments that could affect the operation and safety of the reactor, checkout startup, standard operations, and securing of the facility) to assure safe operation of the reactor. Contrary to the above:

Example 1a. On July 26, 1988 and August 1, 1988, the Gas Stack Monitor (GSM) malfunctioned; but the malfunction was not recorded in the Malfunction Logbook.

- Example 1b. On June 3, 1987, the GSM pump was turned off due to an apparent malfunction (smell of smoke); but this condition was not recorded in the Malfunction Logbook.
- Example 2. An experiment was conducted on October 8, 1985, and an RUR was not completed prior to irradiation.
- Example 3. As of November 7, 1988, no hourly report of the GSM for August 1, 1988, was provided in the GSM historical log.
- Example 4. As of November 7, 1988, the Operator's Log (No. 78) (March 10, 1987 - June 17, 1987) and Activated Materials Log had not been reviewed by the Reactor Facility Director.

(1) Because we admit Examples 3 and 4, the overall Violation B is admitted. For reasons that appear below, we deny Examples 1a, 1b, and 2. Each example will be discussed in the order in which it appears in the Notice of Violation.

(2) The reasons for denying or admitting the violation:

Example 1a.

According to Technical Specification 3.5.1, "The reactor shall not be operated unless the following radiation monitoring systems are operable: . . . Gas Stack Monitor. The gas stack monitor (GSM) will sample and measure the gaseous effluent in the building exhaust system." Malfunction of the GSM must, of course, be recorded in the Malfunction Logbook.

This allegation is denied because the Reactor Operations Logbook entries for July 26, 1988, contain no indication of a GSM malfunction. Both the Daily Operational Start-up and Shut-down Checklists for that date confirm normal GSM operation.

The GSM Historical Logbook does contain some abnormal readings indicating an electronics upset during the night of July 25, 1988, when no operations were being performed. These abnormal readings are the result of electrical interference from severe thunderstorms that affected the AFRRRI complex on that previous night.

These abnormal readings were discovered during testing. Proper operation of the GSM was verified prior to any reactor operations on July 26, 1989. The data dump due to outside effects (loss of power from the storm) was not a malfunction of the GSM itself and so was not recorded in the Malfunction Log.

The Reactor Operations Logbook entries dated August 1, 1988, also show no indication of a GSM malfunction. The Daily Operational Start-up for August 1, 1988, indicates normal operation of the GSM. While performing the Daily Operational Shut-down checklist on the same date, however, two senior reactor operators were unable to print out the one-hour historical report because the GSM printer had failed. Instead of notifying appropriate management personnel, they wrote "N/A" in the blank on the checklist normally requiring the initials of an operator. The operator later stated that "N/A" meant "not available." The unit performed properly on August 2 during the morning start-up check-out. Later, on August 2, 1988, an entry was made in the Malfunction Logbook by a third operator after being consulted by one of the other two.

Example 1b.

As is indicated above, the Technical Specifications require that no reactor operations occur unless the GSM is operable. GSM malfunctions must be recorded in the Malfunction Logbook.

This violation is denied because the GSM pump was not turned off on June 3, 1987, because of an apparent or suspected malfunction (smell of smoke). Rather, the pump was turned off because the noise this pump makes when operating normally would have interfered with a meeting being held on the reactor deck area. The pump was turned back on immediately following the meeting. There never was any report of smoke and no operations were scheduled or conducted during the period the pump was turned off.

Example 2.

A detailed review of the facts surrounding this example of an apparent violation will clearly demonstrate that the absence of a Reactor Use Request

(RUR) did not violate Reactor Operation Procedure I, Conduct of Experiments, and therefore Technical Specification 6.3.

RURs serve a number of separate purposes for experiments conducted pursuant to 6.4.2a and b of the Technical Specifications. In that context RURs assist in reactor scheduling, help key the staff to assure prior set-ups (e.g. core position, customized shielding) so that radiation environments for radiobiological experiments can be replicated, provide a communications media with other elements of AFRRI such as the Safety Department, and assure that the proposed experiment can be accomplished safely.

The reactor run in question (that performed on October 8, 1985) was not, however, the classic "experiment" that it appears to be. Rather, the run was one of a series made that day in an effort to modify a radiation environment that had previously been achieved but as to which precise core configurations were not known. The overall effort was being accomplished under the personal supervision of the RFD who was well aware of the matter (cells) being irradiated. Indeed, the cells being irradiated were obtained by the RFD to serve as "dosimeters." The objective was to achieve, using core configurations and shielding, a slow neutron flux to produce an environment that would kill the cells. It is worth noting at this point that no conventional dosimeters would have served the purpose and that, while it is easy to damage or kill cells with gamma, it is a significant challenge to confine the kill mechanism to slow neutrons in a reactor environment. The RFD's effort to meet that challenge (for the benefit of an experimenter other than the scientist who had provided the cells) was a clear example of a reactor test authorized by Technical Specification 6.4.2.c, Reactor Parameters Authorization.

Example 3.

This violation resulted from a lack of attention to detail by the operators performing the Daily Operational Shut-down Checklist. The "N/A" annotation in the Checklist, instead of bringing the problem to the attention of more senior personnel, prevented timely corrective action from being taken.

Example 4.

The failure of the RFD to review the Reactor Operations Logbook (No. 78) occurred because the logbook in question was mistakenly filed with already-reviewed logbooks by an operator and, therefore, it escaped the RFD's attention. The failure of the RFD to perform the annual review of the Activated Materials Logbook was due to miscommunication between the Radiation Sources Department and the Safety and Health Department (SHD) on the need to review the logbook.

(3) Corrective steps taken and results achieved:

Our general response to this violation has been to conduct an intensive program of review and retraining for reactor operators. This program required each operator to spend approximately 20 hours in a complete review of all procedures and to make comments and recommendations for improvements. This review of procedures was reinforced by two hours of training in December 1988, two and one-half hours in February 1989 and eight more hours in March 1989. The eight hours of training in March also included a full staff walk-through of a Daily Operational Startup Checklist conducted by the RFD. In addition, a written test was given to the operators to evaluate their knowledge and understanding of our operational procedures. Examination scores and subsequent discussion indicate that this training program has resulted in a significant increase in senior reactor operator awareness of procedural requirements. As a result of this renewed awareness, the effectiveness of the operational procedures has been significantly enhanced.

The Reactor Operations Logbook in question was immediately reviewed and signed by the RFD when it was brought to his attention on 7 November 1988.

The review of the Activated Materials Log was intended to insure compliance with a new radioactive material handling procedure which was implemented while activated materials were being stored in reactor areas. With the first annual review completed and the stored material removed from the reactor area, this requirement was determined to be unnecessary and was eliminated on 15 December 1988. The Chairman, Safety and Health Department and the Chairman, Radiation Sources Department agreed to eliminate this required logbook review and the RRFSC concurred on 15 December 1988.

(4) Corrective steps that will be taken to avoid further violations:

AFRRI has renewed its commitment to continue operator training with emphasis on strict verbatim compliance with written procedures. This has been stated in a policy statement and operator forums have been held to insure understanding by all facility personnel. AFRRI will continue to stress this in future training on operator compliance and during procedure refresher portions of the requalification program.

In addition, operator procedures have been clarified in an attempt to avoid situations such as the delayed-entry in the Malfunction Log (Example 1a). The more-detailed procedures also require the operator concerned to annotate the Operations Log each time a piece of tech-spec required equipment is turned off.

Although a GSM printout for August 1, 1988, cannot be created now, our renewed training commitment should prevent a recurrence of Example 3. In addition, we have reviewed our environmental monitoring data and are confident there was no radioactive release.

To prevent further occurrence of the RFD not reviewing and signing the Reactor Operations Logbook (Example 4) Tab A of Procedure VIII has been modified. The modified procedure requires the operator on duty to notify the Reactor Operations Supervisor when the Reactor Operations Logbook is full and ready for review by the RFD. The requirement for review of the Activated Materials Logbook has been eliminated.

(5) The date when full compliance was achieved.

Full compliance was achieved as to Example 3 on March 3, 1989, and as to Example 4 on December 15, 1988. March 3, 1989, is the date on which the operator re-training program was completed.

VIOLATION C: During the continuous operator requalification cycle, between 1986 and 1988, three licensed operators did not participate in some of the preplanned lecture programs, such as the lectures on NRC regulations, Technical Specifications, and Reactor Operating Characteristics.

(1) The violation is admitted.

(2) The reason for the violation:

Our conversion to a new system of tracking operator requalification on a two-year calendar cycle, as opposed to individual two-year cycles, made it very difficult for the training coordinator to recognize discrepancies. As a result, three of our nine operators failed to complete three of 81 required classes.

(3) Corrective steps taken and results achieved:

An accelerated requalification program was initiated on November 1, 1988. The three operators who missed requalification lectures were given the required lectures that they missed. This training was completed on December 23, 1988.

(4) Corrective steps that will be taken to avoid further violations:

A new system of tracking and documenting all operator requalification training has been instituted and in effect since December 1988. This system includes two checklist forms that consolidate all requalification training documentation in one place for each operator. Moreover, these checklist forms require approval by every level of operational management prior to completion of the NRC Form 398. The new documentation of all requalification training requirements is also more efficient and retrievable and will ease the burden on the training coordinator. Management has placed a high priority on documenting attendance at requalification lectures.

Additionally, a revised requalification training program has been developed and staffed through the Reactor and Radiation Facility Safety Committee (RRFSC). This revision is currently undergoing final licensee review prior to being submitted to the USNRC for approval. Management is convinced that this new requalification training plan, coupled with a more efficient, consolidated documentation system and a management emphasis on requalification compliance will greatly strengthen the entire requalification program at the AFRRI Reactor Facility.

(5) The date when full compliance was achieved: December 23, 1988.

VIOLATION D: In October 1988, Angela Munno, a reactor operator for the Defense Nuclear Agency, was discriminated against

by the licensee in that she was reassigned to duties outside the reactor area for engaging in protected activities consisting of her raising allegations of safety violations. These allegations were raised to facility management and were related to possible technical specification violations.

(1) This violation is denied.

(2) The reasons for the denial.

The provisions of 10 CFR 50.7(a) prohibit "discrimination" (defined in the regulation as "discharge and other actions that relate to compensation, terms, conditions, and privileges of employment") against an employee "for engaging in certain protected activities." The regulation also provides that an "employee's engagement in protected activities does not automatically render him or her immune from discipline for legitimate reasons or from adverse action dictated by non-prohibited considerations."

It is apparent that this violation is based in large part on the Department of Labor's findings which were communicated to us on December 6, 1988. Unfortunately, the Department's investigation focused exclusively on the period between September 13 and October 13. Consequently, it failed to consider the actual reasons in the larger context in which Miss Munno's temporary assignment occurred. This larger context is presented in Enclosure 1 which, because of its sensitive content, should be safeguarded as required by the Privacy Act.

Clearly, Miss Munno was engaged in protected activities in mid-October, 1988. Her letter to the NRC dated October 13, 1988, is a textbook example of the kind of protected activity contemplated by 10 CFR 50.7(a)(1)(i). The informal grievance Miss Munno left on her supervisor's desk on September 19, 1988, while he was away on business might also be considered "protected activity." This informal grievance was intended to achieve the same result (an improved rating) as the much more extensive comments on the performance appraisal. It differed from the appraisal comments only in that it did not contain the vague and veiled references to "technical deficiencies."

The Labor Department, however, focused on management's alleged request for her to remove certain remarks from her performance appraisal--remarks she dated September 13, 1988. Those remarks were as follows:

"When violations of technical specifications . . . , [procedures, and non-compliance with the Code of Federal regulations] have occurred, it is my duty to point these out to the ROS/RFD. The 'cynical comments' referred to by MAJ Felty in this evaluation are a result of, I believe, comments made by myself when the RFD has decided not to report violations of technical specifications and procedures, and has also looked for reasons why he need not comply with parts of the Code of Federal Regulations. I have also expressed my amazement when I learned that the RFD deliberately misinformed the Reactor and Radiation Facility Safety Committee [RRFSC] on a safety related issue."

Management was duty-bound to pursue those comments and it did so immediately as is clearly reflected in Enclosure 1. We agree that an elapsed time of 30 days does not seem "immediate" but that assumes that the addressee of those comments (her supervisor) actually read them on September 13. In fact, MAJ Felty did not become aware of the comments until October 4. MAJ Felty's efforts to locate, discuss with, and get copies of pertinent documents into the hands of the RFD while he was on the other side of the country speaks to the concern accorded this matter from the first. His notification to the RFD prompted steps to obtain more specific information from Miss Munno. It was evidently this properly aggressive investigation of Miss Munno's allegations that led Miss Munno to believe that management "discriminated" against her.

While there is a coincidence in time between her temporary removal from the reactor and her engaging in protected activities, there is missing the necessary element of causation. Enclosure 1 clearly indicates that Miss Munno's actions and attitude displayed between April and October led management to conclude that it had a problem far greater than the various examples of administrative non-compliance identified by Miss Munno. This period is best characterized as a period of deteriorating co-worker relationships, as well as a deteriorating superior-subordinate relationship.

Enclosure 1 also contains the results of the investigatory interviews of other reactor staff members conducted by the RFD in response to Miss Munno's allegations. These interviews of other staff members made it clear that the bond which holds small employee groups together had been broken.

At that point, management perceived that there were two ways to continue operations while solving the personnel conflicts that had arisen within the staff: remove Miss Munno or remove most of the rest of the reactor staff until such time as the interpersonal relations among the entire staff could be healed. Given that continuation of a full schedule of operations could not be accomplished with only one reactor operator, management's options were really limited to one. The course of action pursued was to remove Miss Munno temporarily. It bears repeating that her temporary removal was not as a consequence of her "engaging in protected activity" but was rather the result of a significant history of strife within the reactor staff, precisely the kind of strife that can lead to unsafe operations. The record clearly shows that AFRRI management acted in good faith and without prejudice to Miss Munno.

Nor was her temporary removal the kind of management response proscribed in the definition of "discrimination" in the regulation. Surely it was not "discharge," and just as surely it had no effect on her "compensation, terms, conditions, and privileges of employment." If the action is even arguably "adverse," reactor operational safety must be the archetypical example of a "nonprohibited consideration[]" permitted by 10 CFR 50.7(d). In short, AFRRI at no time allowed personality disputes to interfere with the safe operation of the TRIGA reactor.

Management faced a dilemma and made its personnel decisions within that context. During a time of substantial employee tension, management wrestled with Miss Munno's grievance that she had been unfairly rated on her performance evaluation. While the employee claimed that she had been unjustly denied a promotion to Reactor Operations Supervisor, management evaluated a sensitive personnel issue regarding her use of sick leave in lieu of annual leave for two separate vacations Miss Munno had taken.

We also had to consider the "chilling effect" on the other staff members if management had disregarded their expressed safety concerns regarding Miss Munno's continued presence in the reactor area. Management felt it had no option but to temporarily remove Miss Munno from duties as an operator. Management has that prerogative and that responsibility under the regulation. We may have disregarded a fundamental management principle by failing to factor the appearance of impropriety into our decision-making model, but we acted in good faith and above board with Miss Munno

and did not discriminate. We believe we made the correct decision given the facts as we had them and the contentious environment in which the decision had to be made.

(3) Steps taken and results achieved.

There are lessons to be learned even in those situations which are not properly characterized as violations. The most important of those lessons is that there was a third option: temporary suspension of reactor operations. As we have previously reported to Region I, that is in effect what we did later. Our reports indicated that staff stress was only part of the reason for suspending operations and those reports are accurate. The lesson is that such a temporary suspension, in hindsight, might well have led to an earlier resolution of the underlying problems without anyone feeling the need to resort to external entities to protect their rights or assure reactor safety. It also should be noted that, in addition to the considerable effort devoted to formal responses in this matter, we have continued to address Miss Munno's personnel concerns/grievances and kept her posted (until her departure for a position with the NRC) as to the progress of external investigations. We have also, following the applicable personnel procedures, sustained her grievance and thus wound up granting her the result she was attempting to achieve by the comments she made in September in reply to her performance appraisal.

(4) Steps that will be taken to avoid future violations.

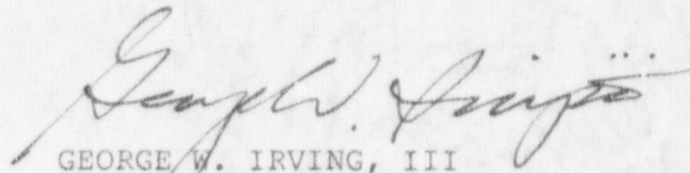
Among the steps taken to respond to the immediate situation was the retaining of an industrial psychologist to provide consulting services aimed at improving interpersonal relations among the staff. Obtaining full value from such a consultant is not a one-session possibility. Resources such as this will be called upon earlier in the proceedings if similar situations arise in the future.

In addition, as we have previously informed Region I, we have attempted to instill safety as a shared responsibility. The training emphasis given safety is intended to reaffirm the message that employees are not "at risk" if safety-related concerns are raised and that raising safety issues is not the beginning of an adversarial process.

(5) We were in compliance.

In accordance with 28 U.S.C 1746, I declare under penalty of perjury that the statements contained in this letter and in its enclosure are true and correct to the best of my knowledge and belief.

Executed this 14th day of May 1989.


GEORGE W. IRVING, III
Colonel, USAF, BSC
Director