GPU Nuclear

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Writer's Direct Dial Number:

March 10, 1982
5211-82-030

Office of Inspection and Enforcement
Attn: R. C. Haynes
Region 1, Regional Administrator
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Response to IE Inspection 50-289/81-34

By letter dated January 18, 1981, NRC transmitted Inspection Report 50-289/81-34 including five items of apparent non-compliance contained in Appendix A - Notice of Violation. The purpose of this letter is to respond to the specific items of apparent non-compliance (Attachment 1). The delay in our response beyond the 30 day requested in the notice of violation was agreed to by Mr. A. Fasano (NRC) and noted in a telephone conversation with your Supervisor, Files, Mail and Records on February 17, 1982. As detailed in Attachment 1, we disagree with the NRC that one of the five items constitutes an item of non-compliance. Further, we also disagree with the severity levels indicated in your notice of violation for those items we are not contesting as items of non-compliance. The basis for our disagreement is also detailed.

Several of the items designated as potential items of non-compliance relate to our Hittman radwaste solidification system. For your information, several design modifications are being pursued relative to this system. Hard piping, between the Hittman Building and the Auxiliary Building is being procured and installed in accordance with our internal funding and schedules (This activity was in progress well in advance of the NRC inspection). Baghouse effluent will be either filtered through filters, or routed back to the auxiliary building. An inspection port discussed in Attachment 1, was only necessary to be open during oily waste processing. System modifications are being made to provide level indication or overflow protection to negate the need for opening this inspection port. Monitoring provisions are being re-evaluated in connection with revised safety and accident analysis that is on going to address Hittman System operation once TMI-1 has restarted.

In accordance with your request contained in the subject inspection report, this response is submitted under oath or affirmation.

Sincerely,

H. D. Hukill
Director, TMI-1

HDH:WJM:vjf
Attachments
cc: A. Fasano

Sworn and subscribed to before me this 10th day of March, 1982.

Notary Public

PAMELA JOY LABRECHT, Notary Public
Middletown, Dauphin County, Pa.
My Commission Expires August 29, 1983

ATTACHMENT 1

Response to Notice of Violation Inspection 50-289/81-34

In accordance with the subject Notice of Violation, this attachment contains a response to each item of apparent non-compliance. In response to each item for which we agree a non-compliance existed, we have provided 1) the corrective steps which have been taken and the results achieved, 2) corrective steps which will be taken to avoid further violations, and 3) the date when full compliance will be achieved. Further, we also have provided 4) comments on the severity level assigned by the NRC.

For the item which we believe does not constitute an item of non-compliance, this attachment details the basis of our disagreement.

NRC Item A

10 CFR 50, Appendix B, Criterion III, Design Control, requires that applicable regulatory requirements be translated into specifications, drawings, procedures and instructions. 10 CFR 50, Appendix A, Criterion 64 states in part that "... means shall be provided for monitoring...effluent discharge paths...for radioactivity that may be released from normal operations, including anticipated operations occurrences and from postulated accidents". The NRC approved Operational Quality Assurance Program, FSAR, Revision 9, May 28, 1981, Article 4.2.1.2, requires that all design regulations will be reviewed and adhered to unless specific Technical Specifications or FSAR changes are requested.

Contrary to these requirements, the licensee's radioactive waste solidification system did not provide for adequate means of monitoring radioactive gaseous effluent releases to the environment during both normal operational occurrences and from postulated accidents.

This is a Severity Level IV Violation (Supplement I)

Response to Item A

We disagree that this item constitutes an item of non-compliance. During the exit on inspection 81-34 we understood the NRC's concern to be as follows:

> "Hittman System - contrary to 10 CFR 50 Appendix A Criterion 64, licensee operated the Hittman System for periods of time with an inspection port open during drum filling operation."

Since we had initiated analysis based upon our understanding of the NRC concern at the time of the exit, the basis of our disagreement below addresses our prior understanding of the NRC concern and expands the discussion to address the revised concern.

There are three potential gaseous effluent release pathways from the Hittman system, a normal vent line, a visual observation portal and a baghouse vacuum cleaner. Our response to this item A addresses the later two and our response to NRC item D addresses the normal vent line. The normal operating procedures for processing of oily wastes and CWST call for the opening of an inspection port to observe level (other Hittman processes do not require the inspection port to be open). This action is described in Rev. 2 of the Process Control Plan, submitted to NRC on June 24, 1981. We do not agree that opening the port constitutes a violation.

GDC 64 states:

> "Monitoring radioactivity releases. Means shall be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences and from postulated accidents."

It is a well recognized and codified regulatory principal that design provisions shall be "commensurate with the importance of the safety functions to be performed." (10CFR50, Appendix A, Criterion 1). Similarly, ANSI18.7-1972, Section 5.1 (incorporated by reference into TMI-1 technical specifications) states "... provide control over activities effecting the quality of the structures, systems and components to an extent consistent with their importance to safety." Regulatory guidance on monitoring provisions, for example the NRC SER on TMI-1 Restart, NUREG 0680, notes that "Systems which are not amenable to continuous monitoring or for which detailed radioisotopic analysis are required will be periodically sampled and the samples analyzed" (NUREG 0680, C5-7 and C4-10). Applicable guidance, therefore, require judgement to be applied on the amount or sophistication of monitoring based upon the significance or potential significance of the hazard involved.

What this potential item of non-compliance boils down to, therefore, is whether Licensee's monitoring provisions are appropriate and commensurate with the significance of the airborne effluents from the Hittman System. Our basis for opposing this item of non compliance, justified below, is data that demonstrates that the radioactive airborne effluent from the Hittman System is and was insignificant (orders of magnitude below the capability of grab sampling or continuous monitoring to detect) and that appropriate monitoring provisions were in place, therefore.

This potential item of non compliance is invalid, first of all, based upon inspection of the radioisotopes present in the Hittman System. Isotopic analysis, performed for each Hittman process identified the following radioactive isotopes to be present:

1) Mn-54
2) Co-60
3) Cs-137
4) Cs-134

The NRC citation alledges that the solidification system did not provide for adequate means of monitoring radioactive gaseous effluent. Since Licensee was aware, prior to all Hittman batches, that no gaseous radioactive material was present, there was no reason or operative NRC regulatory requirement to monitor for radioactive gases.

However, we do not solely rely upon this fact in opposing this non compliance. We have considered whether these non gaseous, relatively heavy isotopes could evolve off the liquid surface of the Hittman liquid and be carried airborne in liquid vapor.

We have modeled and analyzed oily waste and CWST processing during the Hittman Cask fill operation to determine the radioactive effluent during operation of the baghouse filter (when radioactive liquid is present in the liner prior to solidification). Following filtration in the baghouse, the air drawn from the liner is (approximately 300 cfm) released into the Hittman Bld. The calculated effluent radioactive characteristics, without credit for any filter efficiency by the baghouse (for calculational simplicity) are:

Isotope	Measured Concentration in Liquid (μ Ci/cc)	Calculated Concentration in Air Stream (μ Ci/cc)
Mn-54	7.96×10^{-5}	4.7×10^{-19}
Co-60	1.74×10^{-3}	1×10^{-17}
Cs-134	7.08×10^{-3}	4.2×10^{-17}
Cs-137	3.10×10^{-2}	1.8×10^{-16}
Total		2.3×10^{-16}

The calculation utilized actual Cs entrainment factors (10^{-12}) from liquid to vapor derived from TMI-2 containment purging operation. (Entrainment factors for Co and Mn, although less than Cs, were also assumed to be 10^{-12} for this calculation).

We believe these results are representative of effluent from the visual inspection port as well. In either event, the above calculation result demonstrates effluent discharge is approximately six orders of magnitude below 10CFR20 MPC concentrations for airborne effluents that is in airborne pathways from the Hittman System. Further, these concentrations are at least two orders of magnitude below the lower limits of detectability for continuous on line sampling instrumentation.

The following monitoring provisions were utilized before, during or after Hittman processing of oily waste and CWST which support the conclusion that the Hittman airborne effluent is insignificant.

a. The liquid in the concentrated waste storage tank is agitated for extended periods of time prior to pumping to the Hittman system. Off gasing from the tank is monitored by an airborne sampler located in the same cubicle as the open tank.

b. A radioisotopic analysis is performed on each batch of liquid.

c. Swipe samples of the inspection port, liner top and other areas in the Hittman building are taken in accordance with procedure. In addition, radiation and contamination surveys are conducted and documented routinely.

d. Sampling of the baghouse filter (taken after the NRC inspection) which indicate no contamination levels above minimum detectable activity.

It is our conclusion, based on analysis and confirmatory data that the baghouse filter and the inspection portal have not been a significant radioactive effluent pathway during oily waste and CWST processing.

The cited NRC concern is not specific to the CWST and oily waste processing. Additional batches processed in Hittman contain material from Radwaste evaporator (bottoms) and used precoat have the following radioactive isotopic concentrations in the liquid in μ Ci/cc:

	Measured Used Precoat Conc.		Measured Evaporator Bottoms Conc.
Mn54	2.11×10^{-2}	Co60	6.38×10^{-3}
Co60	3.21×10^{-1}	Cs134	2.56×10^{-2}
Cs134	5.27×10^{-1}	Cs137	9.39×10^{-2}
Cs137	1.91×10^{0}		

Although the inspection portal is closed during these processes, the baghouse filter is operated. These concentrations and isotopes are comparable to those analyzed above for the baghouse exhaust that were found to be below MPC. Applying the partitioning factors yields 10^{-15} μCi/cc for the most limiting isotope. Particulate and entrained isotopes are, therefore, several orders of magnitude below MPC for airborne concentrations. There are no gases that would constitute radioactive releases. We conclude that at no time has Hittman system operations constituted a gaseous release path for significant radioactive effluents discussed above since no gases were present and no significant concentrations of airborne particulate were present in Hittman effluent. Further, Licensee's monitoring provisions were adaquate and commensurate with the potential safety hazard of the activity.

The NRC's potential non-compliance also addresses postulated accidents. As discussed above, a revised accident analysis is being performed to address configuration changes in the Hittman system. This analysis will address postulated accidental releases in the modified system. Given the partitioning factors between the liquid and air and the isotopic decay since TMI-1 last operated, we cannot conceive a credible operational occurrance or postulated accident that could have resulted in significant airborne Hittman releases. Liquid releases would be contained by the design basis curbing below the Hittman System or contained in a very small area between the auxiliary and Hittman Buildings.

Although we believe either of the two arguments presented above can demonstrate that this non compliance is invalid, a third, equally persuasive arguement can be based upon 10 CFR 20.106 and 10 CFR 20, Appendix B, Table II, Note 5. Collectively, these regulations consider radioactive isotopes to not be present in a mixture if (a) the ratio of the concentration of that radionuclide (C_A) to the concentration limit for that radionuclide specified in Table II of Appendix "B" (MPC_A) does not exceed 1/10 and (b) the sum of such ratios for all the radionuclides considered as not present in the mixture does not exceed 1/4.

NRC Item B

10 CFR 20.103(a)(3) requires that the licensee use suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas.

Contrary to this requirement, during the period May - December 1981 the licensee permitted personnel to visually monitor solidification container filling with evaporator bottoms* through an inspection port in the container without previously making suitable measurements for detecting and evaluating the concentration of radioactive materials in the gases and vapors being vented from the inspection port.

This is a Severity Level IV Violation (Supplement IV).

Response to Item B

We disagree with this item as stated. "Suitability" of the measurements must be judged in context of radioactivity present. As discussed under item A, the radioactivity was insignificant, therefore, the measurements were suitable. Further, the data available for measuring and evaluating the need for respiratory protection included the following:

1) Concentrations in air above the concentrated waste storage tank during agitation (Several order of magnitude below MPC).

2) The Process Control Plan that authorized visual monitoring based upon " the low activity levels associated with oily wastes". (This PCP was submitted to NRC by Licensee letter LIL-133 dated 6/24/81).

3) Concentrations of liquid waste to be processed. (same order of magnitude as liquid MPC).

4) Original ALARA review, which reminded the Rad Con foreman to evaluate for respiratory protection.

5) Documented HP Surveys in the Hittman Building

We note that the RWP utilized for Hittman processing of oily waste specifically recorded the HP surveys and specifically noted respiratory protection was not necessary. With this available information, the rad controls foreman concluded that respiratory protection was not needed. The detailed calculation in response to the first potential noncompliance confirms his judgment. In addition, a whole body count of the individual involved in monitoring level showed only baseline count.

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*"Evaporator Bottoms" is interpreted to be combined processing of CWST and oily wastes since only during such combined processes was the inspection port open.

Although we conclude that no violation of 10 CFR 20.103 (a)(3) occurred during this activity, we acknowledge that procedural guidance in RCP-1616 was not strictly adheared to. Specifically, air samples were not taken in the breathing space, as the procedure should have been interpreted, prior to the decision being made not to require respiratory protection. We address below the corrective action that will be implemented to avoid reoccurance.

(1), (2) and (3)

The Hittman system has not operated since the subject inspection. Future operation of the Hittman system will be permitted only after design modifications are completed to seal the inspection port and other improvements to avoid airborne radioactive respiratory threats. The procedural guidance in RCP-1616 has been reviewed and found to be adaquate. Although we view this instance of procedural non-compliance to be an isolated instance, the procedural guidance will be emphasized in the next scheduled monthly radiological controls foreman meeting and in cyclic weekly training meetings with radiological controls foreman. This corrective action will be completed by May 1, 1982.

(4) Comments on Severity Level

The NRC's notice of violation identified this item as a severity level IV violation. Severity level IV, from the October 1980 Federal Register notice, states for Health Physics, in relevant part:

> 1. Failure to follow requirements (e.g., inadequate survey, incomplete dosimetry, improper posting), not covered in Severity Levels I, II, III, that substantially reduces the margin of safety; (Emphasis Added)
>
> 2. A radiation level in an unrestricted area such that an individual may receive greater than 2 millirem in a one hour period or 100 millirem in any seven consecutive days;
>
> 3. Failure to make a 30-day notification required by 10 CFR 20.405; or
>
> 4. Inadequate review or failure to make a review in accordance with 10 CFR Part 21.

We do not agree that this item "substantially reduces the margin of safety" or constitutes a radiation level in an unrestricted area of 2 mr/hr or 100 mr/7days. Severity level V violations are defined to include:

> "Any other matter, including failure to follow procedures that has other than minor safety or environmental significance"

As discussed above, although we believe 10 CFR 20 was not violated, procedural requirements were not appropiately implemented. However, the available data and analysis demonstrates a lack of significant respiratory threat. We suggest, therefore, that Severity Level VI is appropriate in that the incident involved "minor safety or environmental significance."

NRC Item C

In CFR 20.401(b) states in part that "Each license shall maintain records... showing the results of surveys required by 20.201(b)".

Contrary to this requirement, surveys made to evaluate the external radiation levels of hoses used for transferring radioactive wastes per Operating Procedure 1104-28A were not documented.

This is a Severity Level V Violation (Supplement IV).

Response to Item C

(1),(2) & (3)

Licensee agrees that this item, although of minor significance, can be classified as an item of non compliance. The single line for which surveys were not documented and retained is a temporary line from the previously installed solidificaton system to the Hittman liner. These surveys were performed for the sole purpose of posting the areas through which the line runs. The area was posted and a rad controls technician remained in the general area throughout process operations. Although the postings were of a temporary nature (1-1/2 hours), we agree that the survey results should have been documented and retained per 10 CFR 20.401 (C)(2). Prior to resuming the Hittman System operation, currently scheduled for mid-April, procedural guidance and instruction will be provided in procedure OP 1104-28A to ensure documentation is retained on surveys of this line. Further, additional generic guidance will be implemented for determining what consitutes a "survey" and required documentation. This guidance, whichwill involve Radiological Control procedure change, will be implemented byJune 1, 1982.

(4) Comments on severity level. Licensee feels this item of non-compliance is of minor concern and has no impact on the health and safety of the public or upon TMI-1 workers. We view this item as a severity level VI concern in that it has "minor safety or environmental significance."

NRC Item D

Technical Specifications, Appendix A, Secion 6.8.1, requires that written procedures be established, implemented, and maintained that meet or exceed the requirements and recommendations of Section 5.1 and 5.3 of ANSI N18.7-1972 and Appendix "A" of USNRC Regulatory Guide 1.33, dated November 1972.

Contrary to this requirement, Unit 1 Operating Procedure 1104-28A, "Radioactive Waste Solidification - Hittman, "Revision 2, effective September 4, 1981, was inadequate in that it did not include when or where a vent line should be run from the head assembly of the Hittman liner.

Licensee Response

We believe this item of potential non compliance is insignificant particularly since the vent line was installed. As discussed in response to item A above, the Hittman airborne effluent is well below MPC. ANSI 18.7-1972 Section 5.1 states in part that "The program shall provide control over activities effecting the quality of the structures, systems and components to an extent consistent with their importance to safety*." Further, the specific portion of 18.7-1972 cited by the NRC at page 6 of the inspection report applies to "operations of systems related to the safety* of the plant". The NRC report does not discuss how the past Hittman System operation with or without this vent line connected related to the safety of the TMI-1 plant.

Nevertheless, in accordance with written policy, we insist on procedural compliance. We are reluctant to discourage good practices implemented to supplement mere procedural compliance. In this case, however, we agree the procedural supplement was a non-compliance. We acknowledge that the improvements associated with proceduralizing the vent line hookup are preferred and should be captured by procedure so that it is routinely performed.

(1)(2) and (3)

Prior to resuming Hittman System operation, currently scheduled for mid-April, Licensee will revise procedure OP1104-28A to reflect appropriate procedural guidance on the Hittman System vent line. Further, licensee contemplates issuance of guidance, possibly in AP1029 to encourage good practices to be incorporated into procedures. This guidance will be issued by early May, 1982.

(4) Comments on Severity Level

As Licensee has noted above, procedural guidance can be and is being improved in the area identified by this item of non-compliance. Since we have recognized that reasonable improvement is possible in this area we have not contested the item of potential non-compliance. We take issue, however, with the assessment of Severity Level by the NRC. We believe that Severity Level VI, items of minor safety concern, is a more accurate assessment.

*Emphasis added

NRC item E

Technical Specifications, Appendix A, Secion 6.11, requires that procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR 20 and shall be approved, maintained, and adhered to for all operations involving personnel radiation exposure.

Contrary to this requirement, the following Radiological Controls Procedures (RCP) were not adhered to.

-- RCP 1796, "DOP Testing Controlled Vacuum Cleaners, "Revision 0, effective March 3, 1981, requires, in paragraph 5.1.3, that the DOP generator and detector be calibrated within the past six months. Contrary to this procedure, controlled vacuum cleaners whose High Efficiency Particulate Air (HEPA) filters were tested in July and August of 1981 were tested with equipment that was calibrated in April 1980.

-- RCP 1683, "Controlled Vacuum Cleaners", Revison 3, effective July 17, 1981, required in paragraph 5.2.4, that the location of all vacuum cleaners be determined weekly. Contrary to this procedure, location of controlled vacuum cleaners have not been determined since November 1981.

This is a Severity Level V Violation (Supplement I).

Response to Item E

General Comments

Licensee agrees that internal procedural guidance related to vacuum cleaners was not adhered to in the cited instances. We further observe that any procedure at TMI-1 designated RCP (Radiation Control Procedure) can be alledged to directly or indirectly relate to Technical Specification Appendix A Section 6.11 which requires procedures for personnel radiation protection by virtue of their being under the cognizance of the Radiation Control Department. We disagree, however, that the subject procedural requirements are mandated by the requirements of 10 CFR 20. The corrective action we have taken to improve our program in this area is as follows.

(1)(2) & (3)
Corrective Action

The lack of up-to-date calibration was recognized prior to the subject NRC inspection. The DOP testing equipment was sent off site, calibrated on 10/23/81 and returned approximately one week later. All vacuum cleaners have either been retested or removed from service pending completion of calibration.

Licensee's program was being implemented in response to recent procedural requirements. Our program identified and had corrected the test equipment calibration discrepancy prior to NRC Inspection 81-34. Our corrective action is complete on this item of test equipment calibration.

Procedure RCP 1683 was not intended to require written inventoring of vacuum cleaners. Control provisions in place include sign in and out of vacuum cleaners, surveying and bagging vacuum cleaners coming from controlled areas, and decontamination prior to returning vacuum cleaning devices to service. The procedure does not require weekly papers or location review for the 19 vacuum cleaners in question. As an interim measure, however, weekly checks were performed and documented to determine location of each cleaner covered by RCP 1683.

Licensee has revised the procedural guidance necessary to programatically control vacuum cleaners and issued temporary procedure STP 1-82-0002. This temporary procedure will be replaced with OP-1104-28G by June 1, 1982.

(4) Comments on Severity Level

We view these items as being inappropriate for severity level V. These vacuum cleaners are controlled at radiological control points. Surveying and cleaning (decontamination) was and is conducted to eliminate personnel exposure problems. We are unaware of any problems or situations where the HEPA filters have degraded to a point of presenting a personnel hazard. In the case of test equipment calibration, the item was identified and corrected prior to NRC insnection 81-34. The aspect of the non-compliance related to weekly inventories is insignificant from a health and safety viewpoint. In our view, NRC Item E is not an item with "other than minor safety significance" as severity level V specifies. We suggest, therefore, that this item should be reassessed at severity level VI.