



June 25, 1990

U.S. Nuclear Regulatory Commission
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Mr. Jerome Roth

Subject: Soil Contaminated with Radioactive Materials

Reference: Letter LD-89-128, A. E. Scherer (C-E) to J. Roth (NRC)
dated November 22, 1989

Dear Mr. Roth:

The referenced letter noted that operations to characterize and cleanup radioactive contamination of an area near a former low level radioactive waste storage pad had been suspended for the winter. This letter is to provide a project summary and an overall status to date.

In April and May of 1989, based upon preliminary radiation surveys, preliminary 30' x 30' grids were established and resurveyed. Approximately 1000 gamma survey readings confirm that the contaminated area had been bounded. As previously reported, the contaminated area had been posted and isolated from normal access. Measured radiation in the isolated area is approximately 10 microrem/hour or almost undetectable above natural background in the Windsor area. Surface gamma meter readings at the highest "Hot Spots" were 10 to 100 times background. While these "Hot Spots" are therefore readily identifiable via the surface survey, their boundaries are somewhat diffused.

In June of 1989, 14 samples were collected and counted with a germanium gamma spectrometer system. Leaves and other organic material were removed prior to collecting the samples. Estimated enrichment, based on long counts, is 89%. Resulting U235 concentrations were greater than 5000 pCi/gm in sampled "Hot Spots". Radioactive material seems to be concentrated at or near the surface of the soil.

In November of 1989 an additional 31 soil samples were collected for counting. Several divided samples were submitted to an outside facility for confirmation by mass spectrographic analysis. While many of the samples produced results of less than 30 pCi/gm, values of two decades higher were noted from certain "Hot Spots" near the surface.

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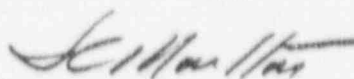
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All sampling and survey work has been done in accordance with radiological control procedures to our existing licenses. Radiation exposure for workers involved to date in this activity is below detectable limits. Long term posting of TLD's for Area Monitors have indicated no detectable change in background over the past 2 years.

Procedures and work instructions are being updated in preparation for further sampling and collection of material from the "Hot Spots". We have submitted additional samples to outside facilities for crosscheck analysis by alternate separation techniques as we study the preferred method of conducting remedial activities. This information, plus additional sampling, should allow completion of a characterization of the site during the summer. Preparation of a project plan and schedule for cleanup, as discussed during your last visit to the Windsor Site, is currently scheduled for August.

Very truly yours,

COMBUSTION ENGINEERING, INC.



J. C. MOULTON
PROJECT MANAGER

cc: Mr. T.A. Bisnett, DOE, NRO, Schenectady
Mr. Kevin T.A. McCarthy, DEP, Connecticut
Mr. Sean Soong, NRC, Washington

CE HOOD VENTILATION VIOLATION

On the afternoon of June 7 the NRC inspector entered the Ceramics Laboratory, accompanied by a health physics technician. The inspector performed a qualitative test for air flow into Hood 6 and Hood 7/8. The qualitative test, which was to observe the deflection of a sheet of notebook paper in the air stream, indicated that air flow into both hoods was likely to be below the minimum of 100 linear feet per minute stipulated in the pertinent license condition. The inspector then examined Hood 6 more closely. He observed a velometer fastened to the wall whose readings were oscillating from about 50 to 80 linear feet per minute. During these observations, the inspector recalls that Hood 6 was approximately 15" to 18" open. There was a sealed container in the hood whose label indicated that it held radioactive material. The inspector does not recall whether there were directions to limit the height to which the hood might be opened. The inspector found no violation associated with these observations.

The inspector asked the health physics technician to lower the Hood 6 opening to just above the velometer opening, which the inspector recalls to have been about 10" to 11" above the bottom of the hood. The inspector observed no change in the velometer. The inspector then asked the technician to raise the hood to full open. Again, the inspector observed no change in the velometer reading.

The inspector asked the technician to obtain a second velometer for the purpose of checking the accuracy of the first velometer. The technician located a second velometer, which appeared to the inspector to be the same model as the first. At the inspector's request, the technician traversed the hood both vertically and horizontally with the second velometer. The inspector again observed no change in the oscillating velometer readings. The inspector still found no violation associated with any of these observations.

The inspector advised the technician to have Hood 6 repaired to correct the air flow problem before further use.

The inspector then proceeded to Hood 7/8. He observed that the face of the hood apparently could be closed by use of about four panels of which about two were missing. The inspector found the inside of this hood to be totally empty. The inspector asked the technician to traverse the openings of this hood with the velometer. Here the readings were again found to oscillate between 50 and 80 linear feet per minute, perhaps with peaks as high as 90 linear feet per minute. The inspector is certain that at no time was the linear velocity observed to be 100 feet per minute or greater.

The inspector then advised the technician to have both hoods repaired before further use and left the lab.

During this portion of the inspection, the inspector found no violations associated with use of the hoods.

On June 8 the inspector, accompanied by the technician, entered the Ceramics Laboratory between 9:00 and 10:00 AM to check the hoods. At that time the inspector observed a person working at Hood 6, with an open container, and pellets resting on paper in the hood as well as on a plastic tray in the hood. The container appeared to be the same container that had been in the hood in a sealed condition on June 7. At this time the inspector again asked for a velometer, and took readings without adjusting the height of the door at the front of the hood. The velometer again oscillated between 50 and 80 linear feet per minute. The inspector determined that this was an apparent violation.

Statement of Violation C:

Section 3.2.3, "Ventilation Requirements," of Part 1, Criteria, of the NRC-approved license application for License No. SNM-1067 states, in part, that when the face velocity at a ventilated hood drops below 100 feet per minute (fpm), the hood filters or ventilation system filter will be changed, brushed, or knocked down to increase the air flow to 100 fpm minimum or the hood shall not be used to handle radioactive material.

Contrary to the above, on June 7 and 8, the face velocities of the two hoods located in the Building 5 Ceramics Laboratory were below 100 fpm (50 to 80), the hood or ventilation system filter(s) were not changed, brushed or knocked down, and the hoods continued to be used to handle radioactive material.

Response:

C-E has reviewed the circumstances surrounding this apparent violation and the following was determined.

On the afternoon of June 7, 1990, the NRC inspector contacted the Radiological Protection (RP) Technician on duty in Building 5 and requested entry to inspect the Ceramics Laboratory. There were no other persons in the Ceramics Laboratory and there was no work in progress. After entering the Ceramics Laboratory, the inspector requested the RP Technician take hood face velocity measurements at two hoods (Nos. 6 and 7/8) located in the Ceramics Laboratory. Although there was no work in progress, a small container with about six depleted uranium pellets was stored in Hood No. 6. As indicated in the inspection report the inspector had observed a velometer located in a small bracket inside Hood No. 6. The velometer is available for use by operators who normally confirm face velocity before starting work in the hood. The velometer is merely stored in the bracket and will not accurately indicate face velocity while in the bracket. The inspector fully opened the roll-up door on Hood No. 6 and requested airflow measurements of hood face velocity. The RP Technician advised the inspector that the hood was not used with the door in the full open position as further indicated by a hand lettered instruction taped to the face of the plastic door which stated "Operate at 1/2 open max only." As requested, the RP Technician did obtain a velometer reading with the hood door in the full open position and this reading was less than 100 fpm (about 50-80 fpm). After obtaining the reading with the door in the full open position, the RP Technician returned the door to the partially opened position (about 1/4 to 1/2 open). The inspector then requested velometer readings at Hood 7/8. The RP Technician advised the inspector that Hood 7/8 had not been used for any purpose in the recent past but monthly airflow readings were still being maintained. At the time of the inspection Hood 7/8 was equipped with three plastic sliding doors; one of these doors had fallen out of the upper slider track and was leaning into the hood. At the request of

NO
DISAGREE

HERE
50-80

the inspector a velometer reading was obtained at the face of Hood 7/8. During the investigation the RP Technician stated that the face velocity reading was significantly above 100 fpm; in fact, the reading was obtained on the high range scale of the velometer.

① NO CHANGE IN RANGE
② TABLETED BOTH HOODS

Following the below-specification reading at the face of Hood No. 6 with the door fully open the RP Technician placed a piece of masking tape across the front of Hood No. 6 and annotated it with instructions to the effect that the hood was not to be used. On June 7, 1990, he also requested the Maintenance Group replace the air filter associated with the hood. Prior to replacement of filters, additional velocity measurements for Hood No. 6 with the door 1/4, 1/2 and 3/4 open were found to be satisfactory.

WINDOW DOORS OPEN

When the inspector returned to the Ceramics Laboratory on June 8, 1990, neither hood had been used. The depleted uranium pellets remained in Hood No. 6 but were not handled or used for any procedures in the hood where they had been stored. On June 8, 1990, the Plant Manager was informed of the apparent violation and he initiated the following actions:

1. The condition of Hood No. 6 and the face velocities associated with it were checked by the Operations Shift Supervisor. He confirmed that with the roll-up door fully open, face velocity was below 100 fpm. He also established that face velocity exceeded the minimum specification of 100 fpm for door positions at 3/4, 1/2 and 1/4 open. He observed the hand lettered instruction that indicated "Operate at 1/2 open max only" was taped to the face of the hood (this instruction was in place since 1988). He also observed the RP Technician's instruction from the previous day, stating, "Do Not Operate RP" taped to the face of Hood No. 6. He directed that the taped instructions not to operate be replaced by a formal tagout. He also requested the Supervisor, Radiological Protection coordinate the filter change by Maintenance, which had been requested by the RP Technician the previous day.
2. Hood No. 6 and Hood 7/8 were formally tagged out. Hood 7/8 was included in the tagout since a filter change would affect both hoods.
3. It was verified that velometer readings at the hoods were being taken at monthly intervals as required by License No. SNM-1067. The previously recorded face velocity readings were taken on May 2, 1990. Face velocities were greater than 100 fpm at that time at all positions of the door including full open.
4. Upon preparing to change filters, Maintenance personnel noted that the Ceramics Laboratory was unusually warm. They also did not believe the exhaust line absolute filters to be the cause of low air flow. The filters in the ventilation lines supplying air to

Hood 6 was in use 9-10 AM HP Tech OBS.
OPERATOR 2. WORKING
HP Tech WAS BLACK
MIKE AUSTIN

the Ceramics Laboratory were then checked, found to be clogged and changed. Face velocities at both hoods were rechecked and verified to exceed 100 fpm with the door fully open on Hood No. 6 and normal door position for Hood 7/8. The tags were cleared and the hoods were returned to service on June 12, 1990.

5. The taped instruction on the roll-up door of Hood No. 6 was replaced with an engraved sign which states "OPERATE WITH DOOR AT MAX OPEN SCRIBE MARK. EXCEPTIONS TO BE MADE BY RP ONLY." Additionally an engraved sign marking the 1/4 open position has been installed at the side of the hood. Additionally, a pin has been installed above the roll-up door to prevent inadvertently opening the door beyond the 1/4 open scribe mark.
6. The sliding door on Hood 7/8 was reinstalled in its track. Additionally, a fourth plastic door has been installed in the same track as one of the other three doors thus ensuring only one door width can be achieved if this hood is used. Low face velocity has never been a problem with this hood.
7. The RP Technician assigned to Building 5 was instructed by the Supervisor, Radiological Protection on license requirements governing hood face velocities. The RP Technician was fully aware of the required airflow face velocity requirements. The Supervisor, Radiological Protection also directed the RP Technician to promptly report to the Supervisor, Radiological Protection any circumstance where hood face velocity is measured at or below an action limit. Additionally, he was instructed that the formal Tag Out System is to be used to take a hood out of service if face velocity falls below the minimum specification.

Combustion Engineering, Inc. believes that, because the hoods were not in use and no enriched Special Nuclear Material (SNM) was handled in them, that no violation occurred; face velocities were also measured to be above the minimum specification for normal door positions during hood operations. Further, actions taken to preclude use of the hood as soon as a low face velocity was found were adequate and timely. Furthermore, the request to Maintenance to replace filters and subsequent corrective actions by Maintenance were timely. We also believe that the additional actions described above will minimize the possibility of future low face velocities.