FEB 14 1990

Docket No. 70-1100

Combustion Engineering, Inc.
ATTN: Mr. C. R. Waterman
Acting Vice President - Nuclear Fuel
Nuclear Power Systems
1000 Prospect Hill Road
Windsor, Connecticut 06095-0500

Gentlemen:

Subject: Inspection No. 70-1100/89-03

This refers to your letter dated July 28, 1989, in response to our letter dated June 30, 1989.

Thank you for the information provided in your response concerning your technique for the evaluation of bioassay results. 20.103(a)(3) requires, in part, that the licensee use suitable measurements of concentrations in air for detecting and evaluating airborne radioactivity and use measurements of radioactivity in the body for the assessment of individual intakes of radioactivity by exposed individuals. During the evaluation conducted to determine the individuals' intakes, you had information that caused you to question the accuracy and the validity of the breathing zone (BZ) air samples that had been collected from these individuals. Specifically, you had reason to suspect that the BZ samples had been mishandled and thus may not represent realistic measurements of the possible airborne exposures associated with this incident. The rationale you presented in support of using the air sample data to estimate intakes are valid under normal circumstances; however, they are not applicable when there is reason to suspect that the sample has been mishandled so as to possibly invalidate the results. Therefore, assigning the BZ results for this incident may not have been conservative since the validity of the samples was never determined.

Because the air sample data were suspected to be invalid, you appropriately collected bioassay (fecal) samples to use in combination with other measurements to assess the individuals' intakes, as required by 10 CFR 20.103(a)(3). However, in your analyses of the bioassay samples, you failed to measure the contribution of other significant uranium isotopes in addition to U-235 (e.g., most of the uranium alpha radiation from your enrichment mixture comes from U-234). Therefore, consideration of only the U-235 activity for the bioassay analyses, was inadequate. If the alpha activity contributed by all the major uranium isotopes in your enrichment mixture was included, your pre-determined uranium alpha activity "action level" would have been exceeded. Because your "go/no-go" action level was exceeded, further evaluation of the bioassay data was necessary. Since this was not done, the actions taken to evaluate the intake of the individuals were not in full compliance with the requirements specified in 10 CFR 20.201 and 20.103(a)(3) and the violation stands.

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You are required to submit to this office within thirty days of the date of this letter, a written statement that will provide (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. In this response, please describe any actions taken or planned including procedural changes, training or other activities to ensure that future bioassay results are appropriately evaluated and include all appropriate radionuclides. This response is not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Your cooperation with us is appreciated.

Sincerely,

(SIGNED) MALCOLM R. KNAPP

Malcolm R. Knapp, Director
Division of Radiation Safety
and Safeguards

cc:
A. E. Scherer, Director, Nuclear Licensing
C. B. Brinkman, Manager, Washington Nuclear Operations
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
State of Connecticut

bcc
Region I Docket Room (with concurrences)
Management Assistant, DRMA (w/o encl)
J. Roth, DRSS
G. Bidinger, NMSS

RI:DRSS	RI:DRSS	RI:DRSS	RI:DRSS
Roth/mk	Austin	Bo	Bellamy
2/8/90	2/8/90	2/8/90	2/8/90
RI:DRSS	RI:DRSS		
Joyner	Knapp		
02/9/90	02/9/90		

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COMBUSTION ENGINEERING

July 28, 1989
LD-89-083

Docket No. 70-1100
License No. SNM-1067

Dr. Ronald R. Bellamy, Chief
Facilities Radiological Safety
and Safeguards Branch
Division of Radiation Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, Pennsylvania 19406

Subject: Response to Notice of Violation
(Inspection Report 70-1100/89-03)

Reference: Letter, R. R. Bellamy (NRC) to P. L. McGill (C-E),
dated June 30 ,1989

Dear Dr. Bellamy:

Combustion Engineering has reviewed the Notice of Violation received with the referenced letter and our reply is provided herewith (Enclosure).

If I can be of further assistance on this matter, please do not hesitate to call me or Mr. J. F. Conant of my staff at (203)285-5002.

Very truly yours,

COMBUSTION ENGINEERING, INC.

A. E. Scherer
Director
Nuclear Licensing

AES:lw

Enclosure: As stated

cc: D. McCaughey (NRC)
J. Roth (NRC - Region I)

Power Systems
Combustion Engineering, Inc.

1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500

(203) 688-1911
Telex: 99297

Response to Notice of Violation
(NRC Inspection Report No. 70-1100/89-03)

Statement of Violation

10 CFR 20.201 "S s" states, in part, that (a) As used in the regulations in this p "survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present. (b) Each licensee shall make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations in this part.

Contrary to the above, between February 27, 1989 and May 26, 1989, an adequate evaluation of bioassay results required by 10 CFR 20.103(a)(3) was not conducted to assure compliance with the regulations in this part. Specifically, the results of bioassay samples from two individuals exposed to radioactive materials on February 27, 1989 during removal of a contaminated sheet of plastic from the FA-1 ventilation system mezzanine floor were not adequately evaluated to determine compliance with 10 CFR 20.103(a)(3).

Response

Combustion Engineering has reviewed the records and actions taken with respect to two workers who had abnormally high lapel air sampler activities. Combustion Engineering believes that the actions taken and the evaluations performed were in full compliance with the requirements specified in 10 CFR 20.201 and 20.103(a)(3).

Combustion Engineering believes that adequate surveys of the work area were conducted and that, based on these surveys, both individuals were assigned lapel air samplers while working in the surveyed area. Combustion Engineering further believes that assigning intakes to both of these individuals based on the lapel air sampler activities complies with the requirements of 10 CFR 20.103(a)(3). Both our air sampling and bioassay programs

use guidance provided in WASH-1251, APPLICATIONS OF BIOASSAY FOR URANIUM , dated June 1974. WASH-1251, Section IV-1.1 states in part, "if an air sampler is located such that airborne contamination, enroute from the source to the workers breathing zone, must pass by the sample head, the probability of missing an intake is considered to be too low to justify the additional bioassays. The additional bioassays are not performed for a specific individual if the licensee can demonstrate that the air sampling system used to protect the individual is adequate to detect any significant intake." Combustion Engineering believes that when a lapel air sampler is used for determining the intake of radioactivity that all of the above conditions are met.

Based on the circumstances surrounding the higher than normal lapel air sampler activities, Combustion Engineering feels that using the activity readings from the lapel air samplers for calculating MPC hours and using that value in the seven day running total for intake was conservative and meets all regulatory requirements. Based on the seven day running total MPC hours, the Manager of Radiological Protection and Industrial Safety removed both individuals from the Pellet Shop until further evaluations could be completed. Our procedure, RPI-208, Bioassay Program, requires special bioassays when 40 MPC hours is exceeded. Since both individuals were involved in whatever occurred causing the above normal air sampler readings, both individuals were requested to give urine and fecal samples based only on one individual's seven consecutive day total intake exceeding 40 MPC hours.

The purpose for taking the bioassay samples was based on guidance provided by an outside consultant. This consultant provided the following guidance in determining the need for considering a change in work assignments:

a. In-vivo lung counting: greater than 175 micrograms U235.

b. Urine bioassay: greater than 141 dpm U/l (sum of U234, U235 and U238).

c. Feces bioassay: greater than 55 dpm U235 excreted per day, this being obtained by multiplying the dpm U235 per gram wet weight by the total wet weight per sample. This assumes the total sample represents one days fecal loss. However, even if the level of 55 dpm U235 excreted per day is exceeded, I don't recommend a consideration of change in work assignment unless the in-vivo lung and urinary bioassay results exceed the levels in a and b above.

The Manager of Radiological Protection and Industrial Safety provided the bioassay results to the Program Manager, Radiological and Industrial Safety for his evaluation, to make a determination as to whether or not these two individuals could be allowed to go back to work in an area with airborne contamination. The Program Manager, based on the urinalysis results for both individuals being 0 and fecal U235 levels being considerably less than 55 dpm for both individuals, made a determination that both individuals could be returned to normal, unrestricted duty.

The action levels recommended by our consultant and used in our bioassay program and RPI's are based on chronic intakes and, therefore, are considered conservative when used for acute intakes.

Based on the conservatism of these action levels a simple go/no-go decision was deemed appropriate.

Combustion Engineering believes that the actions of responsible individuals within our organization were appropriate and were based on guidance provided in WASH-1251, Regulatory Guide 8.11, NUREG/CR-4884, and ICRP-30. Nevertheless, as part of ongoing

efforts and to further assure that in the future proper actions concerning bioassays are conducted in an efficient manner, individuals responsible for taking and/or evaluating bioassay information will have their individual responsibilites clarified. We believe that this action will preclude any confusion which may have existed and which could potentially result in delays in properly processing bioassays.