

December 30, 1982

In reply, please  
refer to LAC-8788

Mr. Robert L. Gregor, Chief  
Facilities Radiation Protection Section  
U. S. Nuclear Regulatory Commission - Region III  
799 Roosevelt Road  
Glen Ellyn, IL 60137

SUBJECT: In vivo analyses at Dairyland Power Cooperative's  
LaCrosse Boiling Water Reactor, Provisional  
Operating License DPR-45.

Dear Mr. Gregor:

In regards to our telephone conversations of December 8 and 30 concerning in-vivo analyses (whole body counting) at LACBWR, we made a commitment in the Exit Meeting for I & E inspection No. 82-08 dated May 24-28, 1982, to calibrate our Whole Body Counter, develop procedures for calibrating the Whole Body Counter and agreed to count persons with suspected elevated organ burdens more frequently. According to our procedure, HSP 13.5, "Whole Body Counting" Section 5.1.3 "each plant individual will be routinely whole body counted every six months," among other more frequent requirements. We had indicated that we would recalibrate our whole body counter prior to our second six month routine counts.

As I indicated in our phone conversations, our last calibration of our current 3" x 3" NaI (TI) - MCA shielded chair type WBC unit was in 1978. The 1978 calibration employed the use of two 5 gallon plastic jugs filled with water with uniformly distributed liquid standard sources. The simulation is not what is normally expected for radionuclides which have entered an individual's body. Therefore, on November 29, 1982, we ordered an anatomical WBC phantom with removable organs with vials containing standard sources. We expected this new phantom to arrive in late December, 1982, but it now appears that it will arrive during the first or second week of January.

In addition, as I indicated in our phone conversation, we will be improving our WBC detector system in the near future. In December, 1982, we have procured a >18% efficient, >48:1 Peak to Compton ratio, High Purity Germanium Detector to replace our old 3" x 3" NaI (TI) crystal. We expect that this detector will arrive prior to January 31, 1983. After the new HPGe detector is installed in the shield cone (collimator) it will be coupled to our ND66 computer system with 4096 channels of which 2048 will be used for the actual counting spectrum. This will be significantly superior to our current 512 channel non-computer assisted MCA which uses only 256 channels for counting spectrum. Our intention is to next calibrate the new WBC system with the new anatomical phantom.

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Our last six month, routine WBCs were performed during July, 1982. The next routine WBC's should be performed in January, 1983 as per procedure. Since July, 1982, we have been counting individuals with suspected elevated body burdens on a more frequent basis, with the WBC efficiencies traceable to the 1978 calibration. Prior to each series of WBCs, a phantom source check is performed, utilizing solid  $^{60}\text{Co}$  +  $^{137}\text{Cs}$  disk sources taped to the frontal side of plastic jugs filled with sugar.

We plan to perform our routine six month whole body counts on plant individuals in January, 1983, utilizing our current source check procedure referenced to our 1978 calibration, unless the new anatomical phantom is available for source checks. This will be done with our current 3" x 3" NaI detector with 512 channel MCA.

Upon installation, computer program development, calibration with the anatomical phantom, and operational checks of our new HPGe, we plan to perform routine six months whole body counts in conformance with HSP 13.5.

If you have additional comments or questions, please call.

Very truly yours,

DAIRYLAND POWER COOPERATIVE

*Paul W. Shafer*

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Radiation Protection Engineer

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