

May 19, 1981

In reply, please
refer to LAC-7552

DOCKET NO. 50-409

Mr. James G. Keppler, Director
U. S. Nuclear Regulatory Commission
Directorate of Regulatory Operations
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: DAIRYLAND POWER COOPERATIVE
LA CROSSE BOILING WATER REACTOR (LACRWP)
PROVISIONAL OPERATING LICENSE NO. DPR-45
IF INSPECTION REPORT NO. 50-409/80-10 -
SPECIAL APPRAISAL OF THE HEALTH PHYSICS PROGRAM

Reference: (1) NRC Letter, Keppler to Linder,
dated March 5, 1981.

Dear Mr. Keppler:

During the period September 22 to October 3, 1980, the NRC conducted a special appraisal of the Health Physics Program at the La Crosse Boiling Water Reactor. Findings of your appraisal indicated that some significant weaknesses existed in several areas of our Health Physics Program as listed in Appendix A of your letter (Reference 1). In addition, your appraisal indicated that certain activities as listed in Appendix B of your letter (Reference 1) did not appear to have been conducted in full compliance with NRC requirements.

In response to your letter we are submitting the following information which describes our corrective actions for each significant weakness in the Health Physics Program as described in Appendix A. In addition, in response to your letter, information describing corrective actions to apparent violations addressed in Appendix B is included.

Items which appear to require corrective action:

1. *Organizational and managerial improvements are needed to resolve problems regarding health physics technical expertise, supervisory personnel workload, staffing, technician performance, and radiation protection program enforcement. (Sections 3.a, 3.b, 3.c, and 3.d)"*

- "2. The health physics technician training program requires improvement in terms of documented initial and refresher training requirements, and conduct of emergency sampling and analysis training. (Sections 4.a and 13)"
- "3. Procedural coverage and adherence need upgrading to include activities not presently addressed and to resolve inconsistencies between procedures and actual practices. (Sections 6, 8.a, 8.c, 9.b, 11.a, and 11.c)"
- "4. The internal and external exposure control programs need upgrading to incorporate formalized TLD spiking, TLD/pocket dosimeter intercomparisons, and whole body counter calibrations and to ensure the availability of a sufficient supply of respiratory protective devices for accident response. (Sections 7.a and 7.b)"
- "5. The radiation survey program needs upgrading in terms of scope and frequency of direct radiation surveys, contamination survey coverage, and task oriented surveys. (Sections 8.a and 8.c)"
- "6. The instrumentation program needs improvement to include calibration acceptance criteria and to resolve problems regarding high range (accident) noble gas monitoring, personal contamination detection, and continuous air monitor calibrations. (Sections 9.b, 9.c, 9.d, 9.e and 11.a)"
- "7. A formalized ALARA program needs to be developed. (Section 10)"

DPC RESPONSE:

Dairyland Power Cooperative is improving and will continue to improve the technical expertise and the management of the LACBWR Health Physics staff. Health Physics Technicians will be sent to off-site technical radiological training schools such as the University of Michigan Short Course in Radiation Protection and the Nuclear Data Inc. ND-6600 computer training school. These courses and others should increase the technical expertise of the staff as a whole.

The current Health and Safety Supervisor, promoted from the Health Physics Technician group and replacing the former Health & Safety Supervisor who resigned on January 16, 1981, has 10 years experience in Health Physics and Radio-Analytical Chemistry, both as an Engineering Laboratory Technician in the U. S. Navy and at LACBWR. In addition to his experience, he has 3 years of college credits, specializing in chemistry, and has successfully completed the short course in Radiation Protection offered by the University of Michigan.

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The Radiation Protection Engineer has been allowed to devote a larger portion of his time to the Health Physics and Radio-Analytical Management and Technical Direction. This has been accomplished largely because the Revised Radiological Emergency Response Plan and Procedures are being completed by a combined effort of plant staff and Cooperative headquarters personnel.

Specific technical problems identified by the special HP appraisal team such as 1) high range noble gas monitoring, 2) stack monitor charcoal analyses and 3) isokinetic stack sampling system have been improved upon by the installation of an Eberline SPING-4 extended range particulate, iodine and noble gas monitoring system. Improvements will continue in these identified specific areas with the future use of silver zeolite cartridges in place of charcoal for iodine sampling and with the future installation of an Eberline SPING-3 air monitor for the reactor containment building.

The special HP appraisal team felt that LACBWR's Health and Safety workload appeared excessive. The supervisory workload is in the process of being reallocated to allow for more time for the Health and Safety Supervisor to perform supervisory functions. The Radiation Protection Engineer will perform a majority of the purely administrative duties as the Radiation Protection Manager. Technical improvements and development will be shared by the Health and Safety Supervisor and the Radiation Protection Engineer. We contemplate establishing an additional management/technical position of Radiation Protection Engineering Assistant. This person would assist the current Health and Safety management in the areas of training, procedure revisions, instrument testing and calibration, administration and technical support.

The special HP appraisal team felt that LACBWR's current Health Physics Technician staff, with an average experience level of over 5 years, has good continuity and more than adequately meets the qualification criteria of ANSI N18.1-1971 guidance. The special HP appraisal team felt that with the current staffing levels, however, that the HP Technicians may be strained somewhat during periods of heavy workload, such as outages or extended absenteeism. In 1981, we currently have a position for one HP Technician available and hope to fill this position about June 1, 1981. After this position is filled, we hope to have one additional HP Technician position filled shortly thereafter. We hope to fill these positions with personnel who meet or exceed ANSI N18.1-1971 qualification requirements by hiring an ex-U. S. Navy Engineering Laboratory Technician or Radiation Health Officer, or by hiring an experienced utility Radiation/Chemistry Technician.

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The special HP appraisal team indicated that greater HP Technician inquisitiveness and responsibility appeared to be needed. The HP appraisal team found the morale of the HP Technicians to be good. LACBWR's Health and Safety Management has changed its policy of supervision to one of "management by objective". The HP Technicians are currently included in the decision-making process. The Health and Safety Supervisor and Radiation Protection Engineer are asking for HP Technicians' opinions and for them to take a more active role in the overall direction of the Health Physics Program. It is our feeling that this "management by objective" will improve the overall inquisitiveness and responsibility of each HP Technician. The change in the Health and Safety management personnel has improved morale. Additional HP Technicians, when hired, and the procurement of improved health physics and radio-analytical chemistry equipment will further improve HP Technician morale.

The special HP appraisal team indicated that LACBWR's radiation protection program has been loosely enforced in the past due primarily to the lack of manpower to adequately oversee each facet of the program. It is our opinion that the enforcement of the program will be performed by all plant personnel in the near future. This will be accomplished by providing a better training program in Health Physics which emphasizes the positive benefits of following all facets of the radiological protection program, as opposed to the issuance of radiological occurrence reports which emphasize the negative aspects of punitive action, except in the most severe cases which involve actual violations of 10CFR20.

The special HP appraisal team found LACBWR's HP Technician On-The-Job Training Program to be acceptable, but indicated that there were no documented formal training criteria, practical factor training requirements, nor testing for progression from OJT to HP Technician. The appraisal team also felt that improvements were needed in the areas of 1) plant systems training, 2) emergency sample collection and analysis training and 3) an establishment of a training commitment time frame. In 1981, we are or will be preparing formal HP Technician On-The-Job training procedures and checklists which establish necessary documentation in the areas of Radiological Protection, and Radio-Analytical Chemistry. These procedures will be incorporated in Section 8 of LACBWR's Health and Safety Procedure. In addition, we are planning to have the HP Technician while on OJT attend certain plant systems training sessions given by knowledgeable management personnel. The Radiation Protection Engineer has conducted formal documented HP Technician training for in-plant airborne activity sample collection and analyses. HP Technician training for calculations of off-site exposures (X/Q) during accidents and emergency environmental sampling and analyses will be conducted in the near future. Additional HP

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Technician emergency radiological response training will be completed during 1981 or as additional post-TMI emergency sampling equipment is installed.

The special HP appraisal team indicated that formal refresher training for HP Technicians is not defined. The Radiation Protection Engineer is currently preparing formal HP Technician training manuals which will be used as part of the HP Technician refresher training. The first manual was completed on April 1, 1981, and is entitled "Health Physics Technician Training Manual, Part 1, Radiation Detection Principles and Instrumentation - Portable Instruments". Tentatively, there will be eight HP Technician Training Manuals as follows:

- Part 2: Radiation Detection Principles and Instrumentation - Laboratory Counting Equipment.
- Part 3: Personnel Dosimetry
- Part 4: Air Sampling Instrumentation and Techniques
- Part 5: Bioassay Program
- Part 6: Analytical Chemistry
- Part 7: Radiation Biology ..
- Part 8: Health Physics Technicians Qualification Guide.

These formal training manuals will include technical information and practical applications of the U. S. Navy Engineering Laboratory Technician training manuals, the Argonne National Laboratory Radiation Safety Technician Training Course and training courses in Health Physics developed at the University of Michigan and Purdue University. These manuals will be completed as time permits.

In addition to the proposed training manuals, the HP Technicians are being enrolled in off-site courses such as the ones offered by the University of Michigan and Nuclear Data Corporation. The Health and Safety Management at LACBWR is investigating the possibility of making Radio-Analytical Chemistry Courses available to the HP Technicians at the University of Wisconsin at La Crosse to further enhance their technical expertise and practical knowledge.

The special HP appraisal team indicated that Health and Safety procedural coverage and adherence needed upgrading to include activities

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not addressed and resolve any inconsistencies between procedures and actual practices. LACBWR's Health and Safety Procedures and Operating Manual, Volume X, are currently being reviewed and will be revised where applicable during 1981 and 1982. These revised procedures should improve coherence with actual in-plant practices. Guidance for procedure revisions will be obtained from ANSI-N18.7-1976 and U. S. NRC Regulatory Guide 1.3.

The special HP appraisal team indicated that our internal and external exposure control programs needed upgrading as indicated in Appendix A, Item 4. We are now conducting TLD spikes on a monthly basis using a 10 Curie Cesium-137 calibration source. A procedure for TLD calibration and performance criteria has been developed. During 1981, we plan to purchase a X and gamma ray monitor with integrating dose and dose equivalent rate functions, which will be traceable to NBS, to perform calibrations of the 10 Curie Cesium-137 source to verify decay corrected source strength. This instrument should have an accuracy of $\pm 1.0\%$ and will be used to replace our defective condenser R-Meter. During 1981, we plan to investigate the procurement of known activity Sr-90 and depleted Uranium slabs for TLD beta dose equivalent calibrations. We are currently using our Eberline PNR-4 neutron-Rem Meter with 3" and 9" polyspheres to better approximate actual neutron energy response calibration factors which are added to TLD results to more accurately assess plant personnel neutron dose equivalents.

A program comparing TLD gamma doses with pocket ionization chamber doses was begun in February, 1981. A procedure describing TLD and pocket dosimeter intercomparisons is being developed.

Whole Body Counter calibrations are being delayed until the Whole Body Counter can be added to our ND-6600 computer system, which is expected before August, 1981. A new phantom and new calibration sources will be used for subsequent Whole Body Counter calibrations.

We are investigating the possibility of replacing our 1.5 to 4.5% efficient 3" x 2" NaI (Tl) crystal in our chair counter with a Streamlined Solid State High Purity Germanium detector with an efficiency of 30% and a P/C of 50/1 to increase the resolution of our Whole Body Counts and our counter overall efficiency to 8%.

Individual whole body count results are plotted to observe qualitative increasing or decreasing trends in personnel internal deposition of radionuclides. These plots are available upon request.

Respiratory protection devices are inventoried on a monthly basis. We are reviewing the need to procure additional NIOSH approved full

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face respirators and SCBA's for emergency use, and a small respirator fit test booth as described in NUREG-0041. In addition, we plan to investigate purchasing NIOSH approved half-mask respirators if acceptable respiratory protection factors for their use can be established.

Portable air sampling equipment is currently being upgraded with the replacement of Staplex-type high volume air samplers with Padeco variable speed air samplers. The new air samplers will be used with either charcoal or silver zeolite cartridges for Iodine collection instead of charcoal impregnated filter papers to increase collection efficiency. The new air samplers can be used in a high volume mode at a nominal 10 cfm for a rapid sample collection or at a low volume regulated flow rate for more representative sample collection. New procedures for the variable speed portable air samplers' use and calibration are being written.

The special HP appraisal team identified weaknesses in our radiological survey program as indicated in Appendix A, Item 5.

A Health and Safety Memorandum No. DPC-28 was issued on December 11, 1980, which redefines the plant radiological restricted area as the plant protected area fence. The Health and Safety Department is notified to determine necessary training and monitoring requirements for personnel entry into the restricted area commensurate to work locations within the restricted area. Appropriate Restricted Area information signs have been attached to the plant protected area fence.

The Change Room friskers (HP210 GM probes and RM-14 Electronic Scalers) have been moved to an area of lower background, which enables them to be used on the X1 scale ensuring more accurate determination of potential personnel contamination. Checkout instructions and training have been provided. The portal monitor is no longer located in the Change Room. The HP-210 friskers are now considered to be the primary means for personnel contamination checks. We are considering the use of a tacky-mat at the entry to the Change Room to minimize the spread of loose surface contamination into the Change Room and points beyond.

All significant personnel decontamination will be documented in the Health and Safety Daily Log Book. Due to the relatively low number of cases of personnel decontamination in the past, a separate decontamination log is not deemed necessary at this time.

A Health and Safety Memorandum which distinguishes plastic bag storage of contaminated and non-contaminated material by color differentiation

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will be written. A new procedure and training for entry into and exit from sequentially contaminated plant areas will be developed and implemented during 1981. This procedure should help reduce personnel contamination and reduce the spread of plant contamination from affected work areas. Contaminated surfaces that workers are likely to come in contact with are determined with a job specific contamination survey. Normally, if work is to be performed in areas not frequently accessed, a decontamination effort will precede the actual work to reduce protective clothing and respirator requirements. We are currently reviewing our contamination surveillance program and will supplement contamination surveys in high occupancy zones to include certain vertical surface areas.

A simplified, logistical method of color-coded Special Work Permits is being initiated at LACBWR. This system uses a 4-color SWP form and a 2-color access control dose log form. This new SWP system should eliminate confusion over completeness of dosimetry information which is logged on the dose log forms, and should enable the Health and Safety Department to maintain better control of SWP issuance.

The procedure addressing Hot-Spot postings is currently undergoing revision to reflect changes in the requirements for posting Hot Spots.

A memorandum to the Operations Department requesting that they notify the Health and Safety Department of any changes in a plant system may cause a significant change in background radiation levels is being considered. The Health and Safety Department would then perform necessary surveys to assess any radiation level changes. Overall frequency of direct radiation surveys by Health Physics Technicians will be decreased commensurate with frequency of personnel occupancy in specific plant areas. This will be reviewed in the near future and a procedure outlining radiation survey frequency will be developed if appropriate. Copies of the most recent radiation surveys will be posted near the location in which the survey was performed.

Posting of air sample results is considered to be adequate because the activities are routinely recorded on air sample activity logs in the laboratory and on routine smear surveys. We are considering adding air sample results to the SWP's, when activity results indicate respiratory protection is required.

The special HP appraisal team identified a need for improvement in instrument calibration criteria as indicated in Appendix A, Item 6.

As indicated previously, we plan to procure an NBS traceable instrument to replace our Condenser-R Meter to recalibrate our dose rate

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instrument calibration source. All portable gamma survey instruments will be calibrated to this source at least semi-annually. In addition, cutie-pie type instruments and newly acquired Xetex 205-A2 digital rate meters will be source checked with a Sr-90 check source prior to each use.

ANSI N323-1978 will be reviewed and its recommendations will be incorporated into our instrument calibration program where applicable.

As indicated previously, we have replaced the portal monitor at the Change Room with more sensitive HP-210 GM friskers, and have provided information at the Change Room for proper personnel contamination check-out. Additional HP-210 GM friskers will be provided at the exit from the Waste Treatment Building and the Security section of the Administration Building in the future. Procedures which define contamination detection equipment selection, use and calibration will be revised where applicable.

Calibration sources for the new SPING air monitoring equipment have been purchased. These sources will be used to calibrate the SPINGS and all other plant continuous air monitors. Flow meter calibrations are performed using a flow meter which is traceable to NBS.

Portable Radeco air samplers will be flow calibrated by using a vendor supplied flow-calibrator which attaches directly to the sampler air inlet port.

Future effluent monitor calibrations will be performed at multiple points using varying concentrations of radionuclides with similar isotopic compositions to reduce error associated with variance in NaI (Tl) detector energy response.

The extended range mobile gas monitors of the SPING-4 stack gas monitor will be calibrated with a known standard mixture of Xe-133 and Kr-85 gases.

A 20% efficient, with a peak to Compton ratio of greater than 50/1, Ge(Li) or High Purity Intrinsic Germanium Detector is being purchased to improve isotopic analyses of Environmental Samples. We expect to have this new detector by June 1, 1981.

The special HP appraisal team indicated that a formalized ALARA Program needs to be developed at LACBWR (Appendix A, Item 7).

A new ALARA review form for Special Work Permits for jobs that are likely to exceed 1 Man Rem has been developed and has been used twice thus far, for the replacement of the recombiner catalyst and the replacement of the fuel pool system filters. This form provides documentation of estimated Man Rem exposure based on previous similar jobs and provides documentation of additional improvements which may reduce exposure in the future on similar jobs.

The special HP appraisal team indicated that improvements in the location of the Health Physics offices should be considered.

The Health and Safety Supervisor's Office was moved from the Administration Building to the Operations Supervisor's Office in the plant Auxiliary Building. This office allows the Health and Safety Supervisor more direct access to the daily plant routine. This office also provided adequate space for a HP Technician meeting and training room. The duty HP Technician on back-shifts also uses this office as his base of operations.

Violations:

- "1. 10 CFR 20.201(b) requires evaluations as necessary to comply with the requirements of 10 CFR 20.203(b) for posting radiation areas.

Contrary to the above, radiation levels that exceeded 5 mR/hr were measured by the appraisers, and verified by licensee personnel, in an unposted area approximately eighteen inches from the outside wall of the waste treatment building. Although the radiation source had been in place for approximately five days when discovered, the licensee's survey program had not identified the excessive radiation levels."

DPC RESPONSE:

The HP Technicians have been instructed that whenever any movement of significant radioactive material in the waste treatment building has been done, they will survey the outside of the building to verify that whole body radiation levels have not exceeded 5 mR/hr. If the radiation levels at eighteen inches from the surface of the building have exceeded 5 mR/hr., but are less than 100 mR/hr., then appropriate "Caution Radiation Area" signs and ropes will be used to demark the area until the radiation areas can be reduced.

- "2. Technical Specification 3.8.1 and 3.11 require adherence to radiation protection procedures. The following instances of failure to meet this requirement were identified during the appraisal."

- "a. Procedure HSP 4.3, Section 6.16 requires that retaining ring lock nuts on filled radwaste drums be tightened upon removal of the drums from the compactor. The lock nut is designed to prevent the retaining (ring) bolt from loosening.

Contrary to the above, the lock nuts on approximately 25 percent of the radwaste drums being held for shipment were not adequately tight to prevent retaining bolt movement.

- "b. Procedure HSP 2.6, Section 7.11 requires that areas containing dose rates which exceed the general area dose rate by a factor of three be posted "Caution Radiation Hotspot".

Contrary to the above, the Appraisal Team and the NRC resident inspectors identified four areas in the containment building and three areas in the turbine building which should have been posted as hotspots but were not.

- "c. Procedure HSP 2.9, Section 7.10 requires that beta-gamma survey instrument calibration records include pre-calibration readings for comparison with the post-calibration readings.

Contrary to the above, pre-calibration readings were not recorded for approximately 50 percent of the 1980 calibrations.

- "d. Procedure HSP 2.9, Section 7.2 requires multiple point calibrations on each instrument scale.

Contrary to the above, at least one instrument (Technical Associates CP-TP-1A, No. 600), was routinely calibrated at single points on the X1 and X10 scales.

- "e. Procedure HSP 2.8, Section 7.1 requires that portal monitors be source checked daily, with specified sources, to ensure proper operation. The specified source for the Eberline PMC-4B portal monitor is a nominal 8600 dpm technetium-99 solid source.

Contrary to the above, the specified technetium-99 source is not used to perform the portal monitor source checks. Sources of significantly greater activity are used, resulting in a less sensitive check on the portal monitor response."

DPC RESPONSE:

- a. The lock nuts on the radwaste drums which were found to be loose were tightened as per procedure, Procedure HSP-4.3, Section 6.16, will be changed to require that the retaining ring lock nuts on filled radwaste drums be tightened prior to loading the drum for shipment.
 - b. The affected areas in the containment building and turbine building were posted as Hot Spots. Procedure HSP-2.6, Section 7.11, is currently undergoing revision to reflect changes in the requirements for posting Hot Spots which are not specified in 10CFR20 requirements, but are used as a method to reduce personnel exposure as low as reasonably achievable.
 - c. Pre-calibration readings will be recorded for all 1981 survey instrument calibrations as specified by procedure HSP-2.9, Section 7.10.
 - d. The instrument in question was recalibrated as per procedure HSP-2.9, Section 7.2, to multiple calibration points on the X1 and X10 scale. The Technical Associates CP-TP-1A instruments may be phased out of operation in the near future due to old age and procurement of improved survey equipment.
 - e. The hand and foot counters and HP-210 GM friskers which are currently used to checkout personnel are sourced checked daily with the specified 8600 dpm Technicium-99 solid check source.
- "3. *Technical Specification 3.9.3(a) requires that a report of radioactive effluents to unrestricted areas be made to the NRC within 60 days after January 1 and July 1 of each year.*

Contrary to the above, the required reports for the six-month periods ending December 31, 1977, June 30, 1978, December 31, 1978, June 30, 1979, and December 31, 1979, were submitted approximately one week to eight weeks late. The report for the six month period ending June 30, 1980, had not been submitted as of January 8, 1981."

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DPC RESPONSE:

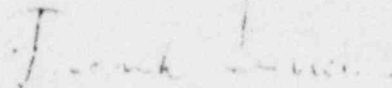
The Dairyland Power Cooperative Environmental Affairs Department, which is responsible for final preparation and distribution of the LACBWR radioactive effluent report, has been notified of these violations. They will make a better effort to report these results within the 60 days as specified by Technical Specifications.

Authorization for this reply to be submitted beyond the twenty-five day reporting period was granted to Mr. Paul Shafer by Mr. Robert Gregor of your staff.

If there are any questions concerning the response, please contact us.

Very truly yours,

DAIRYLAND POWER COOPERATIVE



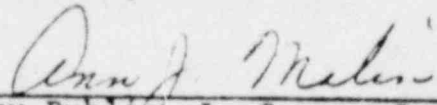
Frank Linder, General Manager

FL:PWS:af

cc: NPC Resident Inspectors

STATE OF WISCONSIN)
)
COUNTY OF LA CROSSE)

Personally came before me this 20th day of May, 1981, the above named Frank Linder, to me known to be the person who executed the foregoing instrument and acknowledged the same.



Notary Public, La Crosse County,
Wisconsin.
My Commission Expires 2/26/84.