WILLIAM L. BERG President and CEO

DAIRYLAND POWER COOPERATIVE

January 11, 2010

In reply, please refer to LAC-14093

**DOCKET NO. 50-409** 

Document Control Desk U. S. Nuclear Regulatory Commission Washington, DC 20555

SUBJECT: Dairyland Power Cooperative La Crosse Boiling Water Reactor (LACBWR) Possession-Only License DPR-45 Annual Decommissioning Plan Revision

**REFERENCES:** 

 DPC Letter, Taylor to Document Control Desk, LAC-12460, dated December 21, 1987 (original submittal of LACBWR's Decommissioning Plan)

- (2) NRC Letter, Erickson to Berg, dated August 7, 1991, issuing Order to Authorize Decommissioning of LACBWR
- (3) NRC Letter, Brown to Berg, dated September 15, 1994, modifying Decommissioning Order

The annual update of the LACBWR Decommissioning Plan has been completed, and the pages with changes and their explanations are included with this letter. Each page with a change will have a bar in the right-hand margin to designate the location of the change. None of the changes were determined to require prior NRC approval, and they have been reviewed by both the plant Operations Review Committee and the independent Safety Review Committee.

The individual pages requiring revision are enclosed with this letter. Please substitute these revised pages in your copy(ies) of the LACBWR Decommissioning Plan. Reasons for the changes are listed on a separate enclosure.

If you have any questions concerning any of these changes, please contact Jeff Mc Rill of my staff at 608-689-4202.

Sincerely,

DAIRYLAND POWER COOPERATIVE

William L Berg

William L. Berg, President & CEO WLB:JBM:two

Enclosures

cc: Kris Banovac NRC Project Mgr.

A Touchstone Energy® Cooperative

#### ATTACHMENT 1

#### 10 CFR 50.59 SCREEN FORM Page 1 of 2

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Document No. N/A

50.59 Screen Rev. No. 0

## Activity Title:

Decommissioning Plan

**Activity Description:** 

2009 annual review and update of the LACBWR Decommissioning Plan.

#### **Document Listing:**

- LACBWR Decommissioning Plan, December 2008.
- LACBWR Possession-Only License, Docket No. 50-409, Amendment No. 69, date of issuance April 11, 1997.
- LACBWR Possession-Only License, Appendix A, Technical Specifications, Amendment No. 70, date of issuance April 3, 2006.
- NRC to DPC, Confirmatory Order Modifying NRC Order Authorizing Decommissioning of Facility, dated September 15, 1994.

#### Design Functions:

The Decommissioning Plan functions as a Final Safety Analysis Report (FSAR) at LACBWR and submittal of revisions to this FSAR fulfill requirements found in 10 CFR 50.71(e)(4). The Decommissioning Plan is also considered a Post-Shutdown Decommissioning Activities Report (PSDAR). NRC notification under 10 CFR 50.82(a)(7) is required if changes are inconsistent with or make significant schedule changes to those described in the PSDAR. None of the changes in this revision to the Decommissioning Plan describe activities that require prior notification.

## ATTACHMENT 1

# 10 CFR 50.59 SCREEN FORM Page 2 of 2

10 CF	R 50.59 Screening Questions	Yes	No				
1.	Does the proposed activity involve a change to a structure, system, or component (SSC) that adversely affects a design function described in the Decommissioning Plan?		$\boxtimes$				
2. 1	Does the proposed activity involve a change to a procedure that adversely affects how SSC design functions, described in the Decommissioning Plan, are performed or controlled?		$\boxtimes$				
3. I (	Does the proposed activity revise or replace evaluation methodology described in the Decommissioning Plan that is used in the safety analyses, or which establishes the design bases?		$\boxtimes$				
4. [ i	Does the proposed activity involve a test or experiment not described in the Decommissioning Plan, where a SSC is utilized or controlled in a manner tha is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the Decommissioning Plan?	t 🗆					
5. I	Does the proposed activity require a change to LACBWR Possession-Only License, Appendix A, Technical Specifications?		$\boxtimes$				
6. \   	Will the proposed change result in a significant environmental impact not previously evaluated in NUREG-0586, Supp. 1, "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," dated November 2002?						
Conc	lusion						
	Any of questions 1, 2, 3, or 4 are answered <b>YES</b> ; questions 5 and 6 are an Evaluation shall be performed. This Screen form does not need to be retain	swered NO.	50.59				
	Questions 5 or 6 are answered <b>YES</b> . NRC approval is required prior to imp	plementation	of the				
	activity; proceed to license amendment process. This Screen form does not need to be retained.						
	All screening questions have been answered <b>NO</b> . 50.59 Evaluation or NRC approval is not required. Implement the activity per the applicable procedure for the type of activity. Attach this Screen form, as approved, to documentation for the activity. Provide justification that a 50.59 Evaluation is not required in the space below.						
Justif	lication:	••••••••••••••••••••••••••••••••••••••					
Changes arise from annual review and update of D-Plan. Changes provide updated dose levels and activity concentrations, decay-corrected to current values. These D-Plan changes are administrative and have no adverse effect on any design bases nor create any significant environmental impact not previously evaluated.							
Signatures							
50.59 Screen Preparer (print name): (Signature) JEFF McRill Jeff McRill Date: 12/10/09							
ORC A	ORC Approval and Meeting No. (Chairman Signature) Date:						
09-26 721 12/10/09							

#### **2009 LACBWR Decommissioning Plan Review**

Cover Page	Update Decomn	nissioning Pla	n revision date.
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Page 9-2Section 9.2, Spent Fuel Handling Accident: The curie content remaining as ofAndOctober 2008 and calculated values for Whole Body Dose and Skin Dose as ofPage 9-3October 2008 are updated to October 2009.

Page 9-4 <u>Section 9.3, Shipping Cask or Heavy Load Drop into FESW</u>: The curie content remaining as of *October 2008* and calculated values for Whole Body Dose and Skin Dose as of *October 2008* are updated to *October 2009*.

#### **INITIAL SITE CHARACTERIZATION SURVEY FOR SAFSTOR (LAC-TR-138):**

Cover Page Update revision date.

- Page 9 Table of Core Internal/RX Component Radionuclide Inventory as of January 1, 1988, has note at bottom of page revised to state that components were removed and disposed of in 2007.
- Page 24 Attachment 1 curie content values decay-corrected to *October 2008* are updated to *October 2009* values.
- Pages 26, 27 Attachment 3 curie content values decay-corrected to *October 2008* are updated to *October 2009* values.

## LA CROSSE BOILING WATER REACTOR

## (LACBWR)

## DECOMMISSIONING

## PLAN

Revised December 2009

DAIRYLAND POWER COOPERATIVE LA CROSSE BOILING WATER REACTOR (LACBWR) 4601 State Road 35 Genoa, WI 54632-8846 The assumptions used in evaluating this event during SAFSTOR were similar to those used in the FESW reracking analyses.<sup>1,2</sup> The fuel inventory calculated for October 1987 was used. The only significant gaseous fission product available for release is Kr-85. The plenum or gap Kr-85 represents about 15% (215.7 Curies) of the total Kr-85 in the fuel assembly. However, for conservatism and commensurate with Reference 1, 30% of the total Kr-85 activity, or 431.4 Curies, is assumed to be released in this accident scenario. (Due to decay, as of October 2009 only 24.2% of the Kr-85 activity remains – 104.4 Curies.)

No credit was taken for decontamination in the FESW water or for containment integrity, so all the activity was assumed to be released into the environment. Meteorologically stable conditions at the Exclusion Area Boundary (1109 ft, 338m) were assumed, with a release duration of two (2) hours commensurate with 10 CFR 100 and Regulatory Guides 1.24 and 1.25.

A stack release would be the most probable, but a ground release is not impossible given certain conditions. Therefore, offsite doses were calculated for 3 cases. The first is at the worst receptor location for an elevated release, which is 500m E of the Reactor Building. The next case is the dose due to a ground level release at the Exclusion Area Boundary. The maximum dose at the Emergency Planning Zone boundary<sup>3</sup> for a ground level release is also calculated. Adverse meteorology is assumed for all cases.

#### **Elevated Release**

Average Kr-85 Release Rate

 $\frac{431.4 \text{ Curies}}{2 \text{ hrs. x } 3600 \text{ sec/hr}} = 6.00 \text{ E-2 Ci/sec}$ 

Worst Case  $\frac{X}{Q}$  for 0-2 hours at 500m E = 2.3 E-4 sec/m<sup>3</sup>

Kr-85 average concentration at 500m E

 $6.00 \text{ E-2 Ci/sec x } 2.3 \text{ E-4 sec/m}^3 = 1.38 \text{ E-5 Ci/m}^3$ 

Immersion Dose Conversion at 500m E

Kr-85 Gamma Whole Body Dose Factor (Regulatory Guide 1.109)

1.61 E+1 
$$\underline{\text{mRem/yr}}_{\mu\text{Ci/m}^3} \times 10^6 \underline{\mu\text{Ci}}_{\text{Ci}} \times 1.142 \text{ E-4 } \underline{\text{yr}}_{\text{hr}} = 1,839 \underline{\text{mRem/hr}}_{\text{Ci/m}^3}$$

Whole Body Dose at 500m E

 $\frac{1839 \text{ mRem/hr}}{\text{Ci/m}^3} \times 1.38 \text{ E-5 Ci/m}^3 \times 2 \text{ hr} = 0.05 \text{ mRem} \text{ (as of } 10/09 = 0.01 \text{ mRem})$ 

#### 9. SAFSTOR ACCIDENT ANALYSIS - (cont'd)

Kr-85 Beta/Gamma Skin Dose Factor (Regulatory Guide 1.109)

1.34 E + 3 
$$\frac{\text{mRem/yr}}{\mu\text{Ci/m}^3} x \frac{10^6 \mu\text{Ci}}{\text{Ci}} x 1.142 E - 4 \frac{\text{yr}}{\text{hr}} = 1.53 E5 \frac{\text{mRem/hr}}{\text{Ci/m}^3}$$

Skin Dose at 500m E

1.53 E5 
$$\frac{\text{mRem/hr}}{\text{Ci/m}^3}$$
 x 1.38 E - 5 Ci/m<sup>3</sup> x 2 hr = 4.2 mRem (as of 10/09 = 1.0 mRem)

#### **Ground Level Release at EAB**

Worst Case  $\frac{X}{Q}$  for 2 hrs at 338m NE or 338m SSE using Regulatory Guide 1.25

Whole Body Dose at 338m

10/87 = 0.49 mRem 10/09 = 0.12 mRem 10/87 = 40.4 mRem

Skin Dose at 339m

10/09 = 9.8 mRem

#### Ground Level Release at Emergency Planning Zone Boundary

Worst Case  $\frac{X}{Q}$  for 2 hrs at 100m E

$$1.02 \text{ E-2} \frac{\text{sec}}{\text{m}^3}$$

Whole Body Dose at 100m E

Skin Dose at 100m E

10/87 = 2.25 mRem 10/09 = 0.54 mRem 10/87 = 187 mRem10/09 = 45.3 mRem

As can be seen, the estimated maximum whole body dose is more than a factor of 30,000 below the 10 CFR 100 dose limit of 25 Rem (25,000 mRem) to the whole body within a 2-hour period.

#### 9.3 SHIPPING CASK OR HEAVY LOAD DROP INTO FESW

This accident postulates a shipping cask or other heavy load falling into the Fuel Element Storage Well. Reference 1 stated that extensive local rack deformation and fuel damage would occur during a cask drop accident, but with an additional plate (installed during the reracking) in place, a dropped cask would not damage the pool liner or floor sufficiently to adversely affect the leak- tight integrity of the storage well (i.e., would not cause excessive water leakage from the FESW).

For this accident, it is postulated that all 333 spent fuel assemblies located in the FESW are damaged. The cladding of all the fuel pins ruptures. The same assumptions used in the Spent Fuel Handling Accident (Section 9.2) are used here. A total of 35,760 Curies of Kr-85 is released within the 2-hour period. The doses calculated are as follows. (Due to decay, as of Oct. 2009 only 24.2% of the Kr-85 activity remains – 8,654 Curies.)

#### **Elevated Release**

Whole Body Dose at 500m E	<u>Skin Dose at 500m E</u>
10/87 = 4.2  mRem	10/87 = 350  mRem
10/09 = 1.0  mRem	10/09 = 84.7  mRem

#### **Ground Level Release at EAB**

Whole Body Dose at 338m	Skin Dose at 338m
10/87 = 40.2  mRem	10/87 = 3.34  Rem
$10/09 = 9.7 \mathrm{mRem}$	10/09 = 0.8  Rem

#### Ground Level Release at Emergency Planning Zone Boundary

Whole Body Dose at 100m E	<u>Skin Dose at 100m E</u>
$10/87 = 186 \mathrm{mRem}$	10/87 = 15.6  Rem
10/09 = 45  mRem	10/09 = 3.8  Rem

As can be seen, the estimated maximum whole body dose is more than a factor of 400 below the 10 CFR 100 dose limit of 25 Rem (25,000 mRem) to the whole body within a 2-hour period.

## LACBWR

## **INITIAL**

## SITE CHARACTERIZATION SURVEY

## FOR SAFSTOR

By:

Larry Nelson Health and Safety/Maintenance Supervisor

October 1995

Revised: December 2009

Dairyland Power Cooperative 3200 East Avenue South La Crosse, WI 54601

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Estimated Curie Content Other Nuclides Components  $T_{1/2} > 5y$ Co-60 Fe-55 Ni-63 Total  $T_{1/2} < 5y$ In Reactor Fuel Shrouds (72 Zr, 8 SS) 22,109 63,221 2,810 15 89,507 1,352 Control Rods (29) 4,886 4,826 817 24 15 10,568 Core Vertical Posts (52) 1,270 594 63 2.396 4 4,327 Core Lateral Support 9.108 21,477 770 31,468 Structure 105 8 Steam Separators (16) 33,439 78,851 2,826 386 30 115,532 Thermal Shield 1,443 3,402 123 17 4,968 1 Pressure Vessel 347 1,029 10 2 ~ 0 1,388 75 Core Support Structure 6,458 15,230 546 22,315 6 Horizontal Grid Bars (7) 15 2 598 173 408 ~ 0 7 307 188 1.118 Incore Monitor Guide Tubes 611 5 Total 79,540 189.226 7,133 5,824 84 281,807 In FESW Fuel Shrouds (24 SS) 2,384 ~ 0 31,065 13,667 14,988 26 27 Fuel Shrouds (73 Zr) 918 1.007 95 3 2,050 Control Rods (10) 910 ~ 0 17 6,769 3,456 2,386 Start-up Sources (2) 3,177 2,285 156 5 \_3 5,626 32 21.218 20,666 3,545 49 45,510 Total

Core Internal/RX Component Radionuclide Inventory - January 1, 1988

NOTE: Core Internals/RX Components were removed and disposed of in 2007.

## ATTACHMENT 1

## SPENT FUEL RADIOACTIVITY INVENTORY

	·		4		
Radionuclide	Half Life (Years)	Activity (Curies)	Radionuclide	Half Life (Years)	(Curies)
Ce-144	7.801 E-1	9.94 E-3	Sr-90	2.770 E + 1	6.65E+5
Cs-137	3.014 E+1	1.01 E+6	Pu-241	1.429 E+1	3.98E+5
Ru-106 /	1.008 E+0	0.46	Fe-55	2.700 E+0	1.94E+3
Cs-134	2.070 E+0	220	Ni-59	8.000 E+4	287
Kr-85	1.072 E+1	2.83E+4	Tc-99	2.120 E+5	276
Co-60	5.270 E+0	3.62E+3	Sb-125	2.760 E+0	1.14
Pm-147	2.620 E+0	128	Eu-155	4.960 E+0	7.95
Ni-63	1.000 E+2	3.04E+4	U-234	2.440 E+5	63.7
Am-241	4.329 E+2	1.42E+4	Am-243	7.380 E+3	61
Pu-238	8.774 E+1	1.06 E+4	Cd-113m	1.359 E+1	5.85
Pu-239	2.410 E+4	8.83E+3	Nb-94	2.000 E+4	15.9
Pu-240	6.550 E+3	7.15E+3	Cs-135	3.000 E+6	14.0
Eu-154	8.750 E+0	713	U-238	4.470 E+9	12.2
Cm-244	1.812 E+1	1.56E+3	Pu-242	3.760 E+5	8.58
H-3	1.226 E+1	160	U-236	2.340 E+7	6.32
Eu-152	1.360 E+1	168	Sn-121m	7.600 E+1	3.64
Am-242m	1.505 E+2	443	Np-237	2.140 E+6	2.19
			U-235	7.040 E+8	1.89
			Sm-151	9.316 E+1	1.28
			Sn-126	1.000 E+5	0.7
i			Se-79	6.500 E+4	0.552
			I-129	1.570 E+7	0.39
			Zr-93	1.500 E+6	0.111

## Decay-Corrected to October 2009

Total Activity = 2.18 E6 Curies

#### ATTACHMENT 3

### PLANT SYSTEMS INTERNAL RADIONUCLIDE INVENTORY - OCTOBER 2009

	Nuclide Activity, in µCi				System Total
Plant System	Fe-55	Alpha	Co-60	Cs-137	μCi Content
CB Ventilation Offgas - upstream of filter	8 SYSTEM	 REMOVED	104	105	217
downstream of filters	SYSTEM	REMOVED			
TB drains	82	40	1,103	3,097	4,322
CB drains	182	3	2,466	1,487	4,138
TB Waste Water	17	7	234	74	332
CB Waste Water	1,008	79	13,625	1,425	16,137
Main Steam	1,249	290	16,869		18,408
Turbine	4	2	60	124	190
Primary Purification	427	12	5,775		6,214
Emergency Core Spray	SYSTEM	REMOVED			
Overhead Storage Tank	62	34	843	483	1,422
Seal Inject	8	4	104	34	150

## ATTACHMENT 3

## PLANT SYSTEMS INTERNAL RADIONUCLIDE INVENTORY – OCTOBER 2009 - (cont'd)

Plant System	Nucli	System Total µCi Content		
	Fe-55	Alpha	Co-60	
Decay Heat	480	490	6,488	7,458
Boron Inject	SYSTEM	REMOVED		
Reactor Coolant PASS	SYSTEM	REMOVED		
Alternate Core Spray	96	94	1,298	1,488
Shutdown Condenser	SYSTEM	REMOVED		
Control Rod Drive Effluent	720	720	9,732	11,172
Forced Circulation	7,203	7,000	97,323	111,526
Reactor Vessel and Internals	SYSTEM	REMOVED		
Condensate after beds & Feedwater	SYSTEM	REMOVED		
Condensate to beds	SYSTEM	REMOVED		

### **ATTACHMENT 3**

## <u>PLANT SYSTEMS INTERNAL RADIONUCLIDE INVENTORY – OCTOBER 2009</u> - (cont'd)

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	Nuclide Activity, in µCi				System Total
Plant System	Fe-55	Alpha	Co-60	Cs-137	µCi Content
Fuel Element Storage Well System	4,082	390	55,150		59,622
Fuel Element Storage Well - all but floor	6	5	84	2,854	2,949
Fuel Element Storage Well floor	124,859	7,600	1,686,940	25,398	1,844,797
Resin lines	624	100	8,435		9,159
Main Condenser	52,825	8,500	713,705		775,030



#### "TRANSMITTAL/ NOTIFICATION/ ACKNOWLEDGMENT"

#### Page 1 of 2

#### TO: <u>NRC Washington – Doc Control</u> CONTROLLED DISTRIBUTION NO. <u>53</u> (TWO COPIES)

FROM: LACBWR Plant Manager

1/25/2010

SUBJECT: Changes to LACBWR Controlling Documents

I. The following documents have been revised or issued new. **DECOMMISSIONING PLAN**, revised December 2008

Remove and replace the following pages:

Cover Page Pages 9-2 thru 9-4

#### SITE CHARACTERIZATION SURVEY

Remove and replace the following pages: Cover Page Page 9, 24, 26 thru 28

- I have received and properly filed the material(s) listed above. I have destroyed superseded material, if necessary.
- I have placed the material(s) listed above in the appropriate "controlled" procedures binder.
- I have reviewed the material(s) listed above, and if necessary I have notified my reporting personnel of the changes noted above. The signatures on the back of this form serve as acknowledgment of understanding and Read and Heed Training.
- I have updated the index or indices with pen and ink changes, if needed.

II. The following procedure(s) has been <u>CANCELLED</u>. Please <u>destroy</u> all copies and update the index or indices with pen and ink changes.

/S/\_\_\_\_\_ DATE\_\_\_\_\_

Please return this notification to the LACBWR Administrative Assistant within ten (10) working days.

# <u>"LACBWR Read and Heed"</u> Page 2 of 2

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	LACBWR Rea	ad and Heed	
Today's Date:	Type of Training:	Read & Heed*	
Procedure Number:	Revision:	Revision Date	·
Procedure Title:	·	Instructor:	
Training Method:	Reading Material		
By signing below, the sig acknowledgment serves	ner acknowledges comprehens as proof of training and will be r	ion of the above named Read a maintained on-file as a permane	and Heed Training. This ent record.
If this box is checked,	instructor verification is require	d for Read & Heed Training.*	
Printed Name	Signature	Title	Date
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Instructor Verification o	f Attendance or Read & Heed	(* Not Required for All Read & Heed	Training)
Instructor Name:	Instr Sign	ructor nature:	Date:
Record Retention			
Copy to Training Supervis	sor (Date):	Copy to Training Records	(Date):