WILLIAM L. BERG
President and CEO

DAIRYLAND POWER
COOPERATIVE

November 29, 2012

In reply, please refer to LAC-14262

DOCKET NO. 50-409 and 72-046

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Dairyland Power Cooperative
La Crosse Boiling Water Reactor (LACBWR)
Possession-Only License DPR-45
LACBWR Decommissioning Plan Revision – November 2012

Enclosed is the latest revision of the LACBWR Decommissioning Plan (D-Plan). This revision performs substantial changes in accordance with NRC guidance to make the D-Plan more of a Post-Shutdown Activities Report (PSDAR).

The D-Plan acted as LACBWR's Final Safety Analysis Report (FSAR) and provided the SAFSTOR accident analysis against which changes to the facility and the structures, systems, and components important to safety were evaluated for adverse effects. As a result of the completion of dry cask storage, changes are being made to the D-Plan at this time to establish it as a PSDAR.

The entire document has been revised such that no change bars have been used in the right-hand margin. These changes have been reviewed by both the plant Operations Review Committee and the independent Safety Review Committee.

If you have any questions concerning these changes to the LACBWR D-Plan, please contact Jeff McRill of my staff at (608) 689-4202.

Sincerely,

William L Berg

William L. Berg, President and CEO

WLB:JBM:jkl

Enclosures: 1) LACBWR Decommissioning Plan and Post-Shutdown Activities Report, Revised November 2012
2) Description of Changes

FSME20
NMSS26

A Touchstone Energy® Cooperative

cc w/Enclosures: John Hickman
Project Manager
U.S. Nuclear Regulatory Commission

Charles Casto
Regional Administrator, Region III
U.S. Nuclear Regulatory Commission

Paul Schmidt
Manager, Radiation Protection Section
State of Wisconsin

STATE OF WISCONSIN)
)
COUNTY OF LA CROSSE)

Personally came before me this 4th day of December, 2012, the above named, William L. Berg, to me known to be the person who executed the foregoing instrument and acknowledged the same.

LAURIE A. ENGEN
Notary Public
State of Wisconsin

Laurie A. Engen
Notary Public, La Crosse County Wisconsin

My commission expires 5-25-14

DAIRYLAND POWER COOPERATIVE

LA CROSSE BOILING WATER REACTOR

DECOMMISSIONING PLAN

AND

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

REVISED

NOVEMBER 2012

REVIEWED BY ______________________ DATE 11/27/12
Technical Support Engineer, Licensing

REVIEWED BY ______________________ DATE 11/27/2012
Manager, Quality Assurance

APPROVED BY ______________________ DATE 11/28/12
Plant/ISFSI Manager

TABLE OF CONTENTS

1.0 DESCRIPTION OF PLANNED DECOMMISSIONING ACTIVITIES

The Decommissioning Plan described Dairyland Power Cooperative's (DPC) plans for the future disposition of the La Crosse Boiling Water Reactor (LACBWR). DPC chose to place LACBWR in SAFSTOR, so this plan described the plant's status and provided a safety analysis for the SAFSTOR period. A separate preliminary DECON Plan was submitted to outline DPC's intention to ultimately decommission the plant and site to radiologically releasable levels and terminate the license in accordance with Nuclear Regulatory Commission (NRC) requirements. This Decommissioning Plan addressed the issues contained in the preliminary DECON Plan.

This November 2012 revision of the Decommissioning Plan establishes information in a Post-Shutdown Activities Report (PSDAR) format to provide stakeholders a better understanding of the current status of the decommissioning effort at LACBWR and the planned dismantlement activities.

There are 333 spent fuel assemblies stored in five NAC-MPC dry cask storage systems at the onsite Independent Spent Fuel Storage Installation (ISFSI). DPC currently expects the fuel to remain onsite until a federal repository, offsite interim storage facility, or licensed temporary monitored retrievable storage facility is established and ready to receive LACBWR fuel.

The License Termination Plan (LTP) for LACBWR will detail final decommissioning and dismantlement activities including site remediation, survey of residual contamination, and determination of site end-use. A final supplement to the Environmental Report in support of the LTP will address all environmental impacts of the license termination stage.

1.1 SELECTION OF SAFSTOR

Effective August 28, 1996, the NRC's final decommissioning rule amended the regulations on decommissioning procedures. The rule clarified ambiguities in previous regulation, reduced unnecessary requirements, provided additional flexibility, and codified procedures and terminology that had been used on a case-by-case basis. The 1996 rule extended the use of the process described in 10 CFR 50.59, "Changes, Tests, and Experiments," to allow licensees to make changes to facilities undergoing decommissioning if determined that prior NRC approval was not required.

The "Generic Environmental Impact Statement (GEIS) on Decommissioning of Nuclear Facilities," NUREG-0586, Supplement 1, evaluates the environmental impact of three methods for decommissioning. The Supplement updates information in the 1988 GEIS and discusses the three decommissioning methods; a short summary of each follows:

> **DECON** is the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations.
>
> **SAFSTOR** is the alternative in which the nuclear facility is placed and maintained in such condition that the nuclear facility can be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use.
>
> **ENTOMB** is the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete. The entombed structure is appropriately maintained and continued surveillance is carried out until the radioactivity

decays to a level permitting unrestricted release of the property. This alternative would be allowable for nuclear facilities contaminated with relatively short-lived radionuclides such that all contaminants would decay to levels permissible for unrestricted use within a period on the order of 100 years. For a power reactor, the choice was either DECON or SAFSTOR. Due to some of the long-lived isotopes in the reactor vessel and internals, ENTOMB alone was not an allowable alternative under the original proposed rule.

The choice between SAFSTOR and DECON was based on a variety of factors including availability of fuel and waste disposal, land use, radiation exposure, waste volumes, economics, safety, and availability of experienced personnel. Each alternative had advantages and disadvantages. The best option for a specific plant was chosen based on an evaluation of the factors involved.

The overriding factor affecting the decommissioning decision for LACBWR was that a federal repository was not expected to be available for fuel storage in the foreseeable future. With the fuel in the Fuel Element Storage Well, the only possible decommissioning option was SAFSTOR. Limited decontamination and dismantling of unused systems could be performed during this period.

There were other reasons to choose the SAFSTOR alternative. The majority of piping radioactive contamination was Co-60 (5.27 year half-life) and Fe-55 (2.7 year half-life). If the plant was placed in SAFSTOR for 50 years, essentially all the Co-60 and Fe-55 would have decayed to stable elements. Less waste volume would be generated and radiation doses to personnel performing the decontamination and dismantling activities would be significantly lower. Therefore, delayed dismantling supported the ALARA (As Low As Reasonably Achievable) goal. The reduction in dismantling dose would exceed the dose the monitoring crew received during the SAFSTOR period.

The shutdown of LACBWR occurred before the full funding for DECON was acquired. The SAFSTOR period has permitted the accumulation of the full DECON funding. The majority of studies showed that while the total cost of SAFSTOR with delayed DECON was greater than immediate DECON, the present value was less for the SAFSTOR with delayed DECON option.

The main disadvantage of delayed DECON was that the plant would continue to occupy the land during the SAFSTOR period. The land could not be released for other purposes. DPC also operates a 350 MWe coal-fired power plant on the site. Due to the presence of the coal-fired facility, DPC would continue to occupy and control the site, regardless of the nuclear plant's status. Therefore, the continued commitment of the land to LACBWR during the SAFSTOR period was not a significant disadvantage.

A second disadvantage of delaying the final decommissioning was that the people who operated the plant would not be available for the DECON period. When immediate DECON is selected, some of the experienced plant staff would be available for decommissioning and dismantlement activities. When SAFSTOR is chosen, efforts must be made to maintain excellent records to compensate for the lack of staff continuity.

The remaining factor was safety. As of October 2009, 24 power reactors have been shut down in the United States, 11 of which have been fully dismantled and decommissioned. Experience has shown that the process can be performed safely.

The NRC issued its Waste Confidence Decision in August 1984 as codified in 10 CFR 51.23. Amended in December 2010, the NRC has found "reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the expiration of that reactor's operating license at that reactor's spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations." Therefore, DPC's plan to maintain the spent fuel at LACBWR, until a federal repository, interim storage facility, or licensed temporary monitored retrievable storage facility is ready to accept the fuel, is acceptable from the safety standpoint, as well as necessary from the practical standpoint.

After evaluating the factors involved in selecting a decommissioning alternative, DPC decided to choose an approximate 30-50 year SAFSTOR period, followed by DECON. After 25 years in SAFSTOR and all spent fuel in dry cask storage at the ISFSI, LACBWR is now beginning the final decommissioning and dismantlement phase.

1.2 SIGNIFICANT POST-SHUTDOWN LICENSING ACTIONS

DPC's authority to operate LACBWR under Provisional Operating License DPR-45, pursuant to 10 CFR Part 50, was terminated by License Amendment No. 56, dated August 4, 1987, and a possess but not operate status was granted. The Decommissioning Plan was submitted December 1987 with a chosen decommissioning alternative of SAFSTOR. License Amendment No. 63, dated August 18, 1988, amended the Provisional Operating License to Possession-Only License DPR-45 with a term to expire March 29, 2003.

The NRC directed the licensee to decommission the facility in its Decommissioning Order of August 7, 1991. License Amendment No. 66, issued with the Decommissioning Order provided evaluation and approval of the proposed Decommissioning Plan, post-operating Technical Specifications, and license renewal to accommodate the SAFSTOR period for a term to expire March 29, 2031.

The Decommissioning Order was modified September 15, 1994, by Confirmatory Order to allow DPC to make changes in the facility or procedures as described in the Safety Analysis Report, and to conduct tests or experiments not described in the Safety Analysis Report, without prior NRC approval, if a plant-specific safety and environmental review procedure containing similar requirements as specified in 10 CFR 50.59 was applied. The Initial Site Characterization Survey for SAFSTOR was completed and published October 1995.

License Amendment No. 69, containing the SAFSTOR Technical Specifications, was issued April 11, 1997. This amendment revised the body of the license and the Appendix A, Technical Specifications. The changes to the license and Technical Specifications were structured to reflect the permanently defueled and shutdown status of the plant. These changes deleted all requirements for emergency electrical power systems and maintenance of containment integrity.

The LACBWR Decommissioning Plan was considered the PSDAR. The PSDAR public meeting was held on May 13, 1998.

License Amendment No. 71 was issued January 25, 2011, making changes to the LACBWR license Appendix A, Technical Specifications in support of the Dry Cask Storage Project. The amendment revised the definition of FUEL HANDLING, reduced the minimum water coverage over stored spent fuel from 16 feet to 11 feet, 6½ inches, and made a small number of editorial changes to clarify heavy load controls and reflect inclusion of the cask pool as part of an "extended" Fuel Element Storage Well. The intent of these changes was to facilitate efficient dry cask storage system loading operations and reduce overall occupational dose to personnel during these operations.

1.3 METAL REMOVAL

Significant dismantlement has already been accomplished. Over 2 million pounds of metallic waste has been removed and shipped, excluding the reactor pressure vessel (RPV) and spent fuel storage racks.

Included in the scope of work during the RPV project was removal of irradiated hardware and all other Class B and Class C material. Waste stored in the FESW was processed and with other B/C waste (i.e., resins, filters, and waste barrel contents) was collected in three liners and shipped for disposal in June 2007. The RPV with head installed, internals intact, and 29 control rods in place was filled with low density cellular concrete. Attachments to the RPV were removed and all other appurtenances were cut. The RPV was removed from the Reactor Building and was also shipped for disposal in June 2007. Following placement of all spent fuel assemblies and fuel debris in dry cask storage at the ISFSI in September 2012, the storage racks and installed components were removed from the spent fuel pool.

As described in Section 2, "Schedule," metal removal is the initial phase of final LACBWR decommissioning following dry cask storage. The remaining systems subject to this metal removal effort are described below.

1.3.1 Forced Circulation System

The Forced Circulation system circulated water through the reactor to cool the core and controlled reactor power from 60 to 100 percent. The system had two pumps with 16-inch and 20-inch piping connected by nozzles to the lower head of the reactor vessel.

System Status: The Forced Circulation system and attendant oil systems have been drained. The Forced Circulation pumps, auxiliary oil pumps, and hydraulic coupling oil pumps have been electrically disconnected. All 16-inch and 20-inch Forced Circulation system piping was filled with low density cellular concrete. Four 16-inch Forced Circulation inlet nozzles and four 16-inch outlet nozzles were cut to allow removal of the reactor pressure vessel. Piping located within the reactor cavity was also cut at the biological shield, segmented into manageable pieces, and disposed of. Pumps and piping in the shielded cubicles remain.

1.3.2 Seal Injection System

The Seal Injection system provided cooling and sealing water for the seals on the two Forced Circulation pumps and the 29 control rod drive units.

System Status: This system is drained and not maintained operational.

1.3.3 Decay Heat Cooling System

The Decay Heat Cooling system was a single high pressure closed loop containing a pump, cooler, and interconnecting piping used to remove core decay heat following reactor shutdown.

System Status: This system is drained and not maintained operational.

1.3.4 Primary Purification System

The Primary Purification system was a high pressure, closed loop system consisting of a regenerative cooler, purification cooler, pump, two ion exchangers and filters.

System Status: Ion exchanger resins have been removed, the system has been drained, and the pump is electrically disconnected.

1.3.5 Alternate Core Spray System

The Alternate Core Spray system consisted of two diesel-driven High Pressure Service Water (HPSW) pumps which took suction from the river and discharged to the reactor vessel through duplex strainers and two motor-operated valves installed in parallel.

System Status: System components continue to serve requirements of the HPSW system.

1.3.6 Gaseous Waste Disposal System

This system routed main condenser gasses through various components for drying, filtering, recombining, monitoring and holdup for decay.

System Status: This system, except for the underground gas storage tanks, has been removed.

1.3.7 Fuel Element Storage Well System

The storage well is a stainless steel lined concrete structure 11 feet by 11 feet by approximately 42 feet deep. When full, it contained approximately 38,000 gallons of water. The cooling system is connected to the well and consists of two pumps, one heat exchanger, one ion exchanger, piping, valves, and instrumentation.

System Status: All spent fuel and fuel debris, installed components, and storage racks have been removed from the storage well. The system is being decontaminated and drained and will not be maintained operational.

1.3.8 Component Cooling Water System

The Component Cooling Water (CCW) system provided controlled quality cooling water to the various heat exchangers and pumps in the Reactor Building during plant operation serving as a barrier between radioactive systems and the river. Currently, the system provides cooling water to Reactor Building Air Conditioner compressors.

System Status: This system remains available for service.

1.3.9 Hydraulic Valve Accumulator System

The function of the Hydraulic Valve Accumulator system was to supply the necessary hydraulic force to operate the five piston-type valve actuators, which operated the five rotoport valves in the Forced Circulation and Main Steam systems.

System Status: This system has been drained. The air compressors, water pumps, and other equipment have been electrically disconnected and are not maintained operational.

1.3.10 Well Water System

Water for this system is supplied from two sealed submersible deep well pumps that take suction through stainless steel strainers, and discharge into integrated pressure tanks. The system supplies water to the plant and office for sanitary and drinking purposes. It is used as cooling water for the two Turbine Building air-conditioning units and the heating boiler blowdown flash tank and sample cooler. The well water system supplies laundry equipment and seal water for the Circulating Water pumps.

System Status: This system is maintained in continuous operation.

1.3.11 Demineralized Water System

The Virgin Water Tank provides stored high quality water to the Demineralized Water transfer pumps which distribute demineralized water throughout the plant. Water is demineralized in batches at G-3 and transferred to LACBWR. The Condensate Storage Tank and the Virgin Water Tank are two sections of an integral aluminum tank located on the Turbine Building office roof. The lower section is the Condensate Storage Tank and has a capacity of 19,100 gallons. The upper section is the Virgin Water Tank and has a capacity of 29,780 gallons.

System Status: The Demineralized Water system remains available for service as a source of water for the heating boiler and dry cleaner. The Condensate Storage Tank has been drained.

1.3.12 Overhead Storage Tank

The Overhead Storage Tank (OHST) is a 45,000 gallon tank located at the top of, and is an integral part of, the Reactor Building. The OHST served as a reservoir for water used to flood the Fuel Element Storage Well, cask pool, and upper cavity during cask loading operations. During operation, the OHST acted as a receiver for rejecting refueling water using the Primary Purification system. The OHST also supplied the water for the Emergency Core Spray system and Reactor Building Spray system, and was a backup source for the Seal Injection system.

System Status: The OHST has been drained.

1.3.13 Station and Control Air System

There are two single-stage positive displacement lubricated type compressors. The air receivers act as a volume storage unit for the station. The air receiver outlet lines join to form a header for supply to the station and the control air systems.

System Status: This system is operated as needed.

1.3.14 Low Pressure Service Water System

The system is supplied by two vertical pumps located in the Cribhouse through a duplex strainer unit. The Low Pressure Service Water (LPSW) system supplies the CCW coolers and is the normal supply to the High Pressure Service Water (HPSW) system through the motor-driven HPSW pump.

System Status: This system is maintained operational.

1.3.15 High Pressure Service Water System

The HPSW system supplies fire suppression water. HPSW system pressure is maintained by the adjacent coal plant, Genoa 3 (G-3). The HPSW system is divided into two main loops. The internal loop serves the Turbine Building, Reactor Building, and Waste Treatment Building interior hose stations and sprinkler systems. The external loop supplies outside fire hydrants and Cribhouse sprinklers. The external loop is cross-connected with the fire suppression system of G-3.

System Status: This system is maintained in operation to provide fire protection.

1.3.16 Circulating Water System

Circulating water is drawn into the Cribhouse intake flume from the river by two pumps located in separate open suction bays. Each pump discharges into 42-inch pipe that join a common 60-inch pipe leading to the main condenser in the Turbine Building. At the condenser, the 60-inch pipe branches into two 42-inch pipe to the top section of the water boxes. Water enters the top section of the condenser tube side and is discharged from the bottom section tube side. The 42-inch condenser circulating water outlet lines tie into a common 60-inch line which discharges to the seal well from G-3 located approximately 600 feet downstream from the Cribhouse.

System Status: This system is maintained operational for periodic use for dilution of liquid waste discharges.

1.3.17 Condensate System and Feedwater Heaters

The Condensate system took condensed steam from the condenser hotwell and delivered it under pressure to the suction of the reactor feed pumps.

System Status: This system has been removed, with the exception of three feedwater heaters that remain in place with piping connections removed. The Condensate Storage Tank has been drained.

1.3.18 Full-Flow Condensate Demineralizer System

The Full-Flow Condensate Demineralizer system consisted of resin-filled service tanks that removed ionic impurities from the condensate water going back to the reactor.

System Status: This system, except for six empty tanks (3 service water tanks, cation tank, anion tank, and sluice water tank) located in the Full-Flow Room, has been removed.

1.3.19 Steam Turbine

The turbine was a high pressure, condensing, reaction, tandem compound, reheat 3600 rpm unit rated at 60,000 kW. The turbine consisted of a high pressure and intermediate pressure and a low pressure element.

System Status: Steam piping in the Turbine Building, turbine inlet valves, and other components have been removed. Removal of the Steam Turbine system is in progress.

1.3.20 60-Megawatt Generator

The 60-MW generator was a high-speed turbine-driven wound-rotor machine rated at 76,800 kVA. The generator was cooled by a hydrogen system, lubricated by a forced-flow lubricating system, and excited by a separate exciter attached to the end of the generator shaft through a reduction gear. A reserve exciter was provided.

System Status: The main and reserve exciters have been removed. The generator rotor has been removed and unconditionally released for reuse. Removal of the generator is in progress.

1.3.21 Turbine Oil and Hydrogen Seal Oil System

The Turbine Oil system received cooled oil from the lube oil coolers to supply the necessary lubricating and cooling oil to the turbine and generator bearings, exciter bearings, and exciter reduction gear.

System Status: This system, with exception of the drained clean and dirty oil tanks, has been removed.

1.3.22 Heating, Ventilation, and Air-Conditioning (HVAC) Systems

The Reactor Building ventilation system utilizes two 30-ton, 12,000-cfm air conditioning units for drawing fresh air into the building and for circulating the air throughout the building. Each air-conditioning unit air inlet is provided with a filter box assembly, face and bypass dampers; and one 337,500-Btu/hr capacity steam coil that is used when heating is required. Air enters the building through openings between and around the bi-parting door sections and is exhausted from the building by action of the stack blowers. Additional exhaust flow is available using a centrifugal exhaust fan that has a capacity of 6000 cfm at 4 inches of water static pressure. The exhaust fan and building exhaust air discharge through two series 20-inch dampers to the Reactor Building ventilation outlet plenum connected to the tunnel. A 20-inch damper is also provided for recirculation of the exhaust fan discharge. The exhaust system is provided with conventional and high-efficiency filters and with a particulate radiation monitor system.

The Waste Treatment Building ventilation is provided by a 2000-cfm exhaust fan that draws air from the shielded vault areas of the building and exhausts the air through a duct out the floor of the building to the gas storage tank vault. The stack blowers then exhaust the air from the gas storage tank vault through the connecting tunnel and discharge the air up the stack.

The exhaust air from the Reactor Building and the Waste Treatment Building is discharged into the tunnel connecting the Waste Treatment Building, the Reactor Building, and the Turbine Building to a plenum at the base of the stack. The stack is 350 feet high and is of structural concrete with an aluminum nozzle at the top.

The Turbine Building heating system provides heat to the turbine and machine shop areas through unit heaters and through automatic steam heating units. The Control Room Heating and Air-Conditioning unit serves the Control Room, Electrical Equipment Room, Shift Supervisor's area, and adjacent office. The office area and laboratory are provided with a separate multi-zone heating and air-conditioning unit.

The heating boiler is a Cleaver-Brooks, Type 100 Model CB-189, 150-hp unit. At 150 psig, the boiler will deliver 6,375,000 Btu/hr. The boiler fuel is No. 2 fuel oil. The oil is supplied by and atomized in a Type CB-1 burner which will deliver 45 gph.

System Status: HVAC systems are maintained operational.

1.3.23 Liquid Waste Collection Systems

The Turbine Building Liquid Waste system collects the liquid waste from the Turbine Building, the Waste Treatment Building, the gas storage tank vault, and the tunnel area in two storage tanks (4500 gallons and 3000 gallons) located in the tunnel between the Reactor Building and the Turbine Building.

The Reactor Building Liquid Waste system consists of two retention tanks, each with a capacity of 6000 gallons, a liquid waste transfer pump, two sump pumps, and the necessary piping to route the waste liquid to the retention tanks and from the retention tanks out of the Reactor Building.

After a tank's contents are recirculated, a sample is drawn from the tank and analyzed for radioactivity concentrations prior to discharge. The liquid waste is then discharged to the circulating water discharge line with dilution by G-3 and LACBWR circulating water outflow.

Spent resin is transferred to the spent resin receiving tank and held until there is a sufficient quantity available for shipment to an approved processing facility. The resin is transferred to an approved shipping container, dewatered, and made ready for shipment.

System Status: Liquid Waste Collection systems are maintained operational.

1.3.24 Fuel Transfer Bridge

The fuel transfer bridge is a specially-designed structure that served as the structural support for the fuel transfer hoist, and provided an operating platform for personnel performing fuel handling operations.

System Status: With all spent fuel in dry cask storage at the onsite ISFSI, the fuel transfer bridge is no longer required.

1.3.25 Electrical Distribution System

69-kV power is supplied to the reserve auxiliary transformer (RAT) located in the LACBWR switchyard through a three-phase air-disconnect switch and three 30-amp, 69-kV fuses. Reserve Feed Breakers supply the 2400-V Bus 1A and Bus 1B from the 69/2.4-kV RAT. The 2400/480-V Auxiliary Transformers 1A and 1B receive power from the 2400-V Buses 1A and 1B through breaker 252AT1A from Bus 1A to Transformer 1A, and breaker 252AT1B from Bus 1B to Transformer 1B. The auxiliary transformers supply the 480-V Buses 1A and 1B through Main Feed Breakers 452M1A for Bus 1A and 452M1B for Bus 1B.

The 480-V buses supply larger equipment directly and motor control centers (MCCs) that furnish power to motors and equipment connected to them including 120-V AC Distribution Panels. Regular lighting cabinets are supplied from 480-V Buses 1A and 1B.

Two diesel generators are available for standby power in the event of a loss of offsite power. The 1A Diesel Generator has a capacity of 250-kW. The 1B Diesel Generator has a capacity of 400-kW. These units may be removed from service in the near future.

The 125-V DC distribution system supplies DC power for equipment and AC breaker operations. The Diesel Building Battery Charger, Generator Plant Battery, and Generator Plant Battery Charger remain as sources of DC power. The Diesel Building Battery Charger provides the normal DC supply with the Generator Plant Battery as the reserve supply. The battery floats on the system maintaining a full charge, and provides DC power in the event of a loss of AC power to the battery charger or failure of the charger. Due to age, the Generator Plant Battery Charger is maintained available as a standby unit.

System Status: The Electrical Power Distribution system is maintained operational.

1.3.26 Post-Accident Sampling Systems

The Post-Accident Sampling Systems (PASS) were designed to permit the removal for analysis of small samples of either Reactor Building atmosphere, reactor coolant, or stack gas when normal sample points were inaccessible following an accident. These samples would aid in determining the amount of fuel degradation and the amount of hydrogen buildup in the Reactor Building.

System Status: The Stack PASS is maintained in continuous operation ensuring flow for AMS-4 monitoring of stack effluent particulate. The Reactor Coolant PASS has been removed. The Reactor Building Atmosphere PASS remains in place. With all spent fuel transferred to dry cask storage at the ISFSI, Post-Accident Sampling Systems are no longer required.

1.4 BUILDINGS AND STRUCTURES

Located within the radiological controlled area of LACBWR are the following buildings and structures. Disposition of buildings and structures has not been determined at this time.

- Reactor Building
- Turbine Building and Turbine Office Building
- Waste Treatment Building
- Low Specific Activity (LSA) Storage Building
- Cribhouse
- Maintenance Eat Shack
- Underground Gas Storage Tank Vault
- 1B Diesel Generator Building
- Ventilation Stack

1.4.1 Reactor Building

The Reactor Building is a right circular cylinder with a hemispherical dome and semi-ellipsoidal bottom. It has an overall internal height of 144 feet and an inside diameter of 60 feet, and it extends 26'-6" below grade level. The shell thickness is 1.16 inch, except for the upper hemispherical dome which is 0.60 inch thick.

The building contained most of the equipment associated with the nuclear steam supply system, including the reactor vessel and biological shielding. The interior of the shell is lined with a 9-inch-thick layer of concrete to an elevation of 727'-10" to limit direct radiation doses in the event of a fission-product release within the Reactor Building.

The Reactor Building is supported on a foundation consisting of concrete-steel piles and a pile capping of concrete approximately 3 feet thick. This support runs from the bottom of the semi-ellipsoidal head at about elevation 612'-4" to an elevation of 621'-6". The 232 piles that support the containment structure are driven deep enough to support over 50 tons per pile.

The containment bottom head above elevation 621'-6" and the shell cylinder from the bottom head to approximately 9 inches above grade elevation 639 feet are enveloped by reinforced concrete laid over a ½ inch thickness of pre-molded expansion joint filler. The reinforced concrete consists of a lower ring, mating with the pile capping concrete. The ring is approximately 4½ feet thick at its bottom and 2½ feet thick at a point 1½ feet below the top due to inner surface concavity. The ring then tapers externally to a thickness of 9 inches at the top (elevation 627'-6") and extends up the wall of the shell cylinder to elevation 639'-9".

The shell includes two airlocks. The personnel airlock connects the Reactor Building to the Turbine Building. The airlock is 21'-6" long between its two rectangular doors that measure 5'-6" by 7'. The Reactor Building is also equipped with an emergency airlock, which is 7 feet long and 5 feet in diameter, with two circular doors of 32½-inch diameter (with a 30-inch opening). Both airlocks are at elevation 642'-9" and lead to platform structures from which descent to grade level can be made.

There is an 8 feet by 10 feet freight door opening in the Reactor Building that was intended to accommodate large pieces of equipment. The door is bolted internally to the door frame in the shell.

Cables and bulkhead conductors from the Turbine Building provide electrical service to the Reactor Building through penetrations in the northwest quadrant of the building shell. The majority of pipe penetrations leave the Reactor Building 1 to 10 feet below grade level either at the northwest quadrant or at the northeast quadrant and enter the pipe tunnel connecting the Turbine Building, Reactor Building, stack, Waste Treatment Building, and the underground gas storage tank vault.

A 45,000-gallon storage tank in the dome of the Reactor Building supplied water for the emergency core spray system and the building spray system. The storage tank provided a source of water inventory for fuel handling operations and the FESW.

A 50-ton traveling bridge crane with a 5-ton auxiliary hoist is located in the upper part of the Reactor Building. The bridge completely spans the building and travels on circular tracks supported by columns around the inside of the building just below the hemispherical upper head. A trolley containing all the lifting mechanisms travels on the bridge to near the crane rail, and it permits crane access to any position on the main floor under the trolley travel-diameter. The lifting cables of both the 50-ton and the 5-ton hoists are also long enough to reach down through hatchways into the basement area. Hatches at several positions in the main and intermediate floors may be opened to allow passage of the cables and equipment.

The spent fuel was stored underwater in racks in the bottom of the FESW located adjacent to the reactor biological shielding in the Reactor Building. The storage rack system was a two-tier configuration such that each storage location was capable of storing two fuel assemblies, one above the other.

To facilitate reactor pressure vessel removal and dry cask storage, an opening was created in the Reactor Building. The opening has a total length of 58'-8". The width of the upper 24'-8" of the opening is 16'-9¼" and the width of the lower 34' of the opening is 10'-6". The opening is closed by a weather tight, insulated, roll-up, bi-parting door.

For dry cask storage operations, the Reactor Building mezzanine floor north was reinforced by adding steel struts beneath a cantilevered section of the floor. In order to provide sufficient water coverage over the spent fuel assemblies during movement into the TSC from the FESW, a water-tight removable gate, 16'-9" high by 9'-4" wide, was installed in the bio-shield opening above approximate elevation 679'-3" extending to elevation 696 feet. The cask pool gate was supported by a 12' high structure installed at elevation 667 feet. The cask pool gate was designed with inflatable pneumatic seals having a defined acceptable leakage rate. Appropriate interfacing modifications to the bio-shield liner at the edges of the opening were installed to ensure water retention in the area between the upper cavity liner and the cask pool gate. The cask pool gate storage stand supported the 6-ton cask pool gate when not in use.

The 10' high by 10' inner diameter cask pool was installed at elevation 669'-3" atop a 20'-10" high support structure attached to the reactor support cylinder at elevation 648'-5". The cask pool had a 16½" wide horizontal flange welded to the top of the shell, the outer circumference of which was tied into the existing upper cavity liner using L-shaped stainless steel angle at approximate elevation 679'-3". This arrangement provided a barrier to prevent water in the upper cavity area above the cask pool from leaking around the outside of the cask pool into the cavity below.

1.4.2 Turbine Building and Turbine Office Building

The Turbine Building contained the steam turbine and generator, main condenser, electrical switchgear, and other pneumatic, mechanical and hydraulic systems and equipment required for a complete power plant. A 30/5-ton capacity, remote-operated overhead electrical traveling crane spans the Turbine Building. The crane has access to major equipment items located below the floor through numerous hatches in the main floor. The Turbine Building is 104.5 feet by 79 feet and 60 feet tall.

The Turbine Office Building contained offices, the Control Room, locker room facilities, laboratory, shops, counting room, personnel change room, decontamination facilities, heating, ventilating and air conditioning equipment, rest rooms, storeroom, and space for other plant services. In general, these areas were separated from power plant equipment spaces. The Turbine Office Building is 110 feet by 50 feet and 45 feet tall.

1.4.3 Waste Treatment Building and LSA Storage Building

The Waste Treatment Building (WTB) is located to the northeast of the Reactor Building. The building contains facilities and equipment for decontamination and the collection, processing, storage, and disposal of low level solid radioactive waste materials in accordance with the Process Control Program.

The grade floor of the WTB contains a shielded compartment which encloses a 320 ft^3 stainless steel spent resin receiving tank with associated resin receiving and transfer equipment. A high integrity disposal liner can be located in the adjacent shielded cubicle.

Adjacent to these shielded resin handling cubicles are two open cubicles, one of which is about 3' above grade. The grade level area contains two back-washable radioactive liquid waste filters, the spent resin liner level indication panel and the spent resin liner final dewatering piping, container, and pumps. The second above-grade area is a decontamination facility, consisting of a steam cleaning booth, a decontamination sink, and heating/ventilation/air conditioning units. The remaining grade or above-grade areas contain a shower/wash/frisking area and temporary storage space for processed dry active waste containers.

Beneath the grade floor are two shielded cubicles. One cubicle, to which access is gained by removal of floor shield plugs, is available for the storage of up to nine higher activity solid waste drums. The other area, to which access is gained by a stairway, contains the dewatering ion exchanger, the WTB sump and pump, and additional waste storage space. The WTB is 34 feet by 42 feet and 20 feet tall. The WTB basement floor is at elevation 630 feet and has a 3-feet deep sump with 8-inch thick walls and bottom which extend to a depth of 626'-4".

The Low Specific Activity (LSA) Storage Building is southwest of the Turbine Building. It is used to store processed, packaged and sealed low level dry active waste materials, and sealed low level activity components. The building has the capacity for 500 DOT17H-55 gallon drums of waste. No liquids are stored in this building and there are no effluent releases from this building during normal use. The LSA Building is 27 feet by 80 feet and 15 feet tall.

1.4.4 Cribhouse

The Cribhouse is located on the bank of the Mississippi River to the west of the plant and through its intake structure, provided river water used in the various plant systems. The Cribhouse contains the diesel-driven high pressure service water pumps, low pressure service water pumps and the circulating water pumps. The Cribhouse is 35 feet by 45 feet and 15 feet tall.

1.4.5 Maintenance Eat Shack

The Eat Shack is a 20 feet by 40 feet and 15 feet tall steel-sided building with windows constructed over a concrete slab.

1.4.6 Underground Gas Storage Tank Vault

The gas storage tank vault is a 29'-6" by 31'-6" (outside dimensions) underground concrete structure with 14-feet high walls and 2-feet thick floors, walls, and ceiling. The vault is 3-feet below grade elevation of 639 feet and with sump extends to a depth of 22 feet or elevation 617 feet. Two 1,600 cubic feet tanks are located in the underground gas storage tank vault. The tanks had the capability to store radioactive gases until such time that they were batch released via the stack. The tanks remain in place below grade along with the associated piping.

1.4.7 1B Diesel Generator Building

The 1B Diesel Generator Building is attached to the southeast corner of the Turbine Building and contains the Electrical Equipment Room, Diesel Generator Room, and an empty Battery

Room. The building is constructed of concrete block and steel beams and braces. The building is L-shaped having largest dimensions of 30'-10" by 37'-11" and 13 feet tall.

1.4.8 Ventilation Stack

The LACBWR ventilation stack is a 350-feet high, tapered, reinforced concrete structure with an outside diameter of 7.19 feet at the top and 24.719 feet at the base. The wall thickness varies from 15 inches at the bottom to 6 inches at the top. The 4-feet thick foundation mat rests on a pile cluster of 78 piles. The foundation mat is 39'-8" square formed without triangular sections of equal 11'-7½" sides on the southeast and southwest corners.

1.5 DECOMMISSIONING WASTE DISPOSAL

1.5.1 System Classification

As a lesson learned from the dismantlement of other nuclear facilities, removal costs and removal contingency percentages vary, depending upon whether the system is a contaminated system or can be classified as a potentially clean system. To more accurately determine LACBWR's final cost and to better apply reprocessing, labor, and burial costs, LACBWR dismantlement activities are broken into categories based on contamination levels as follows:

- > 20 mRem/hr general dose rate
- < 20 mRem/hr general dose rate
- Potentially clean, < 0.1 mRem/hr general dose rate

1.5.2 Shipping

Transportation of material from LACBWR will be made by either truck or rail. In most cases, truck transport will be utilized because it is readily available and normally less expensive. Rail will be used to transport contaminated concrete and soils because of the large volumes of material needing transport.

1.5.3 Radioactive Waste Recycling

The use of radwaste processors has been found to consistently decrease the cost for direct burial of decommissioning waste. LACBWR has been a long-time user of radwaste processors. Past experience of radioactive waste shipments from LACBWR, sent for processing, has shown that of the total material processed approximately 50% has been sent to burial. LACBWR will continue to process all of the Class A material removed, except concrete and soil, to reduce the total volume of waste material needing burial.

A unique aspect in the use of a radwaste processor is that, by signing an agreement for the processing, set rates are established between LACBWR and the processor. The processor's contracted rates cover both the processing and burial of materials sent to their facilities. These radwaste processing charges are fixed by contract.

1.5.4 Burial

All LACBWR Class A metallic waste and dry active waste (not concrete or soil) will be sent to a processor and are not considered in the burial costs. Concrete and soil produced in the decommissioning of LACBWR will be shipped for direct burial. These shipments, due to volume, will be made by rail when possible. Class B and C waste, will not be created as a burial site is not available.

1.6 GROUNDWATER

Groundwater characterization is a requirement of decommissioning nuclear power plants and although each station may have varying degrees of investigations, techniques, and modeling efforts, the process is similar. Haley & Aldrich, Inc. was contracted to build the conceptual site model (CSM) for the LACBWR site with respect to the potential release of radiological and chemical materials to the environment. The Hydrogeological CSM was the first step to better understand both groundwater flow regimes as well as groundwater quality, with respect to radionuclides associated with LACBWR. The CSM was used to identify data gaps that may then be used to develop a focused investigation to better define the hydrogeology.

In order to develop this CSM, the following activities were performed:

- Review of existing environmental documents;
- Review of geotechnical investigations associated with recent projects;
- Review of plant construction;
- Review of plant drawings to identify buried piping, tanks and areas where chemicals or radiological materials were used and/or stored;
- Review of surveys conducted with past employees on potential releases;
- Review of aerial photographs;
- Site walk downs; and,
- Interviews with current and past employees.

These data were used to obtain a better understanding of the site's history and hydrogeological setting and were used to design a sampling program. Since these data will also be used to support license termination, they will provide hydrogeological information for a model such as RESRAD and to develop site Derived Concentration Guideline Levels (DCGLs).

In November 2012, five pairs of groundwater monitoring wells (10 wells total) were installed within the LACBWR radiological controlled area in the most-likely areas of potential release to determine if groundwater quality has been impacted. The paired wells were installed downgradient of the most likely areas where potential releases occurred and have sufficient spatial distribution so that groundwater flow rates and direction may be estimated. The paired wells were installed so that the shallow well intersects the water table and the deeper well is installed at depths approximately 20 to 30 feet below the shallow well. Soil samples were collected during the well installation to provide additional data points that will be able to support RESRAD, should DCGLs be needed during future decommissioning actions (i.e., if radiological contamination is present in soils and or groundwater).

The focus of the investigation will be to characterize groundwater quality in support of NRC decommissioning requirements. However, monitoring wells are located and constructed using methods, such that if needed, they meet the data quality objectives of other programs that may come into play during the regulatory closure of the site.

1.7 ISFSI DECOMMISSIONING

The decommissioning plan for the ISFSI is based on information contained in the NAC-MPC FSAR, Section 2.A.4, "Decommissioning Considerations." The ISFSI will be decommissioned after the stored spent fuel is removed and transferred to the Department of Energy. NAC-MPC dry cask storage systems in use at the ISFSI are designated as MPC-LACBWR.

The principal elements of the MPC-LACBWR storage system are the vertical concrete cask (VCC) and the transportable storage canister (TSC). The VCC provides biological shielding and physical protection for the contents of the TSC during long-term storage. The VCC is not expected to become surface contaminated during use, except through incidental contact with other contaminated surfaces. Incidental contact could occur at the interior liner surface of the VCC, the top surface that supports the transfer cask during loading and unloading operations, and the pedestal of the VCC that supports the TSC. All of these surfaces are carbon steel, and could be decontaminated as necessary for decommissioning. A ¼-inch stainless steel plate is placed on the carbon steel pedestal of the MPC-LACBWR VCC to separate it from the stainless steel TSC bottom. Contamination of these surfaces is expected to be minimal, since the TSC is isolated from spent fuel pool water during loading in the pool and the transfer cask is decontaminated prior to transfer of the TSC to the VCC. Activation of the VCC carbon steel liner, concrete, support plates, and reinforcing bar could occur due to neutron flux from the stored fuel. Since the neutron flux rate is low, only minimal activation of carbon steel in the VCC is expected to occur.

Decommissioning of the VCC would involve the removal of the TSC and the subsequent disassembly of the VCC. It is expected that the concrete would be broken up, and steel components segmented to reduce volume. Any contaminated or activated items are expected to qualify for near-surface disposal as low specific activity material.

The TSC is designed and fabricated to be suitable for use as a waste package for permanent disposal in a deep Mined Geological Disposal System, in that it meets the requirements of the DOE MPC Design Procurement Specification. The TSC is fabricated from materials having high long-term corrosion resistance, and the TSC contains no paints or coatings that could adversely affect the permanent disposal of the TSC. As a result, decommissioning of the TSC would occur only if the spent fuel contained in the TSC had to be removed. Decommissioning would require that the closure welds at the TSC closure lid and port covers be cut, so that the spent fuel could be removed. Removal of the contents of the TSC would require that the TSC be returned to a spent fuel pool or dry unloading facility, such as a hot cell. Closure welds can be cut either manually or with automated equipment, with the procedure being essentially the reverse of that used to initially close the TSC.

The LACBWR ISFSI storage pad, fence, and supporting utility fixtures are not expected to require decontamination as a result of use of the MPC-LACBWR system. The design of the VCC and TSC precludes the release of contamination from the contents over the period of use of the system. Consequently, these items may be reused or disposed of as locally generated clean waste.

The decommissioning plan for the ISFSI is to dispose of the five VCCs and the 32' x 48' x 3' concrete storage pad. The cost for ISFSI decommissioning is estimated to be $1.6 million in Year 2010 dollars.

2.0 SCHEDULE

The current schedule for decommissioning activities at LACBWR is depicted in Figure 2.1. Following final reactor shutdown in April 1987, the transition from operating plant to possession-only facility required numerous administrative changes. Staff level was reduced, license required plans were revised, and operating procedures were curtailed or simplified as conditions and NRC approval allowed. The LACBWR Decommissioning Plan was approved in August 1991, and the facility entered SAFSTOR. License renewal granted at the same time accommodated the proposed SAFSTOR period for a term to expire March 29, 2031. At the time of the original Decommissioning Plan in 1987, DPC anticipated the plant would be in SAFSTOR for a 30-50 year period.

To make better use of resources during the SAFSTOR period, some incremental decommissioning and dismantlement activities were desirable. By Confirmatory Order from the NRC in 1994, changes in the facility meeting 10 CFR 50.59 requirements were permitted and limited gradual dismantlement progressed. As of November 2008, approximately 2 million pounds of material related to the removal of unused components or whole systems, completed in over 100 specific approved changes to the facility, has been shipped for processing and disposal. This total does not include reactor vessel and B/C waste disposal.

The 2-year Reactor Pressure Vessel Removal (RPV) Project was completed in June 2007 with disposal of the intact RPV at the Barnwell Waste Management Facility (BWMF). Disposal of the RPV was completed at this time prior to the planned closing of BWMF to out-of-compact waste in July 2008. RPV removal was not specifically addressed in the original decommissioning schedule. The removal of this large component, as defined in 10 CFR 50.2, was an activity requiring notice be made pursuant to 10 CFR 50.82, Termination of License, (a)(7). This notice was made by submittal to the NRC on August 18, 2005.

In 2007, DPC began efforts to place an ISFSI on site by commencing the Dry Cask Storage Project. An on-site ISFSI was the available option that provided flexibility for license termination of the LACBWR facility. With respect to the federal repository option, a marker for transport of spent fuel offsite has also been added to Figure 2.1 as best available information can provide.

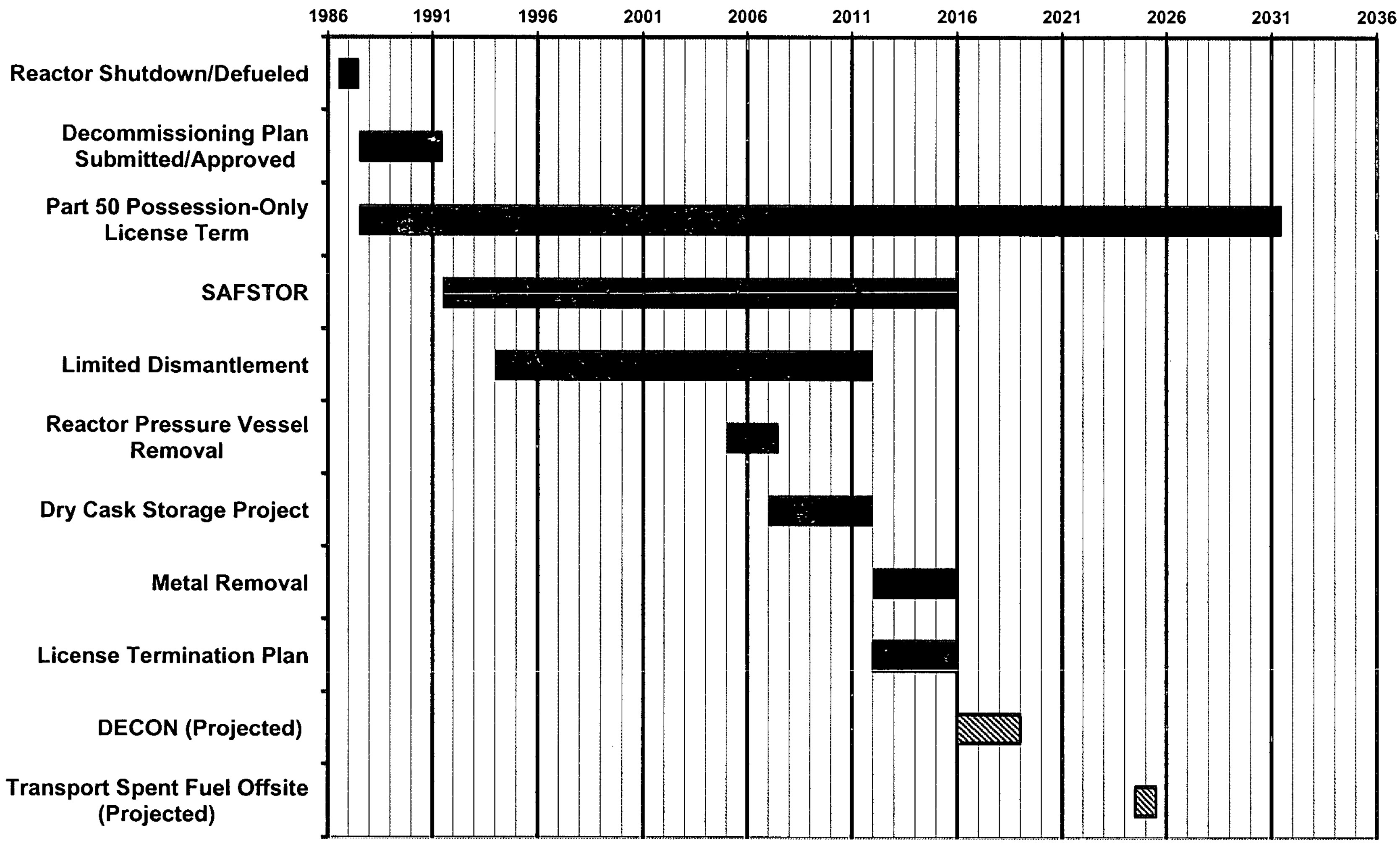
DPC Staff completed an extensive review and analysis of the comparative costs and benefits of the current decommissioning schedule and various accelerated schedules. From this analysis, the DPC Board of Directors approved accelerating the removal of radioactive metal from the LACBWR facility. By letter dated December 7, 2010, DPC gave notification to the NRC of a change in schedule that would accelerate the decommissioning of the LACBWR facility starting with a 4-year period of systems removal beginning in 2012. This activity will include the removal for shipment of large bore (16 and 20-inch) reactor coolant piping and pumps of the Forced Circulation system and other equipment once connected to the reactor pressure vessel or primary system such as Control Rod Drive Mechanisms, Decay Heat, Primary Purification, Seal Injection, and Main Steam.

This metal removal phase of decommissioning activity does not result in significant environmental impacts and has been reviewed as documented in the "Generic Environmental Impact Statement (GEIS) on Decommissioning of Nuclear Facilities," NUREG-0586, Supplement 1, November 2002. The GEIS characterizes the environmental impacts resulting from metal removal as generic and small.

DPC's review and analysis found that the Nuclear Decommissioning Trust (NDT) was sufficiently funded to allow dismantlement to begin in 2012 immediately after spent fuel removal was completed. Costs of the metal removal project will be funded from the NDT. DPC's approved strategy requires continuing evaluation of the costs of the decommissioning activity as it progresses. During this time the LTP will be formulated determining the disposition of concrete structures and site end use. The LTP will include an updated site-specific estimate of remaining decommissioning costs. DPC's decommissioning strategy for LACBWR with accelerated systems removal provides flexibility in that provisions are afforded to evaluate the costs and benefits of alternative methodologies for concrete removal, and delay LTP implementation if necessary to assure adequate NDT funds are available for the final decommissioning process. Figure 2.1 depicts the revised schedule.

The Dry Cask Storage Project established an ISFSI on the LACBWR site under the general license provisions of 10 CFR 72, Subpart K. The ISFSI is located 2,232 feet south-southwest of the Reactor Building center. The ISFSI is used for interim storage of LACBWR spent fuel in the NAC International, Inc. (NAC) Multi-Purpose Canister (MPC) System. The ISFSI contains all LACBWR spent fuel in five NAC-MPC dry cask storage systems. Cask loading and transport operations were completed on September 19, 2012, when the fifth and final dry storage cask was placed on the ISFSI pad.

FIGURE 2.1
LACBWR SCHEDULE



3.0 ESTIMATE OF EXPECTED DECOMMISSIONING COSTS

3.1 DECOMMISSIONING COST FINANCING

In late 1983, the Dairyland Power Cooperative Board of Directors resolved to provide resources for the final dismantlement of LACBWR. DPC began making deposits to a decommissioning fund in 1984. The Nuclear Decommissioning Trust (NDT) was established in July 1990 as an external fund outside DPC's administrative control holding fixed income and equity investments.

The cost of DECON was based on the selection of unrestricted use as the criteria to be pursued for LACBWR. At the time of preparation of this plan in 1987, decommissioning cost was based on studies by Nuclear Energy Services, Inc., available generic decommissioning cost guidance, and technology as it existed. In the Safety Evaluation Report dated August 7, 1991, related to the order authorizing decommissioning and approval of the Decommissioning Plan, the NRC found the estimate of $92 million in Year 2010 dollars reasonable for the final dismantling cost of LACBWR.

An improved site-specific decommissioning cost study was performed by Sargent & Lundy (S&L) in 1994 and provides basis for the current cost estimate and funding. The S&L study determined the cost to complete decommissioning to be $83.4 million in Year 1994 dollars with commencement of decommissioning assumed to occur in 2019. A cost study revision completed in July 1998 placed the cost to complete decommissioning at $98.7 million in Year 1998 dollars. A cost study revision, prompted by significant changes in radioactive waste burial costs, as well as lessons learned on decontamination factors and methods, was prepared in November 2000 and placed the cost to complete decommissioning at $79.2 million in Year 2000 dollars. During 2003, the cost study was revisited again to include changes in escalation rates, progress in limited dismantlement, and a revised reactor vessel weight definition. This update placed the cost to complete decommissioning at $79.5 million in Year 2003 dollars.

In preparation for removal of the reactor pressure vessel (RPV), cost figures were brought current to $84.6 million in Year 2005 dollars. As of December 2006, NDT funds were approximately $83.4 million. NDT funds for B/C waste and RPV removals, approved by the Board of Directors, have been drawn in the amount of $18.2 million. Following B/C waste and RPV disposal a revision to the cost estimate was performed in September 2007 that placed the cost to complete decommissioning at $62.5 million in Year 2007 dollars.

A cost study update was completed in November 2010 to more accurately assess future costs of the remaining dismantlement needed and to facilitate DPC decommissioning and license termination planning. This update placed the cost to complete decommissioning at $67.8 million in Year 2010 dollars. During this process, ISFSI decommissioning costs were identified uniquely as a specific item and estimated to be $1.6 million in Year 2010 dollars. The DPC Board of Directors has established an external funding mechanism for ISFSI decommissioning costs in accordance with 10 CFR 72.30 to assure adequate funds will be available for the final decommissioning cost of the LACBWR ISFSI.

Cooperative management believes that the balance in the nuclear decommissioning funds, together with future expected investment income on such funds, will be sufficient to meet all future decommissioning costs.

The DPC Board of Directors remains committed to assuring that adequate funding will be available for the final decommissioning of the LACBWR facility and ISFSI and is prepared to take such actions as it deems necessary or appropriate to provide such assurance, based upon its review of the most recent decommissioning cost estimate and other relevant developments in this area. At least every five years, the decommissioning cost estimate will be reviewed in order to assure adequate funds will be available at the time final decommissioning.

3.2 DRY CASK STORAGE COST FUNDING

10 CFR 50.54(bb) requires the establishment of a program by which the licensee intends to manage and provide funding for spent fuel storage at the reactor following permanent cessation of operation until which time the spent fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository.

Pursuant to 10 CFR 50.54(bb), DPC promulgated the following spent fuel management funding plan that is now applicable to dry cask storage of the LACBWR spent fuel.

Independent of costs for dry cask storage of the LACBWR spent fuel, DPC has established the NDT and reports annually to the NRC the status of NDT funds. DPC understands that none of the funds in the NDT may be used for dry cask storage and operation of the ISFSI.

DPC will fund the expense of dry cask storage costs from the annual operating and maintenance budget. As part of generation expenses, dry cask storage costs are recovered in rates that DPC charges distribution cooperative members under long-term, all requirements wholesale power contracts. DPC's rates to member cooperatives are annually submitted to the United States Rural Utilities Service (RUS) as part of RUS oversight of DPC operations. DPC is required by RUS lending covenants and RUS regulations to set rates at levels sufficient to recover costs and to meet certain financial performance covenants. DPC has always met those financial performance covenants and has satisfied the RUS regulations concerning submission and approval of its rates.

DPC's 25 member cooperatives set their own rates through participation in the DPC Board of Directors. The operations and maintenance budget approved by the DPC Board, and incorporated into rates submitted to and approved by the RUS, will be funded and available to pay dry cask storage expenses as incurred.

DPC has found no need to separately fund dry cask storage costs outside the regular operating and maintenance budget. Dry cask storage costs are relatively small compared to DPC's annual operating and maintenance costs for generation and transmission facilities, and DPC will continue the long-standing policy of recovering dry cask storage costs as part of regular rates.

4.0 ENVIRONMENTAL IMPACT

Review of post-operating license stage environmental impacts was documented in a supplement to the Environmental Report for LACBWR dated December 1987. LACBWR decommissioning and dismantlement activities have resulted in no significant environmental impact not previously evaluated in the NRC's Environmental Assessment in support of the August 7, 1991, Decommissioning Order or the Final Environmental Statement (FES) related to operation of LACBWR, dated April 21, 1980 (NUREG-0191).

The environmental impact of decommissioning and dismantlement activities is defined in the "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (GEIS)," NUREG-0586, Supplement 1, November 2002. For decommissioning, the NRC uses a standard of significance derived from the Council on Environmental Quality (CEQ) terminology. The NRC has defined three significance levels: SMALL, MODERATE, and LARGE:

SMALL – Environmental impacts are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE – Environmental impacts are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE – Environmental impacts are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The environmental impact of all completed or planned LACBWR decommissioning and dismantlement activities is SMALL as determined by the GEIS. LACBWR decommissioning is specifically evaluated in the GEIS. As stated in the GEIS, licensees can rely on information in this Supplement as a basis for meeting the requirements in 10 CFR 50.82(a)(6)(ii). Site-specific potential environmental impacts not determined in the GEIS are:

- Offsite land use activities
- Aquatic ecology as to activities beyond the operational area
- Terrestrial ecology as to activities beyond the operational area
- Threatened and endangered species
- Socioeconomic
- Environmental justice

The LTP for LACBWR will detail final decommissioning activities including site remediation, survey of residual contamination, and determination of site end-use. A final supplement to the Environmental Report in support of the LTP will address all environmental impacts of the license termination stage.

LACBWR DECOMMISSIONING PLAN

REVISED NOVEMBER 2012

DESCRIPTION OF CHANGES

A. Bases for Changes

This November 2012 revision of the Decommissioning Plan (D-Plan) establishes information in a Post-Shutdown Activities Report (PSDAR) format to provide stakeholders a better understanding of the current status of the decommissioning effort at LACBWR and the planned dismantlement activities. This approach is in accordance with NRC Regulatory Guide (RG) 1.185, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report," July 2000, which states:

> *"For facilities that either have an approved decommissioning plan or have submitted a decommissioning plan before the effective date of the rule, August 28, 1996, the decommissioning plan is deemed to be the PSDAR submittal according to 10 CFR 50.82. This is appropriate since the decommissioning plan was required to contain all the information required by the PSDAR, but in greater detail.*
>
> *For facilities with approved decommissioning plans, decommissioning can proceed under the associated decommissioning order. Significant changes in major milestones, schedules, or cost estimates require written notification to the NRC. For facilities that submitted a decommissioning plan for NRC approval prior to the issuance of the 1996 rule but the NRC had not yet approved their plan, the 90-day period prior to initiation of major decommissioning activities began August 28, 1996.*
>
> ***Since the level of detail required in the PSDAR is significantly less than that required in decommissioning plans, licensees who have submitted a decommissioning plan for approval, or licensees with an approved decommissioning plan are encouraged to extract the pertinent detail from the decommissioning plan and submit a PSDAR update in the format and content specified by this regulatory guide."***

The D-Plan acted as LACBWR's Final Safety Analysis Report (FSAR) and provided the SAFSTOR accident analysis against which changes to the facility and the structures, systems, and components (SSCs) Important to Safety (ITS) were evaluated for adverse effects. With all spent fuel in dry cask storage, ITS SSCs are located at the on-site ISFSI. The plant has no ITS SSCs and the analyzed SAFSTOR accidents are no longer applicable, or do not create significant consequences to personnel and the public. As a result of dry cask storage, changes are being made to the D-Plan at this time to establish it as a PSDAR.

RG 1.185 further states:

> *"The purposes of the PSDAR are to (1) inform the public of the licensee's planned decommissioning activities, (2) assist in the scheduling of NRC resources necessary for the appropriate oversight activities, (3) ensure the licensee has considered the costs of the planned decommissioning activities and considered the funding for the decommissioning process, and (4) ensure the environmental impacts of the planned decommissioning activities are bounded by those considered in existing environmental impact statements.*
>
> *The rule in 10 CFR 50.82(a)(4)(i) requires that the PSDAR include (1) a description of the licensee's planned major decommissioning activities, (2) a schedule for completing these activities, (3) an estimate of the expected decommissioning costs, and (4) a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements."*

B. Description of Changes in D-Plan as of December 2011 Revision

Section 1, Introduction: This section, without the references, has been translated with editorial changes and updates to Sections 1.0 and 1.1.

Section 2, La Crosse Boiling Water Reactor Operating History: This section provided licensing related information and has been completely removed per RG-1.185.

Section 3, Facility Site Characteristics: This section provided licensing related information developed during the Systematic Evaluation Program of the late 1970s and early 1980s. This section has been completely removed per RG-1.185.

Section 4, Facility Description: This section provided a general description of the plant, buildings, and structures. Information of the buildings and structures has been translated with editorial changes and updates to Section 1.4.

Section 5, Plant Status: This section provided information of the spent fuel inventory, status of plant systems, plant nuclide inventory estimates and radiation levels, and other radiation protection information. This section provided licensing related information and has been removed per RG-1.185. Descriptions of remaining plant systems and their status has been translated with editorial changes and updates to Section 1.3 to provide information of planned decommissioning activities related to metal removal.

Section 6, Decommissioning Program: This section described the plant's post-shutdown and SAFSTOR organization, training program, quality assurance program, special nuclear material accountability, fire protection, testing and maintenance, plant monitoring, and records requirements. These topics are addressed in established LACBWR programs and procedures. The licensing related information in this section has been removed per RG-1.185. Information contained in this section related to schedule and cost funding has been translated with editorial changes and updates to Sections 2.0 and 3.0.

Section 7, Decommissioning Activities: This section described preparations and modifications for SAFSTOR, rudimentary decommissioning plans, and description of significant licensing and decommissioning activities. The licensing related information in this section has been removed per RG-1.185. Information related to significant licensing and decommissioning milestones has been translated with editorial changes and updates to Sections 1.2 and 2.0. Evaluation of the environmental impact of completed and planned decommissioning activities has been translated with editorial changes and updates to Section 4.0.

Section 8, Health Physics: This section provided licensing related information and has been completely removed per RG-1.185. This information is found in the Radiation Protection Program.

Section 9, SAFSTOR Accident Analysis: This section has been completely removed as a result of all spent fuel being placed in dry cask storage at the on-site ISFSI. Analyzed SAFSTOR accidents are no longer applicable, or do not create significant consequences to personnel and the public.

Section 10, SAFSTOR Operator Training and Certification Program: This section has been completely removed as a result of all spent fuel being placed in dry cask storage at the on-site ISFSI. Training and qualification of personnel needed for wet storage of spent fuel is no longer applicable.

All Figures and Tables: Figures and Tables provided licensing related information and have been removed per RG-1.185 with the exception of Figure 6.2, "LACBWR Schedule," which has been placed in Section 2.0.

C. Description of Changes in D-Plan/PSDAR as of November 2012 Revision

Cover Page	The cover page is reformatted and revised by adding *Post-Shutdown Activities Report* to the plan title. Review and approval signature blocks are added.
Entire D-Plan/ PSDAR	All Sections of the LACBWR D-Plan/PSDAR are reformatted and content is structured using RG-1.185 guidance. Some information previously in the D-Plan as of the December 2011 revision has been translated with editorial changes and updates to the November 2012 revision.
Page i	Table of Contents is revised to reflect the November 2012 revision of the D-Plan/PSDAR.
Page 1-1 Through Page 1-16	Section 1.0, Description of Planned Decommissioning Activities: RG 1.185 stipulates that the PSDAR should include a description of the licensee's planned activities for decommissioning. The purpose of the description is to inform the NRC and the public of the planned decommissioning by providing a general overview of the proposed decommissioning activities and identifying specific activities to be accomplished or performed. The licensee should describe (in general terms) the method or combination of methods selected for decommissioning (i.e., long-term storage followed by decontamination and dismantlement (SAFSTOR), or prompt decontamination and dismantlement (DECON)).

Section 1.0 introductory text translates information from the old introduction with editorial changes and updates and provides a general overview of LACBWR decommissioning activities. It is stated that this revision of the D-Plan establishes information in a Post-Shutdown Activities Report (PSDAR) format to provide stakeholders a better understanding of the current status of the decommissioning effort at LACBWR and the planned dismantlement activities. Subsections provide established and new additional information.

Section 1.1, Selection of SAFSTOR, translates information from the old Section 1.1 of the same title with editorial changes and updates. The section describes in general terms the method selected for decommissioning. After permanent cessation of operations, LACBWR entered the SAFSTOR mode. Limited dismantlement began in 1994, with NRC approval, prior to the Decommissioning Rule being published in 1996.

Section 1.2, Significant Post-Shutdown Licensing Actions, translates information from the old Section 7.3 with editorial changes and updates. The title of the section has been changed from, "Significant SAFSTOR Licensing Actions." This section provides a narrative of the evolution of LACBWR licensing that occurred prior to contemporary decommissioning guidance and regulation being established.

Section 1.3, Metal Removal, describes the current phase of LACBWR decommissioning that commenced in 2012 following the completion of dry cask storage. Information from old Section 5, "Plant Status," is translated with editorial changes and updates. Twenty-six (26) LACBWR systems still intact to some degree are described and are subject to the 4-year metal removal phase described in Section 2.0.

Section 1.4, Buildings and Structures, translates information from the old Section 4.2 with editorial changes and updates. Descriptions of building and structures within the radiological controlled area are provided. The disposition of these buildings and structures is yet to be determined.

Section 1.5, Decommissioning Waste Disposal, provides information stated in the LACBWR decommissioning cost study updated in 2010. Discussion of system classification relative to dose rate, waste shipping, radioactive waste recycling, and waste burial are included to provide stakeholders a better understanding of the planned disposition of waste generated during LACBWR decommissioning and dismantlement activities.

Section 1.6, Groundwater, contains new information and provides description of the groundwater investigation commenced in November 2012 supporting license termination.

Section 1.7, ISFSI Decommissioning, contains new information and provides the decommissioning plan for the on-site ISFSI.

Page 2-1 Through Page 2-3

Section 2.0, Schedule: RG 1.185 stipulates that the purpose of the PSDAR schedule is to provide information to the NRC and the public on the anticipated timing of decommissioning events, as well as to allow the NRC to schedule resources necessary for appropriate oversight activities. The relationship between the activities should be shown for major activities, so the reader understands the sequence of events as well as the timing of the events. Schedules or diagrams should clearly indicate the estimated initiation and completion of the major decommissioning activities with potential increased risk to the workers, public, or environment, or those that are unique to the facility. Any activities that will require a significant NRC licensing effort should be identified, including the start and desired end dates for activities such as the submission of defueled technical specifications, the approval and licensing of an ISFSI, the licensing activities associated with a certificate of compliance for transportation of major components, or the approval of the license termination plan.

Section 2.0 translates information from old Section 6.6, "Schedule," with editorial changes and updates. A new paragraph that describes completion of the Dry Cask Storage Project, as previously anticipated in the schedule, is added to the end of the section. Metal removal, as described in the old D-Plan and addressed in Section 1.3, commenced following dry cask storage. The figure depicting LACBWR's schedule is translated as Figure 2.1 with no substantive changes.

Page 3-1 And Page 3-2

Section 3.0, Estimate of Expected Decommissioning Costs: RG 1.185 stipulates that the PSDAR should include an updated estimate of the expected decommissioning costs. The updated cost estimate required by 10 CFR 50.82(a)(4)(i) may be (1) the amount of decommissioning funds estimated to be required pursuant to 10 CFR 50.75(b) and (c) as currently reported on a calendar-year basis at least once every 2 years to the NRC according to 10 CFR 50.75(f)(1), (2) a site-specific cost estimate that is based on the activities and schedule, (3) an estimate based on actual costs at similar facilities that have undergone similar decommissioning activities, or (4) a generic cost estimate.

Section 3.1, Decommissioning Cost Financing, translates information from old Section 6.7.2, "Decommissioning Cost Financing," with editorial changes and updates. Included in this section is the current site-specific cost estimate for remaining decommissioning and dismantlement activities.

Section 3.2, Dry Cask Storage Cost Funding, formerly Section 6.7.1, "SAFSTOR Funding," with editorial changes and updates, reaffirms DPC's plan and commitment to fund spent fuel management costs, now applicable to dry cask storage, from DPC's annual operating and maintenance budget. This spent fuel management plan was previously established for SAFSTOR conditions and shall remain unchanged during dry cask storage. This spent fuel management plan complies with the requirements of 10 CFR 50.54(bb).

Page 4-1

Section 4.0, Environmental Impact: RG 1.185 stipulates that the PSDAR should include a discussion of the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by previously issued environmental impact statements. Prior to preparing the PSDAR, the licensee should evaluate the potential environmental impacts associated with the site-specific decommissioning activities. The potential environmental impacts associated with decommissioning should be compared with similar impacts given in the Final Environmental Statement (FES) for the plant (as supplemented), in the GEIS on decommissioning (NUREG-0586), site-specific environmental assessments, and the GEIS on radiological criteria for license termination (NUREG-1496). The comparison with impacts in the GEIS should recognize the unique nature of the site. If the postulated impacts associated with decommissioning have already been considered in the plant-specific FES as supplemented, or the GEIS, the licensee should state this in the PSDAR. An analysis of the specific environmental impacts associated with decommissioning activities need not be included in the PSDAR.

<u>Section 4.0</u> affirms that the environmental impact of completed and planned decommissioning and dismantlement activities has been previously considered. LACBWR decommissioning and dismantlement activities have resulted in no significant environmental impact not previously evaluated in the NRC's Environmental Assessment in support of the August 7, 1991, Decommissioning Order or the Final Environmental Statement (FES) related to operation of LACBWR, dated April 21, 1980 (NUREG-0191).

The environmental impact of all completed and planned decommissioning and dismantlement activities is SMALL as determined by the "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (GEIS)," NUREG-0586, Supplement 1, November 2002. LACBWR decommissioning is specifically addressed in the GEIS.

"TRANSMITTAL/ NOTIFICATION/ ACKNOWLEDGMENT"

TO: **NRC Washington – Doc Control** CONTROLLED DISTRIBUTION NO. **53**

FROM: LACBWR Plant Manager 11/28/2012

SUBJECT: Changes to LACBWR Controlling Documents

I. The following documents have been revised or issued new.
DECOMMISSIONING PLAN, revised November 2012

Remove and replace all pages:

☒ 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 **CANCELLED**. Please destroy 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.