



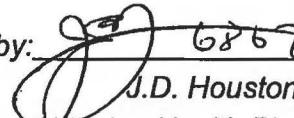
Callaway Energy Center

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Callaway Energy Center Radioactive Waste Management Plan

Revision Four

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Callaway Energy Center Radioactive Waste Interim Storage Plan
Attachment A- Current Initiatives

INTRODUCTION

Callaway Plant is committed to the safe and efficient management and interim storage of NRC waste class B and waste class C radioactive waste. Following closure of the Barnwell Radioactive Waste Repository to all licensees except for those of the Atlantic Coast Compact on 6/30/2008, Callaway is in a position in which all NRC waste class B and waste class C radioactive waste is being stored at the Callaway plant site.

Preparation for storage included the shipment of as much waste class B and waste class C resin as possible before the Barnwell closure date. This action has resulted in the elimination of any stored waste class B and waste class C resin material in need of disposal. Action also included the transfer of resin stored in the Radwaste Primary Spent Resin Storage Tank (PSRST) to liners. These liners in turn were shipped for disposal prior to the Barnwell closure date.

As of 5/29/2012, there is approximately 135 cubic feet of NRC waste class B/C media in the primary spent resin storage tank. There are two 8-120 liners of NRC waste class B/C media being stored in the shield vaults located in LLDS. This radioactive waste interim storage plan applies only to Callaway NRC class B/C waste.

NRC Class A waste will continue to be processed and disposed of through approved processing vendors and disposal sites.

GOALS

Radioactive waste management and interim storage goals for the station are:

- Provide interim storage capacity allowing for the storage of waste class B and waste class C waste based on 20 years Callaway operation without an option for the disposal of waste class B and waste class C waste. The 20 year interim storage value is based on benchmarking from industry peers.
- Ensure interim storage is performed in accordance with the requirements of 10CFR50.59.
- Through the use of benchmarking and assessments, develop and implement waste management strategies that reduce the generation rate of B/C waste and pursue options for disposal of B/C waste currently in storage at Callaway.

EXECUTIVE SUMMARY

- The Callaway waste class B and waste class C interim storage plan was based on plans developed in 1993. The plan was developed in response to a planned closure of the Barnwell Burial Site at that time. The Callaway interim storage plan that was developed in 1993 was never implemented as Barnwell resumed operation allowing the continued disposal of waste class B and waste class C waste until its closure to out of compact waste on June 30, 2008.
- The interim storage plan developed in 1993 included the addition of 20 on-site storage containers (OSSCs) on a concrete pad Plant south of the Radwaste Building. The plan also included the addition of 10 OSSCs at the same location for the interim

storage of waste class B and waste class C filters. In response to published guidance from EPRI on the operation of an interim low level waste storage facility, Callaway has changed the interim low level storage plan. This updated plan consists of constructing storage modules for high integrity containers and liners in the area currently designated as the Low Level Drum Storage Area.

CALLAWAY WASTE CLASS B AND WASTE CLASS C GENERATION RATE

Callaway currently generates class B and class C waste in the form of filter media and spent resin/charcoal media.

Filters from the reactor coolant system (RCS) and spent fuel pool clean-up system each generate class B and C waste. These filters are placed inside a 55 gallon drum at the location where the filters are taken from their filter housings. The RCS system filter housings are located in the Auxiliary Building. The spent fuel pool clean-up system filter housing units are located in the Radwaste Building. When the drums are full of filters the drums are then relocated and placed in the Radwaste high level drum storage area (HLDSA) for long term storage.

Resin and charcoal process stream media that may currently present itself as class B or class C waste includes material from the Chemical and Volume Control System (CVCS), spent fuel pool clean-up system, and the Liquid Radwaste System (LRW).

FSAR section 11.4.2.5, Packaging, Storage, and Shipment states "the HLDSA has a capacity of 395 drums". As of 5/29/2012 the HLDSA has an inventory of 138 drums. With a normal fill rate of five (5) drums per year and capacity for an additional 257 drums, the HLDSA will support the storage needs of Callaway for an additional 51 years before reaching maximum capacity. The class B and class C waste interim storage plan includes use of the HLDSA for the storage of filters for a period of 20 years. The HLDSA satisfies an industry benchmark 20 year capacity guideline for a Callaway interim waste class B/C filter storage plan. Therefore, no additional interim storage capacity for the storage of waste class B/C filters is necessary at this time.

An aggressive resin/charcoal shipping program during the first half of 2008 allowed the disposal of most waste class B and waste class C resin and charcoal media by the 7/01/08 Barnwell close date. Consequently, as of 7/22/08 there was only approximately five cubic feet of class B or class C resin/charcoal waste stored at Callaway in the PSRST.

Based on input from Callaway Chemistry and Operations Department personnel the average annual generation rate of class B and class C resin media is 90 cubic feet per year. This value is based on the following data:

- CVCS refuel clean-up mixed bed demineralizer per fuel cycle (18 months). 60 cubic feet.
- One lithiated/cation CVCS bed demineralizer every second fuel cycle. 60 cubic feet.
- One Spent Fuel Pool Clean-Up demineralizer every 4 to 6 years. 150 cubic feet.

'Short loading' is being successfully utilized at various nuclear power stations resulting in a reported media reduction of up to 33%. Sites reporting success with the short

loading of demineralizer/charcoal media vessels include Calvert Cliffs, Comanche Peak, and Diablo Canyon. CAR 201202846 has been initiated requesting that an RFR be performed to determine if short loading media is a viable option at Callaway. The Chemistry Department owns this potential process change and is currently tracking it in their business plan.

At this time, there is approximately 135 cubic feet of waste class B and waste class C resin media in the PSRST. The current inventory present in the PSRST includes resin sluiced during the last refueling outage, RF-18 and resin from the Spent Fuel Pool Cooling and Clean Up demin. The PSRST has a maximum capacity of 350 cubic feet with an administrative limit of 150 cubic feet. Based on this tank capacity and the Callaway resin media generation rate, the resin in the PSRST will have to be transferred to a liner prior to the next refueling outage scheduled for the spring of 2013. To support the needed transfer of resin from the PSRST, an 8-120 poly liner will be placed in the round process shield located in LLDSA. The resin transferred to the liner will provide sufficient free bore in the PSRST to support resin sluices scheduled in support of RF19. This liner and any future liners stored in this manner will be fully dewatered to support potential long term storage. The proposed 2013 budget allows the purchase of two modules which will give sufficient storage space to support plant operations until Callaway Energy Center has developed an alternate strategy to interim storage.

Callaway will continue to store B/C resin in this manner until a disposal option is identified and put in place by the company. The LLDSA modules are designed such that additional modules can be purchased to add storage capacity as needed. The need to purchase additional storage modules should be evaluated on an annual basis to support obtaining capital funding to purchase these modules. The lead time for the purchase of new modules is very short and does not present a concern at this time.

Callaway is currently storing two 8-120 liners of resin in the two installed storage modules located in the LLDSA. Disposal options are currently under consideration for both of these liners. The current options available are direct disposal at the WCS facility located in Andrews Texas or a resin blending program being offered by a waste processing vendor.

REDUCING GENERATION RATES AND COST

The site is currently exploring several process changes to reduce the LLW generation rates and some other options for reducing cost for processing and or disposal. This list is by no means all inclusive but presents an opportunity to make a contribution in reducing both the waste generation rate and cost for disposal.

- Filter segregation – Develop and implement segregation of Class A filters at the point of generation. This process change was implemented in 2011 for the CVCS filters in the Aux Building. An additional drum and drum host was placed in the filter change out area to allow segregation at the point of generation.
- Waste Classification monitoring software – This improvement was evaluated and not implemented. Callaway currently has monitoring set up and can

perform essentially the same function without purchasing additional software. A new area this will be implemented at in 2012 will be in monitoring the SFPCCU demin. Once a breakpoint determination is calculated for this demin we will be able to determine the cost benefit of early change out based on activity rather than chemical exhaustion. The complexity of this process will require concerted teamwork with the Chemistry group to ascertain the proper volume of resin to be used for this demin. Changing out the resin prior to going greater than NRC waste class A will result in significant cost savings for Callaway.

- Evaluate short loading of demin beds – Determine the minimum resin load required for safe operation. CAR 201202846
- Certification for the Containerized Waste Facility at Clive Utah – Significant cost savings for shipping direct to disposal site.
- Certification for disposal at WCS Waste Disposal Facility in Andrews Texas – With certification and a commercial contract in place, Callaway will have a disposal option available for NRC waste class B/C waste.
- Consolidation and Classification of Waste in HLDSA – The planned consolidation and classification of this waste will reduce the number of containers being stored in HLDSA and produce the waste classification data needed to effectively plan for disposal of the waste. This will allow budgeting funds more accurately for future disposal of this waste. CAR 201200493

CONCLUSION

Callaway Plant believes the waste class B and waste class C interim storage plan will serve Ameren until the time arrives that we have a disposal option in place for the disposal of class B and class C waste. As it stands, the interim storage plan should meet the needs of Callaway for a period of 20 years or more with the purchase of additional storage modules. It is incumbent upon Callaway staff to continue exploring methods to reduce the generation rate of our radioactive waste. In particular, we must focus on reducing the volume of B/C waste generated at Callaway.