



OFFICE OF INSPECTOR GENERAL
U.S. Department of Energy

AUDIT REPORT

DOE-OIG-19-17

February 2019

**INTERIM STORAGE OF RADIOACTIVE
CANISTERS AT THE
SAVANNAH RIVER SITE**



Department of Energy
Washington, DC 20585

February 19, 2019

MEMORANDUM FOR THE DEPUTY ASSISTANT SECRETARY FOR WASTE AND
MATERIALS MANAGEMENT, OFFICE OF ENVIRONMENTAL
MANAGEMENT

Michelle Anderson
FROM: Michelle Anderson
Deputy Inspector General
for Audits and Inspections
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on “Interim Storage of Radioactive
Canisters at the Savannah River Site”

BACKGROUND

The Department of Energy’s Savannah River Site became operational in 1951 and produces nuclear materials for national defense, research, medical, and space programs. The separation of fissionable nuclear material from irradiated targets and fuels results in the generation of liquid radioactive waste, which is stored in underground storage tanks at the site. As of August 2018, approximately 35 million gallons of liquid radioactive waste remained stored in 43 active storage tanks awaiting treatment and final disposal. The Savannah River Operations Office (Operations Office) is responsible for the day-to-day oversight of the Department’s Office of Environmental Management (Environmental Management) operations at the Savannah River Site.

In 1996, the Defense Waste Processing Facility (DWPF) at the Savannah River Site began stabilizing the high-level radionuclides in the liquid radioactive waste through a vitrification process that immobilizes the waste in a borosilicate glass matrix within a stainless steel canister. The radioactive canisters are then stored on an interim basis on-site while awaiting final shipment to a yet-to-be-determined permanent off-site Federal repository. There are currently two canister storage buildings on the Savannah River Site (Glass Waste Storage Buildings #1 and #2). As of May 2014, these two buildings had a capacity of storing a total of 4,590 radioactive canisters in a single stack configuration (calculate based upon subtracting 8 abandoned storage positions and 4 additional positions storing non-radioactive canisters from the initial design storage capacity total of 4,602).

At the end of calendar year 2017, DWPF operations had produced 4,159 radioactive canisters. The Operations Office estimates that a total of 8,170 radioactive canisters will be produced through the end of the treatment process, currently estimated to be completed by 2036, resulting in a single stack canister storage capacity shortfall for 3,580 radioactive canisters. Since 2010,

Environmental Management has considered several different strategies to increase its interim storage capacity, including the construction of a third canister storage building, and more recently, double stacking the canister storage positions in Glass Waste Storage Building #1. Because the canisters need to be safely stored until a permanent repository is identified, we initiated this audit to determine whether Environmental Management had developed an effective strategy for providing adequate interim storage for radioactive canisters at the Savannah River Site.

RESULTS OF AUDIT

While Environmental Management had considered several interim radioactive canister storage strategies until final shipment to a yet-to-be-determined permanent off-site Federal repository, the decision to double stack radioactive canisters in Glass Waste Storage Building #1 (Building #1) and single stack radioactive canisters in Glass Waste Storage Building #2 (Building #2) may not provide adequate interim storage capacity to accommodate planned DWPF radioactive canister production through 2036. We determined that Environmental Management selected this strategy without first resolving several uncertainties, including:

- The number of canister storage positions that can actually be double stacked in Building #1;
- The strategy for storing at least 1,310 radioactive canisters after Building #1 and Building #2 are filled to capacity; and
- Whether the radioactive canisters would remain double stacked in Building #1 until final shipment to a yet-to-be-determined permanent off-site Federal repository.

These uncertainties were caused in part because Environmental Management did not fully evaluate all of the technical aspects associated with double stacking the radioactive canisters in Building #1. As a result, the Operations Office may need to provide additional capacity for the interim storage of radioactive canisters sooner than Environmental Management's expected date of 2029. Further, if the workers have to move the canisters additional times because the radioactive canisters do not remain double stacked in Building #1, then the workers will be unnecessarily exposed to the health and safety risks inherently associated with each additional movement of the canisters. As of January 2018, the Department estimated that it would cost approximately \$22 million to modify all of the standard canister positions in Building #1 to a double stack configuration. These costs would need to be offset against any potential savings generated from double stacking if the lower radioactive canisters initially double stacked are removed from Building #1 and moved to a new interim on-site storage location in the future.

Interim Radioactive Canister Storage Strategies

The Operations Office studied and proposed several interim radioactive canister storage strategies until final shipment to a yet-to-be-determined permanent off-site Federal repository. Specifically:

- **2010** - The Operations Office requested and Environmental Management approved a new project to construct a third canister storage building to be included in the fiscal year (FY) 2012 budget request. Congress appropriated \$3.5 million in Project Engineering and Design funds for this project in the Department’s FY 2012 budget.
- **2011** - The Operations Office directed Savannah River Remediation LLC (SRR), its Radioactive Liquid Waste Operations contractor, to conduct an alternatives analysis in an attempt to reduce the up-front project costs and total funding demand associated with constructing the third canister storage building.
- **2012 and 2013** - In January 2012, SRR’s alternatives analysis identified several options to reduce the funding demand and up-front project costs, including an option for the storage of radioactive canisters on an outdoor pad. In 2012 and 2013, the Operations Office notified Environmental Management that it had identified an alternative project to store radioactive canisters on an outdoor pad, later referred to as the Glass Waste Storage Project, and requested that this alternative project be included in the budget request and be initiated in FY 2014 and FY 2015, respectively. However, despite the Operations Office spending approximately \$2.5 million exploring the alternative proposed in 2012 and 2013, Environmental Management officials informed us that no action was taken to include this alternative project in the budget request due to a lack of expected capital funding.

Meanwhile, in November 2013, a group of subject matter experts assembled to develop alternative interim canister storage options to provide storage capacity for at least 300 additional canisters. In September 2014, SRR concluded that all reviews and preliminary calculations showed that 300 of the standard single stack canister positions in Building #1 could be modified to a double stack configuration and provide storage capacity for 300 additional canisters. SRR also found that up to a total of 2,254 (see Table 1) standard single stack canister storage positions could potentially be modified to a double stack configuration and raise the total storage capacity for Building #1 to 4,508 canisters.

Table 1: Potential Double Stack Capacity Building #1

	(A) Design Single Stack Storage Positions	(B) Abandoned Storage Positions	(C) Non-Radioactive Canisters Stored ⁽¹⁾	(A-B-C) Potential Single Stack Canister Storage Positions	Potential Canisters Stored in Double Stack Configuration
Building #1	2,262	8	0	2,254	4,508

¹ Note: SRR did not distinguish between storage of non-radioactive vs. radioactive canisters when evaluating the feasibility of double stacking canisters in Building #1.

Subsequently, Environmental Management decided to pursue double stacking standard canister storage positions in Building #1 as its strategy for interim radioactive canister storage, and claimed that this strategy would save millions of dollars and delay the need for additional storage capacity until around FY 2029. However, there are uncertainties associated with how many of

the standard canister storage positions can actually be modified to the double stacked configuration and whether the radioactive canisters will remain double stacked until final shipment to a yet-to-be-determined permanent off-site Federal repository. Further, at this time, the Department does not have a permanent off-site Federal repository for high-level waste; therefore, the Operations Office must store the radioactive canisters on-site until a permanent off-site Federal repository is established.

Uncertainty with Double Stacking

There is uncertainty regarding how many standard canister storage positions in Building #1 can actually be reconfigured to accommodate double stacking. Specifically, Building #1 has four individual vaults: vaults A, B, C, and D, which contain a total of 2,262 standard canister storage positions. SRR officials explained that they intended to begin double stacking work in vault A and then determine to what extent the remaining vaults can be double stacked based on their lessons learned in vault A. If a specific canister storage position cannot be modified to accept the double stack configuration, the canister storage position will most likely remain in a single stack configuration. As of August 2018, SRR had completed modifications on 400 of the 546 standard canister positions in vault A and double stacked 494 canisters. It should be noted that even if SRR is successful in double stacking 4,521 radioactive canisters in Building #1, it will still need another strategy for storing at least 1,310 radioactive canisters after Building #1 and Building #2 are filled to capacity. Specifically, the Operations Office estimates that it will need interim storage capacity for a total of 8,170 radioactive canisters by 2036. If 4,521 radioactive canisters are successfully double stacked in Building #1, the combined storage capacity of Building #1 and Building #2 would be 6,860 (see Table 2) radioactive canisters, which results in the need of additional storage capacity for at least 1,310 radioactive canisters.

Table 2: Potential Future Canister Storage Capacity Building #1 and #2 (as of March 2016)

	(A) Design Storage Capacity	(B) Abandoned Storage Positions	(C) Non-Radioactive Canisters Stored	(A-B-C) Potential Future Radioactive Canister Storage Capacity	Configuration
Building #1	4,524	0	3	4,521	Potential Double Stack
Building #2	2,340	0	1	2,339	Single Stack
Potential Future Canister Storage Capacity				6,860	

Uncertainty with Radioactive Canisters Remaining Double Stacked

There is also uncertainty as to whether the radioactive canisters double stacked in Building #1 will remain or whether all or some of the radioactive canisters will be moved to a different location. Specifically, when the Operations Office was considering the Glass Waste Storage Project as a potential interim radioactive canister storage strategy, it was planning to move all of

the radioactive canisters stored at the time in Building #1 and a portion of the radioactive canisters from Building #2 (a total of approximately 4,000 canisters) to the outdoor concrete pad. This plan was predicated on the Operations Office's desire to store older, less radioactive canisters on the outdoor concrete pad and store the newly generated, higher radioactive canisters in Building #1 and Building #2. However, under the current interim radioactive canister storage strategy, the Operations Office is double stacking those older, less radioactive canisters currently stored in Building #1. At the time of our audit, Environmental Management had not made a final determination as to whether these radioactive canisters would remain double stacked in Building #1 or would be moved to an alternate location so that the newly generated, higher radioactive canisters could be stored in Building #1.

Need for Technical Evaluations

Environmental Management did not fully analyze double stacking before selecting it as its strategy for providing additional interim radioactive canister storage capacity. Specifically, a technical evaluation has not been performed to determine the extent to which all standard canister storage positions in Building #1 can be modified to the double stacking configuration. The feasibility report issued by SRR in September 2014 concluded that 2,254 of the 2,262 standard canister storage positions in Building #1 could potentially be modified to allow up to 4,508 radioactive canisters to be double stacked. The remaining eight standard canister storage positions were considered abandoned in place and thus not available for radioactive canister storage.¹ Further, the radioactive canister handling strategy document issued by SRR in July 2015 evaluated the implementing strategies and constraints with the standard canister positions located in vault A only and stated that double stacking implementing strategies and constraints with vaults B, C, and D would be detailed in future documents, which have yet to be finalized. A schedule for completing these documents has not been established. However, considering that vault A is approximately 45 percent double stacked (494 canisters double stacked out of 1,092 potential double stack positions), the Operations Office may need to direct SRR to document the double stacking implementation strategies for vaults B, C, and D now rather than later to ensure that the Operations Office maintains canister storage capacity until Environmental Management's expected date of 2029. In response to the official draft report, management stated that based on its current progress in double stacking canister storage positions in vault A, it has a high level of confidence that Building #1 can be double stacked in its entirety. In addition, despite the uncertainty of double stacking capabilities in all the vaults, Environmental Management selected double stacking the entire Building #1 as its sole strategy for providing additional interim radioactive canister storage capacity. Environmental Management officials stated that additional radioactive canister storage capacity will not be needed until FY 2029 based on the assumption that it will be successful in double stacking 4,521 radioactive canisters in Building #1 (see Table 2). Environmental Management does not currently have an alternate strategy if these double stacking efforts fail. It is therefore possible that, in the future, the Operations Office may be required to slow or even stop DWPF operations and radioactive canister production until an alternate strategy is developed for needed radioactive canister storage capacity. This is not desirable because the key to reducing the overall risk of high-level waste is processing it as expeditiously as possible through DWPF operations. In response to the

¹ Although there were eight abandoned standard canister positions in Building #1 as of September 2014, all eight positions have been recovered and are no longer considered abandoned as of January 2018.

official draft report, management stated that it had included a requirement in the Request for Proposal for the new Savannah River Site Liquid Waste Services contractor to provide additional canister storage. We validated that the Request for Proposal for the new Savannah River Site Liquid Waste Services contract included a requirement for the contractor to provide canister storage for at least an additional 800 canisters beyond the end of the new contract.

In addition, Environmental Management has not performed a technical evaluation to determine whether all the radioactive canisters that are eventually double stacked in Building #1 will actually remain double stacked, or whether those radioactive canisters will be unstacked and moved to a new interim on-site storage location to accommodate the storage of newly generated, higher radioactive canisters within Building #1. Environmental Management officials have acknowledged that additional technical evaluations are required to determine if the older, less radioactive canisters will remain in Building #1 until shipment to a yet-to-be-determined permanent off-site Federal repository. Further, the officials informed us that since additional interim radioactive canister storage is not anticipated to be needed until 2029, they are not currently working on the technical evaluation and a schedule has not been established to perform the evaluation. However, the officials also informed us that sometime between 2022 and 2023, the Operations Office will begin addressing additional interim radioactive canister storage needs and, as part of that process, will evaluate various alternatives for interim radioactive canister storage, including the determination of whether the radioactive canisters will remain in Building #1 until shipment to a yet-to-be-determined permanent off-site Federal repository. Workers are currently moving and double stacking radioactive canisters in Building #1; however, each radioactive canister they double stack between now and 2022 or 2023 may have to be moved again to a new interim on-site storage location. In response to the official draft report, management stated that all relevant technical aspects with respect to double stacking have been properly evaluated and there are no known technical issues related to double stacking these canisters for many decades until an off-site disposal facility is available. Further, management stated that even though the Department has no intention of moving or handling these double stacked canisters once they have been placed in such a configuration, there is no restriction on moving them if future conditions warrant it. We did not validate these statements by management.

Potential Impact of Radioactive Canister Storage Issues

As a result of the uncertainties associated with the double stacking strategy, the Operations Office may need to develop additional interim radioactive canister storage capacity sooner than Environmental Management's expected date of 2029. The operation of the high-level waste system at the Savannah River Site is dependent upon many factors, including available storage capacity for radioactive canisters produced through DWPF. The need for additional radioactive canister storage capacity in 2029 is predicated on the expectation that 4,521 radioactive canisters can be double stacked in Building #1. Environmental Management does not currently have an alternate strategy for providing adequate radioactive canister storage capacity should double stacking efforts fail to provide all of the assumed capacity. Therefore, if the Operations Office is unable to double stack 4,521 radioactive canisters within Building #1, as planned, additional radioactive canister storage capacity will be required prior to 2029, or DWPF production may have to be slowed or possibly even stopped.

Further, if the workers have to move the lower radioactive canisters currently being double stacked in Building #1 to another location in order to store higher radioactive canisters in Building #1, then the workers will be unnecessarily exposed to the health and safety risks inherently associated with each additional movement of the canisters. For example, to get the canisters double stacked, the workers must first move each canister out of its standard position so that the position can be modified to a double stack configuration (first movement of the canister). Once the position is modified, the canisters are then moved back into the double stacked position (second movement of the canister). If the decision is made to store the higher radioactive canisters in Building #1 instead, the workers must then move the lower radioactive canisters out of Building #1 (potentially up to 4,000 canisters) to a new interim on-site storage location (third movement of the canister). As of January 2018, the Department estimated that it would cost approximately \$22 million to modify all of the standard canister positions in Building #1 to a double stack configuration. These costs would need to be offset against any potential savings generated from double stacking if the lower radioactive canisters initially double stacked are removed from Building #1 and moved to a new interim on-site storage location in the future.

RECOMMENDATIONS

We acknowledge that the Department has a strategy for the interim storage of radioactive canisters that allows DWPF to currently accomplish mission requirements. However, in light of the uncertainties associated with the double stacking strategy, the Operations Office may need to develop additional interim radioactive canister storage capacity sooner than Environmental Management's expected date of 2029. As such, we recommend that the Office of Environmental Management's Deputy Assistant Secretary for Waste and Materials Management develop and implement a strategy for the interim storage of radioactive canisters at the Savannah River Site that includes:

1. Determining how many standard canister storage positions can be double stacked in Glass Waste Storage Building #1;
2. Determining whether the radioactive canisters that are eventually double stacked in Glass Waste Storage Building #1 will remain double stacked until shipment to a yet-to-be-determined permanent off-site Federal repository; and
3. Ensuring adequate storage for all radioactive canisters produced through the end of the DWPF treatment process at the Savannah River Site.

MANAGEMENT RESPONSE

Management concurred with each of the report's recommendations and indicated that, in most cases, corrective actions have been initiated to address the issues identified in the report. For instance, management indicated that ongoing successful double stacking efforts in Building #1 have resulted in a high level of confidence that all 2,262 positions can be successfully double stacked. Further, management indicated that while it has no intention of moving or handling these double stacked canisters, there is no current or future restriction on moving them, if

necessary. Finally, management commented that it has included a requirement in the Request for Proposal for the new Savannah River Site Liquid Waste Services contractor to provide additional canister storage.

AUDITOR COMMENTS

Management's comments and planned corrective actions are responsive to our recommendations. Also, we validated that the Request for Proposal for the new Savannah River Site Liquid Waste Services contract includes a requirement for the contractor to provide canister storage for at least an additional 800 canisters beyond the end of the new contract. Management's comments are included in Attachment 2.

Attachments

cc: Deputy Secretary
Chief of Staff
Assistant Secretary, Office of Environmental Management

OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE

We conducted this audit to determine whether the Department of Energy's Office of Environmental Management had developed an effective strategy for providing adequate interim storage for radioactive canisters at the Savannah River Site.

SCOPE

The audit was performed from December 2013 through February 2019. It included a review of the Savannah River Site's historical performance and current and future plans for storing radioactive canisters. We conducted audit work at the Savannah River Site near Aiken, South Carolina in conjunction with the Department's Office of Tank Waste and Nuclear Material in Washington, DC. The audit was conducted under Office of Inspector General project number A14SR013.

METHODOLOGY

To accomplish the audit objective, we:

- Reviewed applicable Federal regulations and requirements;
- Reviewed the Savannah River Site Liquid Waste System Plan;
- Reviewed operational budgets for the Radioactive Liquid Tank Waste Stabilization and Disposition activities at the Savannah River Site;
- Reviewed the Federal Facility Agreement and Site Treatment Plan for the Savannah River Site;
- Reviewed reports related to the planning and development of alternatives for providing additional canister storage at the Savannah River Site;
- Held discussions with Department and contractor personnel regarding the storage of radioactive canisters at the Savannah River Site; and
- Assessed Department decisions regarding additional canister storage capacity alternatives.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, we assessed significant internal controls and compliance with laws and regulations to the extent necessary to

satisfy the audit objective. In particular, we assessed the Department's implementation of the *GPRRA Modernization Act of 2010*. We determined that the Department had established performance measures related to the storage of radioactive canisters at the Savannah River Site. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not rely on computerized data to accomplish the audit objective. Therefore, an assessment of the reliability of computer processed data was not performed.

Management waived an exit conference on January 29, 2019.

MANAGEMENT COMMENTS



Department of Energy

Washington, DC 20585

November 2, 2018

MEMORANDUM FOR MICHELLE ANDERSON
DEPUTY INSPECTOR GENERAL
FOR AUDITS AND INSPECTIONS
OFFICE OF INSPECTOR GENERAL

FROM: ANNE MARIE WHITE 
ASSISTANT SECRETARY
FOR ENVIRONMENTAL MANAGEMENT

SUBJECT: Management Response to the Office of Inspector General Draft
Audit Report, *Interim Storage of Radioactive Waste Canisters
at the Savannah River Site (A14SR013)*

The Department of Energy (DOE) has reviewed the subject report and provides the attached Management Response requested in your October 10, 2018, memorandum. DOE appreciates the Office of Inspector General (IG) taking into account the additional information we provided after issuance of the draft report on July 3, 2017.

DOE concurs with all three of the IG’s recommendations. In most cases, DOE has already implemented appropriate activities addressing them. We have provided our Management Response to the recommendations, and additional comments regarding the three uncertainties discussed in the draft report. DOE believes that the current draft report provides a fair assessment of the process to plan and manage the radioactive waste canisters.

Double stacking canisters in Glass Waste Storage Building (GWSB) #1 has shown to be successful for all storage positions in vault A, and DOE has a high level of confidence that all positions in the building can be double stacked. Our analysis considered the uncertainty in availability of an off-site storage or disposal capability, and we expect all double-stacked canisters to remain in this configuration until such time as they can be transferred to an off-site facility. With this in mind, if the canisters would ever need to be moved unexpectedly before a facility is available, DOE is aware of no restrictions preventing this possibility. DOE’s intent in increasing the storage capacity in GWSB #1 is to alleviate the immediate need for an additional storage facility for waste canisters and to provide ample time to develop such a facility if needed. DOE estimates one will not be needed until 2029.



DOE appreciates the opportunity to submit this response for inclusion in the final audit report. If you have any questions, please contact me at (301) 903-7514.

Attachment

cc: Michael Budney, SRS
Jeff Griffin, EM-3
Mark Gilbertson, EM-4
Mark Senderling, EM-4.2
P. Bosco, EM-5
Leslie Jackson, EM-5.112

MANAGEMENT RESPONSE
IG Report IG-30 (A14SR013)
Interim Storage of Radioactive Canisters at the Savannah River Site
October 30, 2018

We recommend that the Office of Environmental Management's Deputy Assistant Secretary for Waste and Materials Management develop and implement a strategy for the interim storage of radioactive canisters at the Savannah River Site that includes:

Recommendation 1:

Determining how many standard canister storage positions can be double stacked in Glass Waste Storage Building #1; .

Management Response: Concur

DOE has determined that all 2,262 positions in GWSB #1 can be double stacked, providing storage for a total of 4,524 canisters in GWSB #1. As of the date of this response, the double stacking initiative has successfully modified and recovered use of all storage positions in vault A, including previously abandoned positions, and 526 canisters are stored in double stack positions. With over 25% of the total engineered metal plugs installed and about 38% of the total cross-bars removed from GWSB #1, there has been no indication of any issues or concerns that could prevent successful storage of canisters in GWSB #1 in a double stacked configuration. Therefore, the department has a high level of confidence that GWSB #1 can be double stacked in its entirety.

Recommendation 2:

Determining whether the radioactive canisters that are eventually double stacked in Glass Waste Storage Building #1 will remain double stacked until shipment to a yet-to-be-determined permanent off-site Federal repository.

Management Response: Concur with Comment

All relevant technical aspects with respect to double stacking have been properly evaluated. There are no known technical issues related to double stacking of these canisters for many decades until an off-site disposal facility is available. However, even though the Department has no intention of moving or handling these double stacked canisters once they have been placed in such a configuration, there is no restriction on moving them if future conditions warrant it.

Recommendation 3

Ensuring adequate storage for all radioactive canisters produced through the end of the DWPF treatment process at the Savannah River Site.

Management Response: Concur

Based on its most recent Liquid Waste System Plan (Rev. 20), the Department would need approximately 1,310 additional canister storage positions, in addition to the 4,524 double stacked positions in GWSB #1 and 2,339 single stacked positions in GWSB #2, for the total inventory of radioactive waste canisters projected. Consequently, predicated on the presumption that no other alternatives can be employed to remove canisters from the site, the Department estimates that additional storage capacity will be needed by the year 2029. The Department has included a requirement in the Request for Proposal (RFP) for the Savannah River Site Liquid Waste Services contract requiring the new contractor to provide additional canister storage.

DOE-SR RESPONDING TO IG'S COORDINATION DRAFT REPORT
"Interim Storage of Radioactive Canisters at the Savannah River Site" IG-30 (A14SR013)
October 18, 2018

Technical Comments

- No technical comments

General Comments

- The report provides a fair assessment of DOE process to plan and manage DWPF canister interim storage capacity. The uncertainties identified in the report were taken into consideration as inputs and assumption into our short- and long-term planning process.

Uncertainty 1 - the number of canister storage positions that can actually be double stacked in Building #1

The double stacking initiative has successfully modified and recovered use of all storage positions in vault A, including previously abandoned positions. With over 25% of the total metal engineered plugs installed and about 38% of the total cross-bars removed from GWSB #1, there has been no indication of any issues or concerns that could prevent successful storage of canisters in GWSB#1 in a double stacked configuration. Therefore, the department has a high level of confidence that GWSB #1 can be double stacked in its entirety.

Uncertainty 2 – the strategy for storing at least 1,310 radioactive canisters after Building #1 and Building #2 are filled to capacity

The department has identified the future need of approximately 1,310 additional canister storage positions for the rest of DWPF mission. This value is predicated on the presumption that no other alternatives can be employed to remove and/or relocate canisters offsite and they will remain at this interim facility until final repository becomes available. Consequently, the department has targeted, based on DWPF production projections, that this additional storage capacity will be needed by year 2029; therefore, resources will be allocated well in advance to address this need accordingly.

Uncertainty 3 – whether the radioactive canisters would remain double stacked in Building #1 until final shipment to a yet-to-be-determined permanent off-site Federal repository

All relevant technical aspects with respect to double stacking have been properly evaluated. There are no technical issues related to double stacking of these canisters until there are shipped to a final repository. Even though the department has no intention of moving or handling these double stacked canisters, once they have been placed in such configuration, there is not or ever has been any restriction to move them if that were the case.

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