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DOE Packaging Certification Program

**Safety Evaluation Report for
Request to Amend Certificate of Compliance Number 9979
to Authorize Changes to the 30- and 55-Gallon Drum
Designs for Fabrication**

Docket No. 19-19-9979

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Date:

7/22/19

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This Safety Evaluation Report (SER) documents the U.S. Department of Energy (DOE) Packaging Certification Program (PCP) independent technical review of the application and supplements submitted for the Savannah River Operations Office (SR) by the Savannah River National Laboratory (SRNL) to amend DOE Certificate of Compliance (CoC) Number 9979 to authorize optional changes to the 30-gallon drum seam weld for fabrication and changes to the 55-gallon drum design for fabrication, improved performance, and consistency with the 30- and 55-gallon drum designs for the Model 9981 packaging.

Evaluation

By letter dated November 29, 2018,^[1] the Savannah River National Laboratory (SRNL) prepared and submitted an application for SR to DOE PCP to amend DOE CoC 9979 to authorize an option to use gas tungsten arc welding (GTAW) to butt weld the seam of the 30-gallon drum in lieu of the resistance weld method. The applicant's technical justification to support this change included Drawing R-R2-G-00058 Revision 5, a chapter-by-chapter evaluation for the impact of the GTAW weld method on the existing Safety Analysis Report for Packaging (SARP) Revision 5, and a page change to SARP Revision 5 (page Appendix 1.1 - ii). This option for fabrication of the 55-gallon drum was previously authorized in CoC 9979 Revision 9, Docket 18-52-9979.

During DOE PCP staff's review of the Model 9981 package design (Docket 18-32-9981), staff and the applicant agreed that welding, fabrication, and design features of the 30- and 55-gallon drums for the Models 9979 and 9981 should be as consistent as practical, since Model 9981 is based on the Model 9979 design, but with a larger payload capacity.

The applicant submitted a revised application on February 22, 2019^[2] that included changes to Drawings R-R1-G-00026, R-R1-G-00027, R-R2-G-00057, R-R2-G-00058 and R-R2-G-00059 to clarify welding requirements for consistency with the Model 9981, and SARP page changes (Appendix 1.1 – ii, 9-22, and 9-31) to implement the revised welding requirements. Drawings R-R1-G-00027, R-R2-G-00057, and R-R2-G-00059 also included three additional design changes options to improve the performance of the Model 9979 55-gallon drum, based on fabrication and test results of the 55-gallon drum for the Model 9981. These design changes were:

1. Alternative 55-gallon drum split-ring lug profile design,
2. The option for use of spacer rods in place of spacer tabs in 55-gallon drum, and
3. The option to weld spacer studs in the 55-gallon drum lid.

The revised application did not include an analysis to demonstrate why these changes would not affect the safety performance of the 9979 package; consequently, on April 30, 2019, in response to QO's issued by DOE PCP on April 12, 2019, the applicant submitted^[3] a chapter-by-chapter evaluation of the impact of each of the three changes on the 9979 packaging's safety

performance and additional SARP page changes (1-3, 2-13, 2-45, and 2-46) to implement their evaluation.

PCP staff reviewed the 9979 SARP and page changes, including the revised drawings and the applicant's chapter-by-chapter safety evaluation, and concluded that GTAW butt weld method will provide equivalent welds on the 9979 packaging's 30-gallon drum as the resistance seam welding method. In addition, staff finds that the 55-gallon drum split-ring lug profile change, the use of spacer studs in place of spacer tabs in the 55-gallon drum, and the option to stud weld the spacer studs in the 55-gallon drum lid should not affect the safety performance of the 9979 packaging, and will provide reasonable assurance that the regulatory requirements of 10 CFR Part 71 have been met.

Condition of Approval

The 9979 certificate revision was changed from Revision 12 to Revision 13, with the following changes:

- Figure 1, page 2 – Callout revised to “55-Gallon Liner Axial/Radial Spacer Tab (3) or optional studs (4) not shown”
- Drawings 5.(a)(3):
 - R-R1-G-00026 revised from Revision 6A to Revision 8A
 - R-R1-G-00027 revised from Revision 6A to Revision 7A.
 - R-R2-G-00057 revised from Revision 10 to Revision 11A.
 - R-R2-G-00058 revised from Revision 4 to Revision 6A.
 - R-R2-G-00059 revised from Revision 6 to Revision 7A.
- 5.(d) Condition 14, was revised to add “... Revision 12 of this certificate may be used until July 31, 2020.”
- Supplement 5.(e)(6) was revised to “*Safety Analysis Report for Packaging – Model 9979 Type AF-96, S-SARP-G-00006, Revision 5, Pages-changes: Appendix 1.1 - ii, 9-22, and 9-31, February 22, 2019.*”
- Supplement 5.(e)(7) was revised to “*Model 9979 Type AF 55-Gallon Drum Subassembly and Weldment, Drawing No. R-R2-G-00057, Revision 11A, February 19, 2019*”
- Supplement 5.(e)(13) was added “*Application for 9979 Package CoC Amendment to Address 30-Gallon Drum Welding Requirements, SRNL-L4500-2018-00117, Rev. 0, November 29, 2018.*”
- Supplement 5.(e)(14) was added “*Revised submittal for Docket 19-19-9979, SRNL-L4500-2018-00011, Rev. 0, February 22, 2019.*”
- Supplement 5.(e)(15) was added “*Justification for Docket 19-19-9979 Requested SARP Changes, SRNL-L4500-2019-00018, Rev. 1, April 30, 2019.*”
- Supplement 5.(e)(16) was added “*Safety Analysis Report for Packaging – Model 9979 Type AF-96, S-SARP-G-00006, Revision 5, Pages-changes: 1-3, 2-13, 2-45, and 2-46, April 30, 2019.*”

- Supplement 5.(e)(17) was added:
 - “*Model 9979 Type AF 30-Gallon Container Split Ring Assembly (U)*, Drawing No. R-R1-G-00026, Revision 8A, February 13, 2019
 - “*Model 9979 Type AF 55-Gallon Drum Lid Split Ring Assembly (U)*, Drawing No. R-R1-G-00027, Revision 7A, February 13, 2019
 - “*Model 9979 Type AF 55-Gallon Drum Subassembly and Weldment*, Drawing No. R-R2-G-00057, Revision 11A, February 19, 2019
 - “*Model 9979 Type AF 30-Gallon Drum (U)*, Drawing No. R-R2-G-00058, Revision 6A, February 19, 2019
 - “*Model 9979 Type AF 55-Gallon Drum Lid Subassembly and Weldment (U)*, Drawing No. R-R2-G-00059, Revision 7A, February 19, 2019

Conclusion

Based on the statements and representations in the application, as supplemented, and PCP staff’s confirmatory evaluation, staff finds that the changes do not affect the performance of the package and will provide reasonable assurance that the regulatory requirements of 10 CFR Part 71 have been met, subject to the conditions above.

References

- [1] *Application for 9979 Package CoC Amendment to Address 30-Gallon Drum Welding Requirements*, SRNL-L4500-2018-00117, Rev. 0, Letter from Robert Watkins to James Shuler, November 29, 2018, enclosures (SARP Revision 5 page-change Appendix 1.1-ii and Drawing R-R2-G-00058_R5).
- [2] *Revised submittal for Docket 19-19-9979*, SRNL-L4500-2018-00011, Rev. 0, Letter from Robert Watkins to James Shuler, February 22, 2019, with enclosures (SARP Revision 5 page-changes Appendix 1.1 – ii, 9-22, and 9-31; and Drawings R-R1-G-00026, Revision 8A, R-R1-G-00027, Revision 7A, R2 G-00057, Revision 11A, R R2 G-00058, Revision 6A, and R R2 G-00059, Revision 7A).
- [3] *Justification for Docket 19-19-9979 Requested SARP Changes*, SRNL-L4500-2019-00018, Rev. 1, Letter from Robert Watkins to James Shuler, April 30, 2019, with enclosures (SARP Revision 5 page-changes 1-3, 2-13, 2-45, and 2-46).