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**DOE Packaging Certification Program**

**Safety Evaluation Report for  
Request to Authorize Non-Conforming Gasket Material in  
the 9979 Package**

**Docket No. 16-39-9979**

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Date:

12/23/17

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This Safety Evaluation Report (SER) documents the U.S. Department of Energy (DOE) Packaging Certification Program (PCP) technical review of the application submitted by the Savannah River National Laboratory (SRNL), for the Savannah River Operations Office (SRO), to amend DOE Certificate of Compliance (CoC) Number 9979 to authorize use of a gasket that does not conform to the elongation requirements in CoC drawing R-R4-G-00062.

## Evaluation

By a letter <sup>[1]</sup> dated August 15, 2016, as supplemented <sup>[2, 3]</sup> October 11, 2016 and February 15, 2017, SRNL requested DOE PCP to amend DOE CoC Number 9979 <sup>[4]</sup>, to authorize newly fabricated silicone gaskets that do not conform to CoC <sup>[4]</sup> Drawing R-R4-G-00062, Rev. 3.

The applicant requested DOE to authorize use of two hundred (200) silicone gaskets from Batch No.0057022890, Lot # S0059225, produced by Parker Hannifin Corporation in accordance with Drawing R-R4-G-00062, Rev. 3. This batch/lot of gaskets exceeds the standard for maximum elongation change and therefore does not conform to the authorized drawing. Each gasket is installed between the 30-gallon drum lid (Drawing R-R2-G-00060, Rev. 4) and the 30-gallon drum (Drawing R-R2-G-00058, Rev. 3), and is secured by the 30-gallon split-ring (Drawing R-R1-G-00026, Rev. 4). Drawing R-R4-G-00062, Rev. 3 specifies that the silicone gasket be in accordance with ASTM D2000, specification M3GE, for which the elongation specification for maximum elongation change is -30 (i.e. 30%). The measured value of the subject batch/lot is -49 (i.e. 49%). This elongation measurement was performed at 225°C (437°F) after 70 hours, so the acceptance test conditions exceed the package maximum normal conditions of transport (NCT) temperature of the gaskets at 62°C (143°F) and the maximum hypothetical accident conditions (HAC) temperature of the gaskets at 163°C (326°F), per the SARP <sup>[5]</sup>. The gasket material from the subject batch/lot remains elastic when it was elongated and has an elongation limit to break in excess of 150%. Based on the applicant's evaluation, the non-conforming condition (i.e., max elongation change of 49%) does not affect the safety performance of the package, and requests the gaskets may be used as-is.

PCP staff reviewed the application, as supplemented, and agree with the applicant's evaluation that the non-conforming silicone gasket material produced Batch No.0057022890, Lot # S0059225 has no effect on the safety performance of the package.

## Condition of Approval

This certificate authorizes use of two hundred (200) silicone gaskets (Batch No.0057022890, Lot # S0059225) produced by Parker Hannifin Corporation in accordance with the Drawing R-R4-G-00062, Rev. 3

Revision 5 of this certificate may be used until February 28, 2018.

All other conditions of CoC Number 9979 remain the same.

## Conclusion

Based on the statements and representations in the application, as supplemented, PCP staff concludes that the non-conforming gaskets do not affect the ability of the package to meet the requirements of 10 CFR Part 71, subject to the conditions listed above.

## References

- [1] Letter, *Alternative Silicone Gasket Material for 9979 30-gallon Drum*, SRNL-L4500-2016-00103, from Paul S. Blanton, Packaging Technology and Pressurized Systems, Savannah River National Laboratory, to Dr. James M. Shuler, DOE Packaging Certification Program, August 15, 2016.
- [2] Letter, *Alternative Silicone Gasket Material for 9979 30-gallon Drum and SARP Chapter Evaluation*, SRNL-L4500-2016-00106, from Paul Blanton, Savannah River National Laboratory, to Dr. James M. Shuler, DOE Packaging Certification Program, October 11, 2016.
- [3] Letter, *Alternative Silicone Gasket Material for 9979 30-gallon Drum and SARP Chapter Evaluation*, SRNL-L4500-2016-00106, Revision 1, from Paul Blanton, Savannah River National Laboratory, to Dr. James M. Shuler, DOE Packaging Certification Program, February 15, 2017.
- [4] DOE Certificate of Compliance, Number 9979, Revision 5.
- [5] Safety Analysis Report for Packaging Model 9979 Type AF-96, S-SARP-G-00006, Revision 4, March 2015.