Appendix K

NUCLEAR WASTE MANAGEMENT PROCEDURE Sandia National Laboratories	**Software Problem Report (SPR)**	**Form Number: NP 19-1-10** **Page** 1 **of** 1

1. **Software Name and Version:** PRELHS Version 2.45
2. **SPR Classification:**

☐ Major (Problems that cause the calculations to be re-run or necessitates a change to all baseline documents, if this is a condition adverse to quality initiate a CAR per NP 16-1. An impact statement is needed from each person designated by Responsible Manager)

☒ Minor (Everything else)

3. **Summary of Error:** [how to reproduce it and suggestions for fixing it (optional)] (attach pages as needed)

Two issues have been identified in the PRELHS code. First, PRELHS expects cumulative probability to be defined in the range [0,1]. Specifying a minimum cumulative probability greater than zero, or a maximum cumulative probability less than one, may result in LHS failing to interpolate a parameter sample value, outputting a zero instead. PRELHS should detect this issue and raise an error for the user.

Second, distribution data is currently being ordered by the distribution value. Within a distribution, a value may be repeated in order to define a vertical step in cumulative probability; however, ordering by value can cause the probabilities at this value to be swapped, resulting in a negative probability increment. Distribution data should be ordered by order index instead, and negative probability increments should raise an error.

4.	Todd Zeitler **Code Team/Sponsor Name** (*print*)	*Signature on File* Signature	8/2/2022 Date
5.	L. Michael Feng **Technical Reviewer Name** (*print*)	*Signature on File* Signature	08/02/22 Date
6.	Shelly R. Nielsen **QA Reviewer Name** (*print*)	Shelly R. Nielsen Signature	8-2-2022 Date
7.	Steve Wagner **Responsible Manager Name** (*print*)	Steve Wagner Signature	8-2-2022 Date
8.	Jennifer Long **SCM Coordinator Name** (*print*)	Jennifer Long Signature	8/2/22 Date
9.	**SPR No.** (Year and sequence, e.g., 04-001):	22-001	

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