

Attachment A**PWROG Comments on Draft Safety Evaluation for PWROG-15060-P**

Table 1 below provides the PWROG comments on the NRC Draft Safety Evaluation (DSE) for PWROG-15060-P.

Table 1 – PWROG Comments on Draft Safety Evaluation (DSE)				
DSE Page No.	DSE Line No.	PWROG Comment	Basis for Comment	NRC Response
9	32	Delete the requirement to have a horizontal pipe following the down-comer from this statement.	Only a vertical down-comer is required to apply the TR methods. Requiring a horizontal pipe would eliminate application of TR to accumulation locations immediately upstream of pump with vertical inlet.	
14	9-13	Delete the requirement to address RCS chemical effects.	See Attachment B, Section B.1.	
15	6	Change 10^2 to $10D^{2.5}$.	Refer to Section 3.3 of WCAP-17276-P.	
15	34-36	Change the text to state: “The Purdue tests exhibited a hydraulic jump in the lower horizontal pipe during some of the tests. Flow downstream of the jump transported gas towards the pump, and the TR provided methods to evaluate the acceptability of the gas transport.”	See Attachment B, Section B.2.	
16	39	The phrase “time over which fluid enters the elbow”	The parameter Δt_{in} in WCAP-17271-P Equation 10-6 is defined as the total	

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		should be replaced with “time over which gas enters the elbow.”	time period over which gas is entering the elbow	
17	1-11	Change to indicate “void fraction located to the left of the sketch is much less than occurring near the elbow. However, the gas near the elbow is stagnant, whereas the gas to the left of the jump is flowing towards the pump.”	See Attachment B, Section B.2.	
17	46-48	Delete the requirement to include a safety factor when using TR Table 3-2.	See Attachment B, Section B.3.	
18	7-8	Delete the requirement to include a safety factor when using TR Table 3-2.	See Attachment B, Section B.3.	
18	12-14	Delete the statement that “TR Eq. 6-6 was incorrectly assumed to hold for $1 \leq N_{FR} \leq 2.25$ with $\beta_{\min \text{ reqd}} = 0.188$ for $N_{FR} > 2.25$.”	See Attachment B, Section B.4.	
18	14-15	The DSE states: “In discussing TR Figure 6-12, the TR statement that β_{\max} is less than 0.188 is incorrect.” The	The TR will be revised based on the DSE. However, it should be noted that the value of $L_s/D=10.0$ is based on $\beta < 0.188$ using TR Equation	

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		PWROG will correct this statement in the TR. The TR text will be revised to state that $\beta_{\max} < 0.188$ for $0 < L_s/D < 10.0$ instead of $0 < 12L_s/D < 16.7$, as currently stated in the TR. TR x-axis of Figure 6-12 will be revised to have a maximum value of 10.0. This revision has no downstream impacts in the TR.	6-7 and is not meant to imply that all of the data points in TR Figure 6-12 will have $\beta < 0.188$.	
18	17-19	Delete the last sentence indicating that TR Equation 6-9 was not substantiated.	See Attachment B, Section B.5.	
18	36-39	Delete: “However, the Purdue tests appear to provide a β_{\max} that is independent of N_{FR} in contrast to the W values that show an increase in β_{\max} with increasing N_{FR} .”	See Attachment B, Section B.5.	
18	41-46	Revise conclusion (1) to eliminate N_{FR} range. Revise conclusion (3) to state that TR provides a conservative method for predicting maximum shock	See Attachment B, Section B.4. See Attachment B, Section B.7.	

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		length. Eliminate conclusion (5) that use of average fluid properties (void fraction) must be further justified.	See Attachment B, Section B.6 and B.7.	
21	28-30	Delete the requirement to address RCS chemical effects.	See Attachment B, Section B.1.	
25	8	“WM11” should be “VM11.”	Typographical error in DSE.	
26	8	“49 – 90 = 41 sec” should be “90 – 49 = 41 sec.”	Typographical error in DSE.	
41	15-16	The DSE states: “TR coverage of Section 3.15.3 of the NEI-09-10 SE is incomplete but when the complete NEI-09-10 SE listed items are addressed, it is acceptable.” What aspects of Section 3.15.3 of the NEI-09-10 SE are incomplete?	N/A	
42	16-19	Delete the requirement to address RCS chemical effects.	See Attachment B, Section B.1.	
45	1-3	Delete the sentence: “This was also assumed to indicate that the DC and elbow could	See Attachment B, Section B.2.	

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		accumulate no additional air and air entering the DC would result in the same quantity being expelled into the lower horizontal pipe.”		
45	33-36	This statement on page 6-12 of the TR will be corrected to state: “Therefore, the peak flux at the start of the test is what initiates formation of the kinematic shock and as long as the gas influx is greater than the entrainment rate at the shock exit and the gas transport through the elbow, the shock will continue to grow.”	The DSE comment relates to a typographical error in the TR. The TR used “less than the entrainment rate” rather than “greater than the entrainment rate.” The description of the process in the TR will also be enhanced by acknowledging that some of the air that exits the down-comer is transported through the elbow and the horizontal pipe.	
46	1-4	The second sentence should be deleted: “However, the Purdue tests appear to provide a β_{max} that is independent of N_{FR} in contrast to the W values that show an increase in β_{max} with increasing N_{FR} .”	See Appendix B, Section B.5.	
46	19-22	These lines should be deleted.	The difference between the DSE proposed correlation and the TR correlation is insignificant. In addition, Appendix B, Section B.4	

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			provides a basis for the fact that the TR correlation is conservative over the range of applicability.	
46	24-26	These lines should be deleted.	TR Equation 6-6 is not intended to be used for $N_{FR} < 1$.	
47	6-12, 14-16	These statements should be deleted.	See Appendix B, Section B.4.	
48	5-8	The statements concerning the trend being incorrect and TR Equation 6-9 not being substantiated should be removed.	See Appendix B, Section B.5.	
49	14-16	The TR will be corrected as indicated in our comment on DSE Page 18, Lines 14-15.	N/A	
50	1-2	Delete the statement “The TR incorrectly gives this as α_{ave} instead of α_{max} .”	See Appendix B, Section B.6	
50	19-24	Revise conclusion (1) to eliminate N_{FR} range. Revise conclusion (3) to state that TR provides a conservative method for predicting maximum shock length. Eliminate conclusion (5) that use of	See Attachment B, Section B.4. See Attachment B, Section B.7. See Attachment B, Section B.6 and B.7.	

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		average fluid properties (void fraction) must be further justified.		
55	21-22	The TR will be revised to incorporate DSE comment.	N/A	
55	28-30	Replace β_{MAX} with β_{AVE} .	The intent of the TR is to verify β_{AVE} meets Table 3-1 or Table 3-2	
56	8-10	The TR will be revised to incorporate.	N/A	
57	7-9	Remove statements concerning the need to apply a safety factor when using Table 3-2.	See Appendix B, Section B.3.	
73	7,15	Eliminate the restriction of usage to past operability.	See Appendix B, Section B.8.	
73	13-17	Revise statement to acknowledge that the TR uses a conservative method to identify kinematic shock location in lower horizontal header.	See Appendix B, Section B.6 and B.7.	
74	8-12	Eliminate requirement to address RCS water chemistry.	See Appendix B, Section B.1.	
76	6-8	This will be corrected in TR.	N/A	
76	10-11	Delete statement that TR Figure 12-8 is an oversimplification and is not acceptable.	Figure 12-8 is merely a process diagram implementing TR Section 6.3.6. On DSE Page 52,	

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			Section 4.5, the NRC states this methodology is acceptable. See Appendix B, Section B.9.	
76	13-14	Eliminate restriction on N_{FR} range for TR Equation 6-6.	See Appendix B, Section B.4.	
76	16-17	Delete the DSE statement: “TR Eq. 6-20 incorrectly provides α_{avg} . The correct result is α_{max} . They differ by greater than a factor of two.”	See Appendix B, Section B.6.	

This page was added to the quality record by the PRIME system upon its validation and shall not be considered in the page numbering of this document.

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