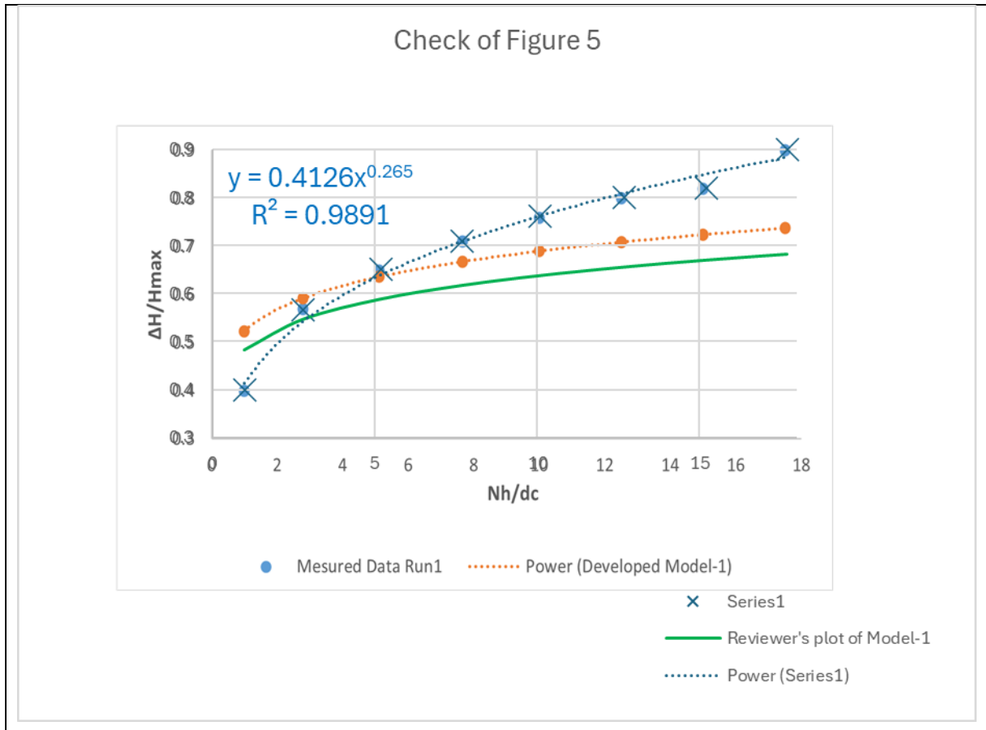
SDI FINAL EVALUATION FORM 1.1

PART 1:

Journal Name:	Journal of Engineering Research and Reports
Manuscript Number:	**Ms_JERR_130296**
Title of the Manuscript:	**Three New Approaches to estimating Energy Losses in Stepped Spillways with the Channel slope of 8.9o.**
Type of Article :	**Original Research Article**

PART 2:

FINAL EVALUATOR'S comments on revised paper (if any)	**Authors' response to final evaluator's comments**
In my first review, my final comment on the Conclusions section was clipped short and apparently did not fully reach the authors. I meant to say: The Conclusions section states: The results from the developed models, Eq (9) to Eq (11), compare well with the measured data sets (Run 1 to Run 4) in terms of energy dissipation, with the coefficients of correlation that range between 0.95 and 1.0. My comment (which was not included) was: I disagree strongly with the conclusion. The comparison is relatively poor and I believe the correlation coefficients are calculated incorrectly. ……. After reviewing this revision, my opinion is still the same. The authors challenged me to test their curve fits and my observations about the insensitivity of results to various parameters. I find that my original observations were on-target. Model-1 is almost absolutely insensitive to N and h (which is obvious from the fact that the exponents of those terms are nearly zero). Furthermore, N, h, and q are fixed for all data sets, so the models are just functions of $(N \cdot h)/d_c$. My previous observation that the fit of the plotted data in the figures does not correspond to the extremely high correlation coefficients (almost equal to 1) is still true. I tried to recreate figures 5, 7, and 9 by overlaying my own plots on theirs and performing my own curve fit. I find that when I use equations 9 and 10 to calculate and plot the model curves (Model-1 and Model-2), they do not match the curves in the authors' figures. They also do not match the measured data. I also used Excel to generate my own power curve fitted to the measured data and found that reasonable fits can be obtained, but they do not remotely resemble the equations provided in this paper. I still believe that the authors obtained such high correlation coefficients by misusing the Excel trend fitting tools to obtain a trend curve to match their model-computed values. These correlation coefficients do not represent the quality of the fit between measured data and the proposed models. **My overlaid plots are shown on the next pages:**	


Check of Figure 5
y = 0.4126x^0.265
R² = 0.9891
ΔH/Hmax
Nh/dc
Mesured Data Run1
Power (Developed Model-1)
Series1
Reviewer's plot of Model-1
Power (Series1)

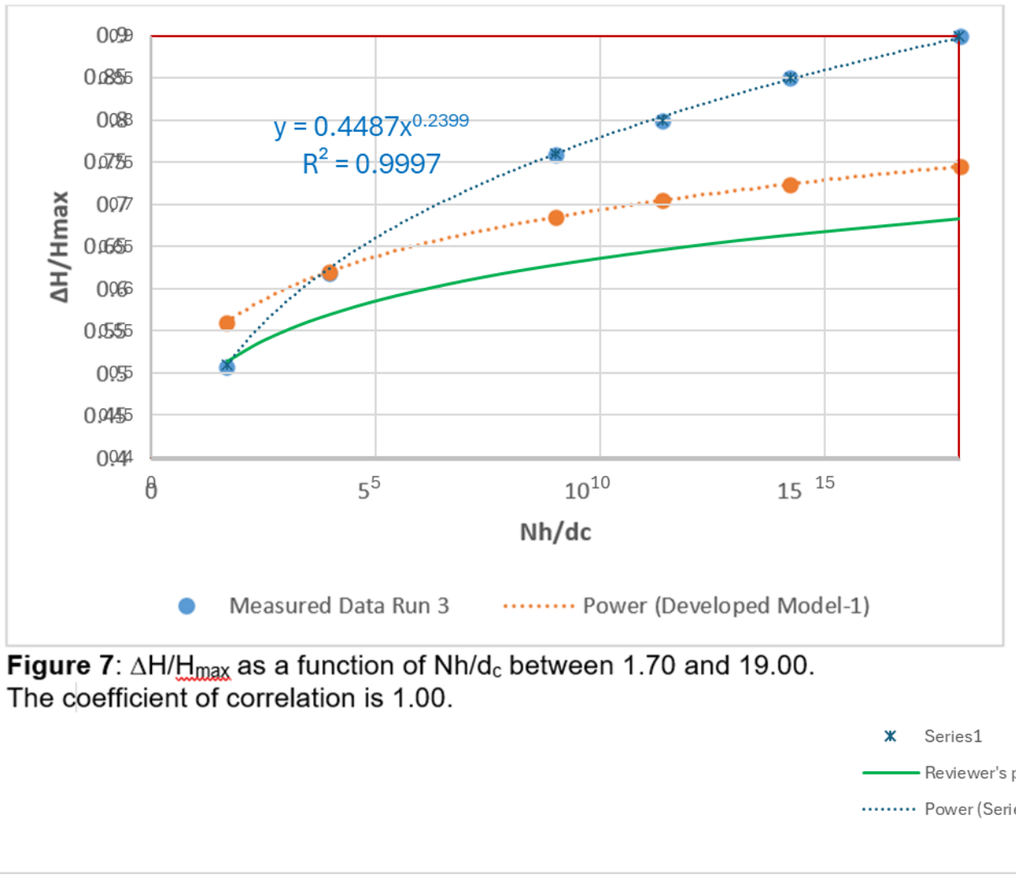


Figure 7: $\Delta H/H_{max}$ as a function of Nh/d_c between 1.70 and 19.00.
The coefficient of correlation is 1.00.

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$$\Delta H/H_{max} = (0.05\,Nh/d_c)^{0.29} N^{0.20} h^{-0.17} \theta^{-0.30}$$

0.05	0.0046 works much better to match their curve
0.29	
0.2	
-0.17	
-0.3	

For this plot, changing the 0.05 to 0.0046 produces a better match of the equation to the author's plotted curve, but their curve still does not match the observed data.

FURTHER OBSERVATIONS

The last sentence of the 3rd paragraph of the introduction states that air entrainment causes energy dissipation. In fact, entrained air typically reduces the friction factor, which implies that an aerated flow may actually retain more energy and does not experience an energy loss compared to a non-aerated flow. However, the steps dissipate lots of energy, so the net effect is that a stepped spillway dissipates more energy than smooth, but it is not because of the air.

Many places in the text make statements like "The stepped spillway had 21 No steps…". The "No" is not necessary.

There are still many grammatical errors and oddly formed sentences, despite the authors' statement that they had the article carefully reviewed and corrected only the few errors found.

The addition of equations 7a-7f is helpful. Thank you.

This paper studies only one slope, but seems to hint that the authors have data from other slopes. A valuable approach would be to combine the data from different channel slopes and strive to develop models that perform well across a broad range of conditions. This would allow the work to demonstrate the effect of the factors N, h, and q. This paper does not demonstrate the effects of those parameters, since they do not vary in the measured data sets.

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