



SDI FINAL EVALUATION FORM 1.1

PART 1:

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2015_BJAST_17358
Title of the Manuscript:	STRUCTURAL BEHAVIOR OF WEIRS WITH BOTTOM CIRCULAR OPENINGS
Type of the Article	Original Research Article

PART 2:

FINAL EVALUATOR'S comments on revised paper (if any)	Authors' response to final evaluator's comments
Most of the previous comments in the last review (including major difficulties and challenges, your original achievements to overcome them, justifications of method and key parameters, rationale on the choice, sensitivities, justifications of assumptions, etc.) have not been addressed satisfactorily.	▪ The general problem that called the need to do this research is mentioned in the 1st paragraph of the abstract <i>"to increase the discharges, weirs should be reconstructed to guarantee water levels over sub-channels' intakes. That will be very costly; which gave great importance to study, from hydraulic and structural points of view, the possibility of making openings in weirs, to increase the discharge passing through them"</i> ▪ The major challenge and difficulties were in the fluid modeling. This is stated in the manuscript as follows: <i>"The main challenges faced during the CFD modeling was the instability of the model related to the choice of the turbulence model and the proper simulation of the open channel flow to permit getting relatively smooth VOF correctly representing the gas / liquid interface. The above mentioned modeling choice enabled the authors to resolve the instability and the interface problems."</i> ▪ My original achievement is to develop equations that enable engineers to predict the maximum stresses and deformations in the weir body by knowing discharge, diameter of the opening, and the dimensions of the weir. (Mentioned in conclusions). <i>"Four other formulae were developed to estimate the values of the maximum tensile stress, the maximum shear stress, the maximum compression stress and the maximum deformation for the weir width ranges from 3 to 9 m, the weir height ranges from 1 to 2 m and the diameter of opening from 0.25 to 0.75 of weir height."</i> ▪ The reason for using the method (numerical FSI): (justifications of using numerical simulations using FSI) Using numerical models saves time and there are no space or budget constraints. Numerical simulations can deal with many processes at the same time. Nowadays, FSI techniques are widely used and there are many commercial software packages which could be used to do that accurately (This is mentioned in line: 51). <i>"FSI simulations could be performed physically or numerically. The rapid development of computer industry is also providing more and more powerful computing ability for numerical simulation, which also makes numerical simulation more applicable to a wider fields and more complex problems such as FSI problems. Unlike physical simulation which has time and space limitations, numerical techniques can simulate a very large scale region and last an almost unlimited long period of time. Numerical simulation can deal with many physical processes at the same time. Even nonlinear processes pose no difficulty to numerical simulation [19]."</i> ▪ The rationale on the choice of variables (i.e. weir dimensions and discharges) is mentioned in line 79 as follows: <i>"From the designed data of weirs in Fayoum region including the designed dimensions and discharges, it was found that most of weirs in Fayoum region have width ranges from 2m to 10m and height ranges from 1m to 2m. Hence, nine 3D-models, that represent the different weirs / bottom openings configurations prevalent in Fayoum region, have been developed using ANSYS Fluent and ANSYS Mechanical."</i> ▪ The rationale on the choice of the weir type is the common use of this type in the study area (Fayoum region, in Egypt where the Fayoum type weir is generally used) This is mentioned in the Abstract and the Introduction. ▪ All assumptions and sub-models, that are used in this study, are described and mentioned in lines: 96 - 134