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Discussion

The Impact of Extreme Wave Events on a Fixed Multicolumn Offshore Platform
by Nagi Abdussamie, Roberto Ojeda, Yuriy Drobyshevski, Giles Thomas, Walid Amin (IJOPE, Vol 27, No 3, pp 293–300, 2017)

Abbas Khayyer (Kyoto University, Kyoto, Japan).

The paper presents an interesting work. The discusser read the paper with interest and would like to highlight several issues related to the paper:

1. A journal paper must provide sufficient and self-contained information to ensure the repeatability of experiments and analyses by readers. The section of EXPERIMENTAL SETUP does not provide some essential information that could have been provided concisely. For instance, a simple schematic sketch of the considered TLP model as well as locations of PT15 and PT16 transducers corresponding to pressure time histories presented in Figs. 4, 12, and 16 should have been provided in the paper itself. Authors ask readers to refer to so-called "open literature (Abdussamie et al., 2017a, 2017b)." However, a journal paper has to be self-contained, and both mentioned references are openly available only to subscribers.

2. The numerical investigations of the paper have been conducted by a commercial software and on the basis of several assumptions that require more justifications. For instance, in CFD MODELING section, the authors state that "since CFD results were validated against model test results at a small scale, *laminar flow* was assumed for all numerical simulations." This assumption definitely needs a more rigorous justification, especially considering the fact that authors are modeling wave loads on a TLP corresponding to extreme wave events. The other controversial assumption is related to the fact that authors consider the *air as an incompressible fluid* in their numerical investigations, except for the final part of their paper (Fig. 16). Proper modeling of air dynamics (including its compressibility) is expected to play a clear role in prediction of wave-in-deck pressures as well as global wave impact forces.

3. From Fig. 8, a good agreement is achieved between the measured and calculated time histories of global wave impact forces in the horizontal direction. For the vertical direction, however, clear discrepancies exist. The authors state that "such discrepancies were caused by the structural dynamic response of the model in the z-direction observed in model tests." Indeed, structural dynamic response may contaminate the load cell signal response. However, this contamination should be limited to small-scale errors and fluctuations that can be effectively removed using a low-pass filter with a carefully selected cut-off frequency, as also stated in section 3.7 of the Ph.D. thesis of the first author (Abdussamie, 2016). Here, even after filtering the existing small-scale fluctuations, clear discrepancies remain and thus, the main reason for the observed discrepancies is not expected to be the structural dynamic response.

4. A journal paper must present novel information and unpublished data. There is an overlapping of presented information in Abdussamie et al. (2017) and another paper by the authors, namely, Abdussamie et al. (2016), published in the Proceedings of the 20th Australasian Fluid Mechanics Conference (AFMC). For instance, Figs. 7, 8, 10, and 11 of Abdussamie et al. (2016) are republished in Abdussamie et al. (2017). "Condition 2," as stated in the captions of Figs. 7 and 8 of Abdussamie et al. (2016) correspond to "Fixed Multicolumn Platform," as considered in Abdussamie et al. (2017), and presented data in both papers are related to test condition 3 in Table 1 in Abdussamie et al. (2017). The 20th AFMC was held in early December 2016 prior to submission of the revised version of Abdussamie et al. (2017) on December 30th, 2016, and it would have been preferable and academically professional if the authors had at least cited their 20th AFMC paper in their IJOPE one. As for AFMC papers, all contributing authors are required to submit a copyright transfer form for their manuscript to be included in the proceedings.

5. Considering the scope of the paper, i.e., prediction of global and local wave loads on a rigidly mounted TLP at a model scale due to "extreme wave events" (as stated in the last paragraph of introduction), convincing discussions should have been made on the reliability of presenting an extreme wave condition by regular waves. Although this has been common in practice, a more precise approach is to consider, for instance, the so-called NewWave theory (Tromans et al., 1991) that can be a more reliable representation of extreme wave events.

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AUTHOR'S REPLY

Dr. Khayyer has provided valuable comments on our recent study (Abdussamie et al., 2017). The authors have carefully read the comments from the discusser and prepared the following reply:

1. The original paper (Abdussamie et al., 2016) contained details of the experimental setup and instrumentations. However, due to the page limitations of the IJOPE journal (7 pages), this information had to be removed from the present paper. Although the references given in the paper are available only to subscribers, the first author's PhD thesis was made available upon completion (December 2016) and can be downloaded free of charge from the University of Tasmania website, as done by Dr. Khayyer.

2. To illustrate the small impact of the inclusion of turbulence on the CFD simulation results, the time history of the measured F_x compared with the predicted force using *laminar flow*, $k\varepsilon$ and $k\omega$-*SST* turbulence models is presented in Fig. 1. It can be appre-