Bergen, October 1, 2018

To: The Faculty of Mathematics and Natural Sciences
University of Bergen

Statement about joint work with PhD student Arne Klein

In this note, we give an overview of the papers constituting the doctoral dissertation 'Methods for Optimizing Turbine Locations and Cable Routes in Offshore Wind Farms' of Arne Klein, and state the candidate's contribution in each of the works.
In addition to the introductory part (not co-authored), the dissertation consists of the following papers:

Paper I: *A continuously differentiable turbine layout optimization model for offshore wind farms* (A. Klein). The candidate is the sole author of this text.

Paper II: *An Integer Programming Model for Branching Cable Layouts in Offshore Wind Farms* (A. Klein, D. Haugland, J. Bauer, and M. Mommer). The candidate was the main author, and he was in charge of all the implementation and experimental work. He also had the main responsibility for the theoretical work (model design). The coauthors assisted the candidate on the model formulation and the technical writing. The candidate presented the paper at a conference.

Paper III: *Obstacle-aware optimization of offshore wind farm cable layouts* (A. Klein, D. Haugland). The candidate was the main author, and he was in charge of all the implementation and experimental work. He also had the main responsibility for the theoretical work (model design). He got some help from his coauthor on formulation of the technical concepts, as well as the technical writing. The candidate presented the paper at a conference.

Paper IV: *Optimization of reliable cable layouts in offshore wind farms* (A. Klein, D. Haugland). The candidate was the main author, and did most of the work on this text. The contribution from the coauthor was confined to assistance in technical writing, and discussions leading to the final version of the solution approach.

With my compliments

Professor Dag Haugland (supervisor)
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