



Séminaire conjoint / Joint Seminar
Chaire de recherche du Canada en logistique et en transport et
Chaire de recherche du Canada en distributique

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GREEN SUPPLY VESSEL OPERATIONS

Abstract: The oil and gas industry needs reliable transport of cargo between onshore bases and offshore installations. Each installation requires one or more fairly spread visits throughout the week, and some of the installations are closed at night yielding multiple time windows. The vessels have fixed departure times from the onshore base, and the duration of a voyage is two or three days. The supply vessel planning problem is a fleet mix and periodic vehicle routing and scheduling problem. We study how optimizing sailing speeds when constructing schedules can reduce fuel consumption and thus emissions from the supply vessels operations. A supply vessel weekly schedule may include waiting time for opening hours at installations, waiting for loading and unloading at supply base and idle time between voyages. We develop speed optimization strategies that utilize the waiting time in different ways to reduce speed and hence emissions. The speed optimization strategies are incorporated into a two-phase optimization procedure, where feasible vessel voyages are first generated and the schedule is then constructed by solving an optimization model. A cost minimization objective including vessel charter and voyage fuel costs is used to achieve a weekly schedule with low emissions and minimal number of vessels. Tests carried out on real instances from Statoil's activities on the Norwegian continental shelf show up to 25% emissions and fuel costs reductions without fleet size increase.

Note : Ellen Karoline Nørlund est étudiante de doctorat au département de logistique à Molde University College, sous la supervision de Irina Gribkovskaia et Svein Brathen. Elle effectue présentement un stage au CIRRELT, sous la supervision de Gilbert Laporte. / Ellen Karoline Nørlund is a Ph.D. student at the department of Logistics of Molde University College, under the supervision of Irina Gribkovskaia and Svein Brathen. She is doing an internship at CIRRELT, under the supervision of Gilbert Laporte.

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Salle / Room 5441
Pavillon André-Aisenstadt
Université de Montréal

Ouvert à tous / Open to all

Organisateur / Organizer
Gilbert Laporte

