

In-situ burning field tests in Greenland – a multiorganization collaboration

By Lonnie Bogø Wilms, Managing Director, Greenland Oil Spill Response

In the summer of 2017, Greenland Oil Spill Response (GOSR) conducted in-situ burning field test together with Aarhus University (AU) and Lamor.

The field tests were part of work package 4 (WP4) in the Integrated oil spill response actions and environmental effects (GRACE) project, funded from the European Union's Horizon 2020 research and innovation programme under grant agreement No 679266. Other partners of WP4 were Tallinn University of Technology, SSPA Sweden, RWTH Aachen University and the University of the Basque Country. Subcontractors to the project were DESMI, Martek ApS and Masik.

The main objective of WP4 was to improve the knowledge base for combating oil spills in icy and cold waters. It is assessed that the results from the research experiments will provide valuable information for decision makers regarding oil spill response options to include in a strategic Net Environmental Benefit Analysis (sNEBA) for oil spill response strategy and capacity building in the Arctic and Baltic Sea.

From an organisational and operational perspective, valuable lessons were learned with regard to several organisations, with different backgrounds and objectives, working together, which is the focus of present short paper. Scientific reports related to the GRACE project will be published at www.grace-oil-project.eu in the course of the projects lifetime (2016-2019).

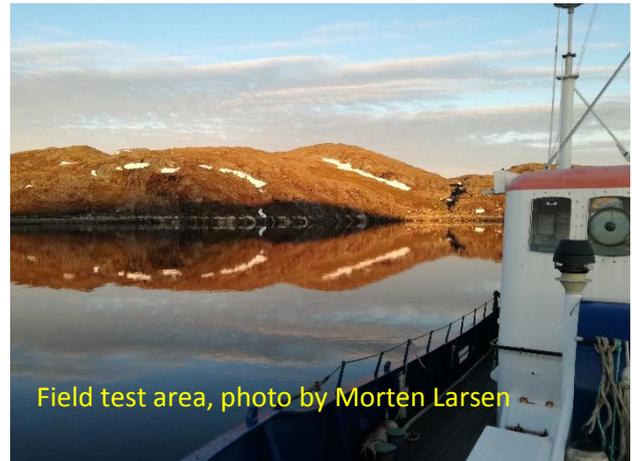
Obtaining approval – involvement of stakeholders and matching of expectations

The WP4 includes several tasks, but those relevant for this short paper are: Task 4.3.2 "Pilot scale oil spill field experiment", Task 4.3.3 "In situ burning of oil at shoreline", Task 4.3.4 "Test of systems for collection of burn residues from water after burning" and Task 4.3.5. "Environmental effects of situ burning, water wash and chemicals for shoreline clean-up".

As there were several organisations involved in the tasks, it was important to delegate the overall lead for the different tasks; GOSR was lead on task 4.3.3 and task 4.3.4 and AU took lead on task 4.3.2 and 4.3.5. The rationale behind this being that GOSR should be lead on the more operational tasks and AU should be lead on environmental scientific tasks, as both organisations possessed actually field experience in Greenland, held a good working relationship with the Greenland authorities and held sufficient local knowledge.

As AU for many years has been acting as an environmental advisor to several Greenland authorities, AU was lead on the application process for the field tests and GOSR, as a nationally owned Greenland oil spill response company, provided input to the application on contingency planning and operational procedures. It was important for both AU and GOSR to submit a bulletproof application with regard to environmental mitigation that exceeded the normal standards. Both organisations were concerned about complying to the arm's length principle, which led to high standards in order to obtain the permit on fair ground. The application and permission included the field trials with 1,000l IFO180 and up to 1,000l of light medium crude oil for in situ burning.

An area for the field trials had already been suggested based on NunaGIS a digital atlas displaying geographical information on bird colonies and sensitive areas for wild life. The year before the field tests, this area was visited with the specific tasks in mind, to confirm that the area was indeed suitable for the burnings. The subcontractor for one of the vessels to be used for the tasks was chartered to take representatives from GOSR, AU and the Greenland authorities to the site, which was located app. 50km South of Nuuk. AU and GOSR had from their own knowledge of the Greenland environment and requirements for the tests, some specific areas in mind, which upon arrival looked promising. As it turned out it was very fortunate that the vessel subcontractor was present when conducting the survey as it the original areas chosen was not very workable from his point of view in regards to the limitations on the vessels being used for the tasks. Another thing that became apparent during the survey of the area was also that the partners had to elaborate on their objectives, as GOSR's main objectives were operational and wanting to ensure the least shoreline clean-up as possible, whereas the objective for AU was actually to examine the effect of the burning oil on the tidal zone environment. From being on the same page, it was possible to choose suitable locations that accommodated all scientific data and operational needs.



Involving the authorities at this level was considered reasonable, as the field trials were the first of its kind in Greenland. In addition, it was important to the project partners that the expectations to the execution and the outcome of the field trials were completely clear to the authorities in order to obtain approval for the field trials on a sound and transparent basis, and to avoid subsequent negative effects.

As commercial hunting and fishing is very important in Greenland, and even though the area was not recorded to be a hunting and fishing area, nor did it appear to have been used recently for these kinds of activities when the survey was conducted, it was decided to consult the local hunting and fishing organization (KNAPK). They confirmed that the area was not an important area for commercial hunting and fishing, but that recreational hunting and fishing were likely to take place. This was also confirmed by staff at the large ship fuel station in the area. Even though there was some use of the area it was found to be at such a low level that the field trials would not affect them if the sites for the trial were selected in order to avoid fishing (presence of GARN). It did, however, show the importance of identifying and involving stakeholders in the planning as public available data may not always give a complete environmental overview.

Preparing the field test – communication, communication, communication

Preparing and submitting the applications and obtaining the approval took almost a year, which then lead to app. 6 months of thorough planning. Quite early in the planning process, staff from DESMI, and Oil Spill Response Ltd. (OSRL) was invited. Oil spill response equipment from DESMI was included in the field tests, and OSRL had prior experience and protocols developed for in-situ burning, which the project could gain some valuable knowledge from. Observers from the Greenland authorities and the Danish Royal Navy were also invited for the field trials, and thus the following organisations were represented at the trials: GOSR, AU, DESMI, Lamor, OSRL, Royal Danish Navy and Greenland authorities. This resulted in 4 different nationalities and 4 different cultural backgrounds and languages. The project's writing language was English, but the working language was in general Danish for the field trials, with limited translations into Greenlandic and English. In the aftermath, we assess that it would have been beneficial to decide on a language policy to avoid any misunderstandings and important orders to be lost in translation. However, it was always verified

that everyone had understood their tasks in connection with working environment safety analysis and toolbox talk. On the other hand, more focus on language and translation would, however, have been beneficial for the workers involved, for them to gain the full picture of the in situ burning test objectives, and not just the operational experience.

As we were working through the job descriptions and job safety analysis, it became clear that we should have done this earlier on in the process as they revealed issues that we hadn't taken into account, one example of that was that nobody planned how to actually release the oil into the sea, as the release of the oil was not described as a task but rather as a step before a task in the project description, meaning that nobody thought it their job to release the oil as the focus had been on a working and environmental safe operation after oil release. The problem was however solved fairly quickly with a simple pump, but it would have meant less stress if this step had been discussed earlier on in connection with a job safety analysis eg.. So another important lesson learned from this project is to start working on the job descriptions and job safety analysis pretty early on in the process in order to catch omissions.

Execution – remember where you are

Understanding what non-technical issues to consider in a project like this are just as important as understanding operational and scientific procedures and objectives. Working in Greenland conditions was quite different from what some of the participants have experienced earlier: logistics are difficult in Greenland as there is only a limited pool of operators and transportation options available, and you cannot necessarily solve the problem by hiring foreign subcontractors as it may be too costly due to the remoteness of the country. So making due with, for instance, the vessels available in the area was crucial to understand.

Wildlife is an issue to consider where ever you're working in the world. Most people coming to Greenland are concerned about polar bear attacks, which is a real threat when working away from populated areas, but actually, another big concern is actually mosquitoes in the summer. The numbers of mosquitoes may be so vast that they possess a concentration disturbance, and it may sometimes be necessary to wear a face screen, both limiting factors when operating under stress. This disturbance is not mentioned in literature, but have to be taken into account when procedures are developed. Furthermore, it shows the importance of involving local knowledge.

Conclusion

When this said, the in-situ burning field test went beyond expectations; the burns themselves went smoothly from an operational point of view, and valuable hands-on and real-life experience were gained. From a scientific viewpoint, the mitigation measures were in place and a comprehensive amount of new data was collected. From a multiorganizational project perspective, valuable lessons were learned, but first and foremost we learned that communication was key to a successful project; 1) communicating clear objectives and goals in order to match them with the rest of the project group and relevant stakeholders; 2) communicating openly with everybody involved in the project in order to ensure a clear understanding of the overall objective with the project; and 3) making sure that communication is clear with regard to language and communication lines in order to avoid misunderstanding and, perhaps eventually, mistakes.



In-situ burn in the tidal zone, photo by Lars Poort