Delivery of the Regional Training on Oil Pollution: Shoreline Assessment and Clean-Up
Online Delivery Interaction platform
Part 2, Virtual Classroom Training, 25-27 May 2021

Training Summary and Documentation

Contents

Background

The UN Environment Programme (UNEP) and the Government of Norway's Oil for Development (OfD) have a collaboration, which aims at strengthening environmental management capacities in the oil and gas sector. Since 2017, UNEP has been collaborating with various partners including the Norwegian Coastal Administration (NCA), International Maritime Organization, and International Tanker Owners Pollution federation (ITOPF) in delivering a number of regional trainings in East Africa geared to support the effective national implementation of the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC).

In this regard, UNEP organized a Regional Training focused on oil spill shoreline contamination, assessment and clean up strategies. It was designed as a follow up to the Regional Training for Eastern Africa countries on Oil Pollution: Shoreline Assessment and Response, which was held on 06-09 November 2018 in Dar es Salaam, Tanzania.

Due to the current global COVID-19 pandemic which have led to travel restrictions, and with the safety and well-being of participants as the highest priority, UNEP proposed to deliver the training online to participants in two parts –

- **Part 1, Self-paced Preparatory Training**[1] (18-21 May, 4 hours in total) required participants to undertake preparatory exercises at their own pace/timetable a week before, to participate in Part 2. This phase was designed to enable participants to review important topic areas and learn how to navigate the use of MyMaps, used for the groupwork exercises in Part 2;
- **Part 2, Online Classroom Technical Training** (25-27 May, 3 days) was online classroom training setting with the training team delivered through a combination of technical presentations, case study analysis, Q&A, and group work exercises.

Presentations in the training were recorded and can be accessed here, here and here[2] to enable other participants who could not join to access the training at later stages.

This training report summarizes key points from discussions and participants' feedback from the training evaluations.

[1] More details on contents of Part I can be seen in Annex 3. For Part I of the training, participants were required to complete a baseline knowledge assessment, the training needs assessment and watch some videos that provided an initial overview of oil spill assessment and clean up strategies using provided links as a prerequisite to attending the training. This was to ensure all attendees had acquired at least a minimum level of understanding of the topic before the training.

[2] The recordings from the training is audio only. Listen to the trainings in Portuguese by clicking day1, day 2 and day 3.

Training Course

The 3-day training aimed to further deepen knowledge and practical skills to support contaminated shoreline assessments and oil spill response onshore. Participating countries included: Mozambique, Tanzania/ Zanzibar, Kenya, Uganda and Somalia. Mauritius was also invited as part of the training participants and to present on its recent oil spill incident experience.

The training objectives were as follows:

1. Review participants' own knowledge on how oil behaves and affects the environment, particularly different types of shorelines (fate and behavior of oil spills)
2. Review the key components associated with the organisation and management of oil spills, including the key phases of an oil spill incident
3. Improve knowledge on how to organize and manage beach cleaning operations, including prioritizing areas for clean up
4. Gain familiarity and experience using/applying available tools to support the management of shoreline assessments and clean up, including:
    a. Use of electronic / digital maps for shoreline assessments and registration of oil spill incidents
    b. Introduction to the use of SCAT (Shoreline Clean up and Assessment Technique) surveys
    c. Use of the 5-point order template to design and effectively execute and manage shoreline assessments and clean up operations

5. Identify how to integrate shoreline response considerations within the national framework for preparedness and response to oil spills

The training was targeted at designated government officials with direct responsibilities in managing and coordinating a response to oil spill impacted shorelines, such as Shoreline On-Scene Commanders, incident/shoreline response managers or designated national oil spill response and recovery team leaders; and/or who have completed the IMO Model Course Level 2 or Level 3, or who attended the UNEP-organized Regional Training in November 2018 in Dar es Salaam.

A total of 31 participants (13 women, 18 men) attended the training who were mainly senior officers from national government institutions including the Ministry of Environment, Solid Waste Management & Climate Change, Ministry of Blue Economy, Marine Resources, Fisheries and Shipping, Ministry of Ports & Marine Transport, National Maritime Authority/Administration, Department of Disaster Risk Reduction/Preparedness, Office of the Prime Minister, National Environment Management Council/Authority, National Coast Guard, and the Special Mobile Police Force.

The online training also included Q & A sessions with contributions from several participants (see Annex 1). Presentations and other training materials were shared with participants few days prior to and during the training. The training also included group work exercises that supported participants' familiarity with the use of digital mapping tools

(MyMaps) for the registration of oil spills or to assist planning/organization of response processes (see Annex 5).

Discussion Highlights

Throughout the training, participants raised questions/comments relating to the different modules, which have been captured through an online shared google doc (see Annex 1 for questions, comments and answers). Some of the key issues can be summarized as follows:

a. **Develop/Review/Improve National Oil Spill Contingency Plans (NOSCP) to include clear organizational procedures, including in terms of waste management**
   - The case of Mauritius supported participants in understanding the importance of establishing the command structures and system for oil spill response– need for clear responsibilities and chain of command, during a spill response process to be included in contingency plans.
   - Also emphasized was the need to take into account, mobilize and train if possible, locals and non-governmental organizations in oil spill response, to save time and resources as well as reduce the amount of waste that can be generated during response and clean-up process, as illustrated in the Wakashio case. Volunteers/civil society could also sign up and be trained in advance for application for more effective clean-up process. Norway, for example, conducts trainings for volunteers and has a good collaboration with NGOs like World Wide Fund for Nature (WWF) who participate in response operations.
   - Addressing other gaps in the NOSCPs (in countries like Tanzania, Uganda and Kenya) such as the emergency request procedures, command structures, environmental restoration process (clearly stated in guidance manuals), post-clean up monitoring, was highlighted during the training. Participants from Somalia appreciated the highlighting of key considerations for NOCSPs as they begin preparation to develop one for the country

b. **Need to ensure proper waste management, including adherence to legislations, conventions and best practices during response**
   - Presentations and the Wakashio case highlighted the need for inclusion of waste management plans and importance of building capacity of those involved, especially as the response itself (including equipment used) could potentially become wastes to be managed properly. For example, in the Wakashio case, the artisanal booms at some point became part of the waste generated. Wastes during response operations will need to be properly handled, classified, packaged, labelled, treated and disposed of.
   - Adherence to existing national and international laws and best practises should be paramount when managing wastes, including compliance with conventions such as the Basel Convention when requiring the transboundary transportation of these waste, as was the case in the Wakashio spill

c. **Importance of Capacity building in identifying strategies and application of tools, including digital map systems with interoperable functions for effective response**
   - The need to become familiar with using/applying available digital tools to support the management of shoreline assessments and clean up was emphasized. For example, Kenya highlighted that they had some mapping tools which they use for sensitivity mapping. Participants appreciated the group work exercises using

MyMaps, an electronic / digital mapping system which could be used for oil spill preparedness and shoreline assessments

- Countries may need to invest in these types of digital tools, some of which may require additional services which are not available in free versions such as the one used in Google's MyMaps. These digital tools can be used offline and would help in providing vital information for oil spill response operations, including identifying sensitivity areas and other areas of priority depending on socio-economic factors from the NOSCP
- Also highlighted was the importance of employing different strategies and conducting surveys taking into account factors such as shoreline type, volume of spillage, tides, waves, placement/type of boom needed, prioritized areas and those that can be sacrificed etc. for effective and efficient response. For example, sacrificing a beach instead of mangroves will be a good strategy as was done in a 2016 spill in Mauritius, as beach clean up is much easier than cleaning up in a mangrove area.
- ITOPF highlighted its availability to provide oil spill response to countries; requests may be made via their website.

Modules – Main Highlights

Day 1.

Lesson 1. Country Case study: Mauritius oil spill

Scope and Summary

Using the MV Wakashio incident in Mauritius as case study, this lesson aimed to discuss the key points that would support participants in understanding the fate and behaviour of oil spills as well as the different types of shoreline, assessment and clean up techniques.

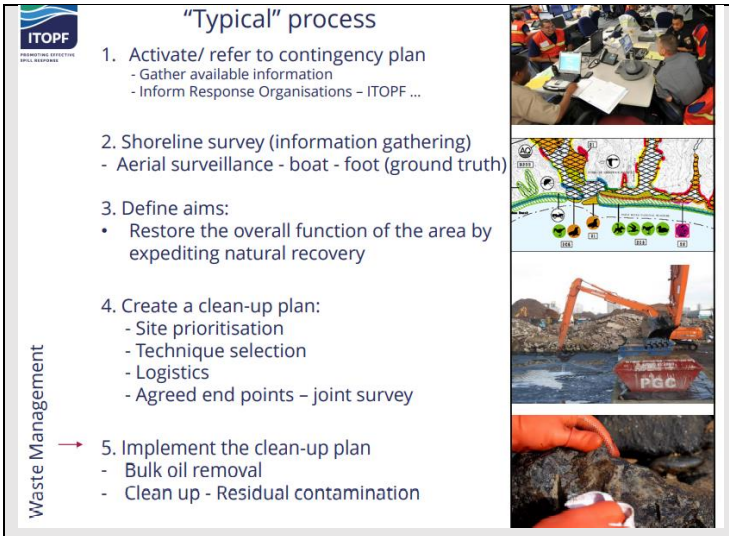
It also highlighted the key stages of a response, the strategy/planning process, the shoreline survey and the shoreline cleanup techniques used in the Wakashio case.

Presenter :
Thomas Sturgeon, ITOPF

Some key conclusions from this lesson include:

- The Wakashio Spill involved the spillage of approximately 1000 tonnes of oil which affected the shoreline (sandy beaches, rocky shores, mangroves, mud flats, etc.) Good organisation & management is key to a successful response
- Oil properties dictate weathering and behaviour at sea which influences environmental impact and the clean up strategies to be adopted
- Maintaining an up to date contingency plan & conducting training and exercises will aid shoreline response
- Shoreline surveys form the basis of a clean-up plan

- Realistic end points should be established early & maintained
- Response techniques should be selected considering waste management
- Significant bulk oil & buried oil, should be treated as a priority
- The plan should be adapted to the situation as it evolves
- Best option is often a mixture of various cleanup techniques; ensure you have the health & safety of responders prioritized



Typical process in an oil spill response

A picture of the Wakashio spill

Lesson 1B. Country Case study: Mauritius oil spill

Scope and Summary

This session provided an overview of the Wakashio spill in the South East of Mauritius and the environmental impacts on the shoreline, from the government perspective. It discussed

the sites affected by the spill and how they were prioritized; the Environmental Sensitive Areas affected, the cleanup techniques adopted, and the waste generated.

Presenter:
Bheemul Thummanah, Ministry of Environment, Mauritius

Some key conclusions include:

- The NOSCP was activated with identification of ESAs around the area of the grounded ship – blue bay marine park and Point d'Esny Ramsar site, before there was any spill
- ITOPF produced a map showing the degree of contamination; mudflats and mangroves were mostly affected in the east coast.
- Priority was given to sites with high environmental and/or socio-economic sensitivity, sites for public use and cultural events and sites that have large accumulations of mobile oil that could remobilize with tidal action
- Shoreline cleanup techniques applied depended on the following key criteria- substrate and shoreline type, environmental sensitivity, amenity value/public se/tourism and access and safety for workers
- Cleanup techniques included: manual cleaning, high-volume low-pressure flushing, skimming, hot water high pressure washing. First phase was a manual clean up collection of debris; booms were used to contain the oil
- Joint site visits were carried out at the affected sites to determine cleanup endpoints
- Approximately 1,282 metric tons of liquid Heavy Fuel Oil wastes have been collected and carted away and around 2,432 metric tons of contaminated solid wastes and debris were collected and transferred to a hazardous waste storage facility for subsequent exportation to licensed facilities

Movement of oil after the grounding of Wakashio


Some of the affected shoreline in Mauritius

Waste Management process during the cleanup

Hot Water High Pressure Washing technique

Lesson 2. Shoreline Clean-Up: Organization and Management

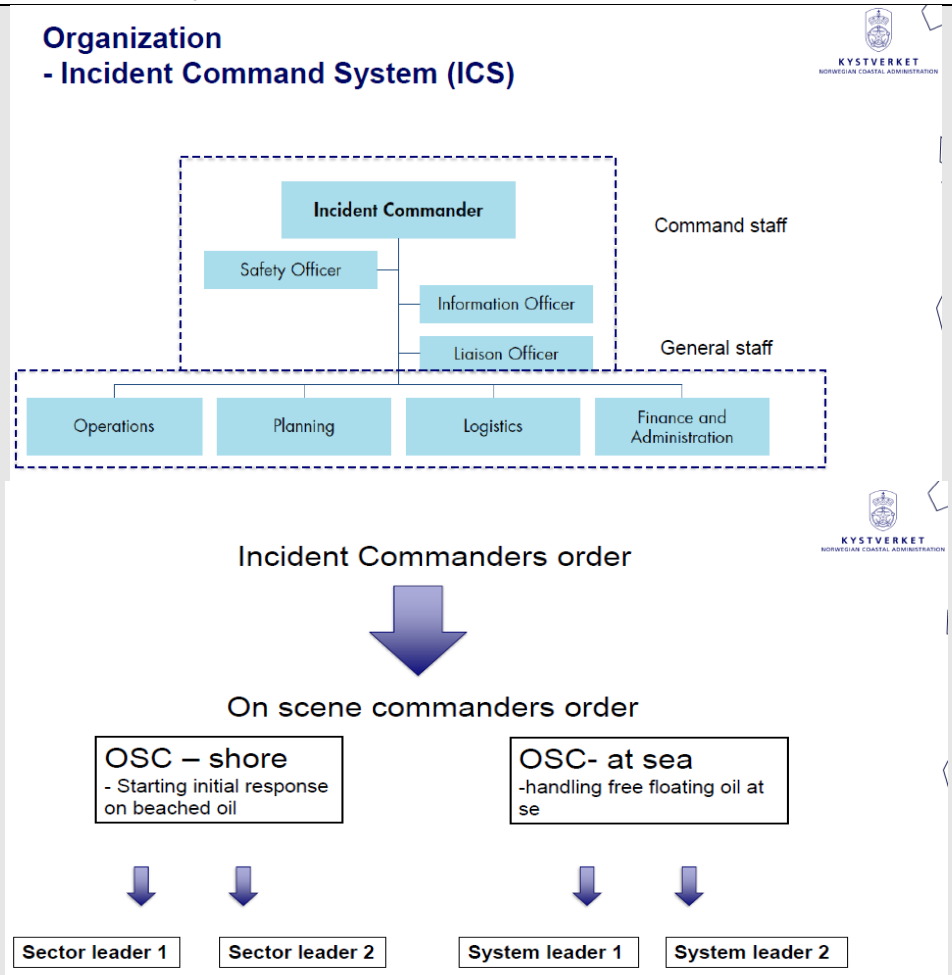
Scope and Summary

Using Norway as a case study, this session aimed to highlight how oil spill cleanup is managed in the country. It discussed the initial phase, operational procedures, organization, order and supporting documentation needed for a response operation.

Presenter :
Kjersti Dale, *NCA*

Some key conclusions from this lesson include:

- The overall priority for response actions include, life, health and safety, natural resources, and economic and human interests
- The management is responsible for the overall HSE; it is important to have training at all levels. Supporting documents such as preproduced handbooks and supervisor manuals are good guides and will save you time during an incident
- Best preparedness is knowledge and a good Plan in advance
- National Contingency plan should be updated
- It is important to know the reporting lines for good organization during an operation
- Sharing knowledge and transfer of experience from other incident to maintain good practices and identify areas of improvements



Organization: A chart showing the incident command system and reporting lines

Lesson 3. Acute response

Scope and Summary

This lesson discusses in detail the Acute response (initial phase) phase. It also provided more information to enhance the understanding of the use of containment booms in response to oil spills and response strategies.

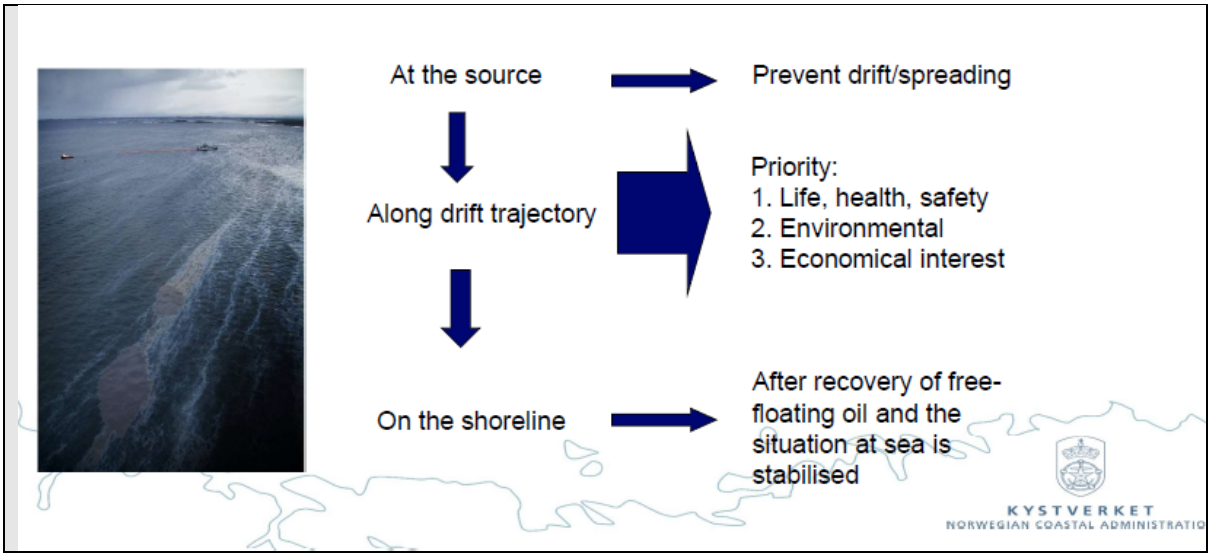
Presenter :
Kjersti Dale, *NCA*

Some key conclusions from this lesson include:

- The initial phase of an oil spill incident is also referred to as the emergency or acute phase. Tasks can be divided into two- action on water for source control at the scene of the accident and to combat free floating oil at sea, and action for shoreline protection
- Information gathered will have given to the On-scene Commander through the first version of the Incident action order to help to take actions on what to do and resources available. The resources are limited in the initial phase – there is need to prioritize to limit the spreading of oil along shoreline and vulnerable areas
- Plan along trajectory lines. Usually trained task force/strike teams are the ones that perform the initial action
- Start uptake of oil at an early stage. Key to success for onshore operations is to recover oil and lock stranded oil quickly before it can be reworked, buried down in sediment or remobilized.
- Booms are one of the usual tools that are used to prevent or reduce oil contamination of the shoreline. Oil stranded on shorelines can become mobile and refloat with changing tides and wind direction
- There are several types of booms that varies in size including hard boom, sorbent boom, and even fire boom. All booms need to be place and maintained in a coordinated strategy with other response alternatives to ensure their effectiveness. As booms can fail in winds and strong currents, often multiple rings of booms are placed to prevent leakage of the collected oil inside the boom system
- Techniques for using booms in response to oil spills include: Containment boom – for source control; for shoreline: Exclusion Boom – to protect areas or to lock already stranded oil to prevent remobilize and to lead oil to a more proper area for recovery or to prevent oil to drift towards larger prioritized area that hardly can be fully protected by booms
- Other creative ways of creating barriers for contamination of shoreline are using sand bags or stacking sandbags

Use of containment booms in oil spill response

Containment booms used to protect fragile ecosystems



G001-004.Group work exercise

Scope and Summary

Based on the MyMaps assignment completed by participants in Part I of the training and presentations during the training, participants were required to build a situation picture using an area in their country on MyMaps. Part II of the training involved four group exercises – three during the training and one submitted a week after. Using the same country case scenario, each group work activity was designed to build on each other and was based on different phases of oil spill response process including Acute and beach cleaning phases

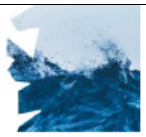
The objective of these exercises was to support participants to gain familiarity in using/applying available tools to support the management of shoreline assessments and clean up – in this case electronic / digital maps for shoreline assessments and registration of oil spill incidents (see detailed instructions in pictures below).

- G001- (Acute phase) Participants working in their country teams were to develop individual country scenario and identify a relevant place in their country. They were required to highlight priority areas and indicate items to be placed in the map like booms
- G002- Country teams were to identify on the map current conditions, weather, natural resources in the area such as mangroves/turtles and equipment available and needed
- G003- (Beach cleaning phase) Country teams were to prioritize areas on the map based on environmental, social and economic factors
- G004 – Using the 5-point order template, country teams were requested to make their own work order for beach cleaning in one specific beach. This final group work was to be submitted 1 week after the training (see Annex 5 for country team submissions and Annex 6 for feedback from experts).[3]

Presenter :
Marisol Estrella, UNEP

[3] Submissions of each country team can be found in Annex 5 and feedback from experts can be found in Annex 6.

Group work 1: Using MyMaps and starting to create a situation picture within your group:



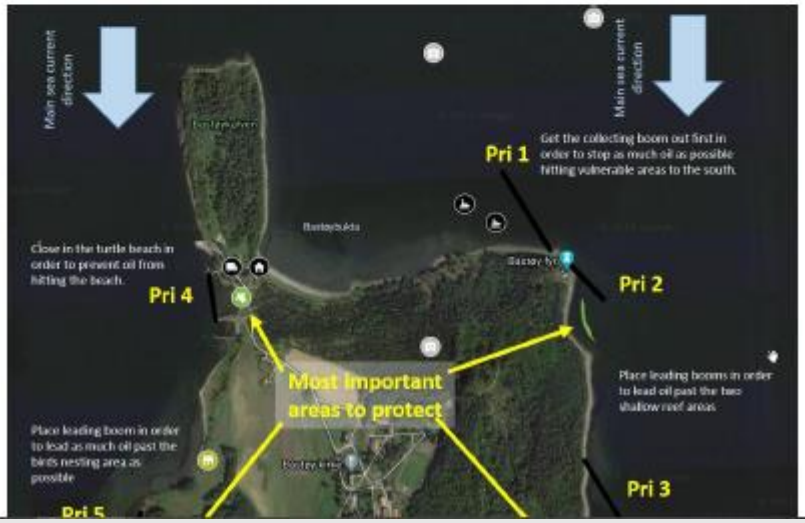
1. Designate a group leader.
2. Choose an coastal area in your own country with the following components:
   a. Proximately 5 km
   b. Different beach types such as marshes, mangroves, sandy beaches, shallow reefs, rocky parts and economic sensitivities (harbours, beach hotels e.g.)
   c. Some locations which can give economic impacts if oiled
3. Group leader creates a new map in self-selected area in own country.
4. Group leader invites his/her national course colleagues to created map.
5. Establish the following map layers:
   a. Surveillance and oiled beaches.
   b. Observations - other than oiled beaches (e.g. oiled animals).
   c. 2 oil slicks on water.
   d. Photos.
   e. Vulnerability and environmental information.
   f. Recourses (e.g. depotes, boats, toilets, cars).
   g. Other information.
6. Plot the following within the correct layers:
   a. 2 oil slicks at sea which threatens the coast line.
   b. 3 photos.
   c. Highlight an environmental area such as a turtle beach or other vulnerable species with link to an environmental online info site (Does not have to be about turtles). If environmental information site available online, add link in the description box. (If nothing available, just put in a link to something else)
   d. Plot 2 mangrove or marsh areas (polygons) in order to highlight this in your map.
   e. Plot one shallow reef area (or other vulnerable underwater area).
   f. Plot one depot with equipment.
   g. Plot 1 oil boom, for closing in oil in a bay (think about the current in the area).
   h. Plot 2 small work boats in the same area as the boom.
   i. Plot in area/spot suited for vacuum cars in order to collect closed in oil (in bay, ref h).

Instructions for Group work exercise 1

Groupwork 2 - Accute phase (beach):

Continue in map made in group work 1. The oil is still free floating (will/can re-mobilize). You still do not know about any oiled beaches. This group work focus on areas that can be influenced and whether some of the areas must be prioritized e.g. because of environmental vulnerability or not.

1. Find (national) vulnerability information related to the different positions in the area you have chosen. (Including what you found in group work 1)
    a. If online information, make link to these sites available in designated positions in your map.
    b. Prioritize the different positions/areas, based on available information on sea currents (+ weather), vulnerability information, available logistics, accessibility etc.
        i. Which beaches/areas are most important to protect from oil?
        ii. Is there locations in which you can sacrifice (suitable to concentrate and collect oil)?
    c. Plot in 1 boom in 3 different locations:
        i. One boom to concentrate oil for collection (in a natural bay)
        ii. One boom to divert oil past a vulnerable area
        iii. One boom to completely protect a specific area (close the area in).
2. Plot the following in correct layers:
    a. Area/spot suited for vacuum trucks in order to collect closed in oil (in bay, ref c. i)
3. What type of equipment do you have available in which you can use in this area. (From your national oil spill contingency plan)
4. What kind of equipment would you like to have?

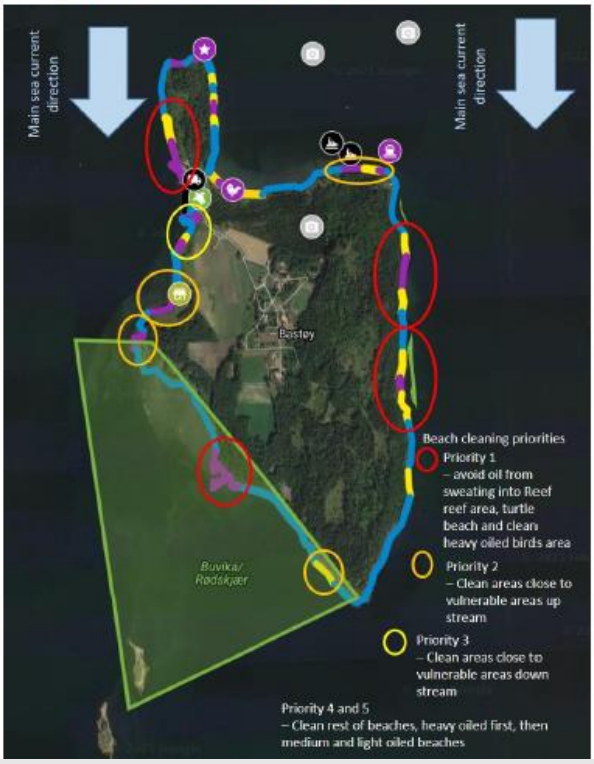


Instructions for Group work exercise 2

Groupwork 3 - Beach cleaning phase - SCAT:

Continue in map made in group work 1 and 2. The oil is now stranded and the risk of re-mobilization is smaller.

1. Plot beach surveillance etc etc (beach lines)
2. Based on the oiled beaches in your map – Prioritise the different oiled areas based on available information on vulnerability information, available logistics etc.
3. Anything else you would consider important



Instructions for Group work exercise 3

5 point order – Group work 4

Based on your work in group work 1, 2 and 3, choose one "first priority" beach and make a work order for the personnel that shall conduct the cleaning there. Keep in mind that you should **describe information that is important for this specific group of working personnel in their specific beach**. Do not use many words e.g. describing the overall situation picture.

1. **Briefing on the situation**
Orientation is given based on the information available at any given time. Status of the situation, units in action, local situation - weather, tide etc (what, where, when..)

2. **Mission**
A brief description of the mission.

3. **Plan and performance**
A brief description in terms how the situation is to be handled based on evaluation information available (how will the mission be solved).

4. **Administration and supply service**
Brief description of logistics; personnel (accommodation, dining etc) and material (need for resources

5. **Communications and management**
Brief description of the spill management organization with responsibility and authority.
Description of the communication diagram - contact points
(where is your place in the organization, which contact point are in use, radio network, any mobile number)

Instructions for Group work exercise 4

Day 2.

Lesson 4. Waste Management

Scope and Summary

This lesson aimed at enhancing participants' familiarity with the various types of wastes and waste streams produced during oil spill response. Using the Wakashio case study, the importance of organization in the collection, storage and disposal of wastes generated during all stages of the cleanup operation was highlighted. It also discussed the typical waste management hierarchy and process; and the overarching principles of spill response which apply to waste streams.

Presenter :
Thomas Sturgeon, ITOPF

Some key conclusions from this lesson include:

- Aim of oil spill response: Restore function & assist natural recovery.
- There is no magic waste solution
- It is important to note that waste can quickly cause bottlenecks for response operations; need to consider storage and transport.
- Response should be underpinned by waste segregation and minimization; Non-oil related waste requires separate planning and disposal
- When dealing with wastes during response, be aware of local/regional/national regulations, permits and approvals permissions and restrictions.
- Constraints are likely to be twofold: legislative and technical.

Lesson 5. Shoreline protection and clean up strategy: How to prioritize

Scope and Summary

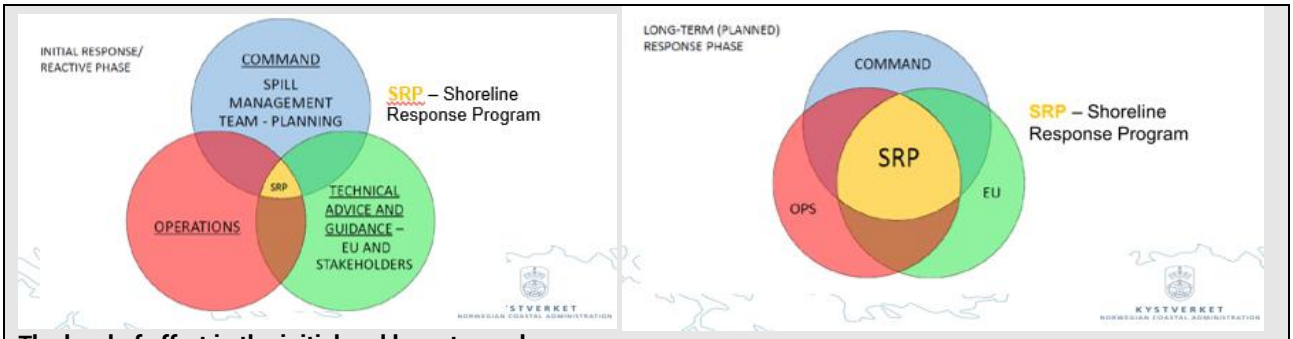
This lesson aimed at enhancing participants' understanding of the importance of prioritization during the acute and beach cleaning phases of a spill response operation. The initial shoreline protection will have an impact on the scope of the shoreline response program in the long-term phase.

It discussed shoreline protection and the strategy principles, environmental impact of the operation and the importance of mapping in supporting planning.

Presenter :
Kjersti Dale, NCA

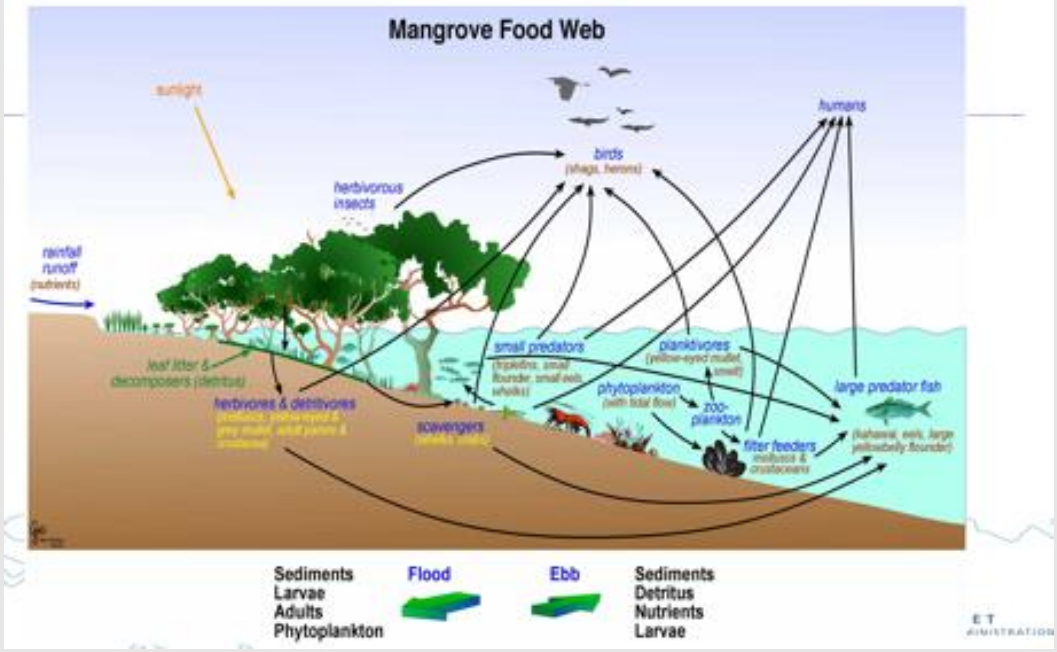
Some key conclusions from this lesson include:

- Shoreline operations require a long-term (weeks to months) strategy for the planned response that doesn't fit easily into the short-term focus of the typical spill management process as in the initial response. The focus of effort in an operation changes at each phase
- Natural resources linked to the sea surface, the upper part of the water column and shoreline habitats are most affected.
- Sensitivity maps holds essential information, identifying the sites of coastal resources and environmentally sensitive areas.
- Areas to be protected should be identified at the contingency planning stage
- The valuable window of opportunity during the initial phase will impact the subsequent of the shoreline response operation
- Clean-up operations enhance natural recovery –stop at the point where nature will do the final job
- Recovery time is highly variable and varies with shoreline types and habitats
- Environment studies as part of the cleanup plan to assess environmental conditions as well as food safety
- Communication of the results to the general public and media - the public interest has to be taken seriously; it is beneficial to keep them informed



The level of effort in the initial and long-term phases

An example of Response software as maps designed for those responding to oil spills including layers with essential information from Norway



Different local shoreline types, ecosystem and seasonal variations to support planning

Day 3.

Lesson 6. Shoreline assessment and surveys: Introduction to SCAT

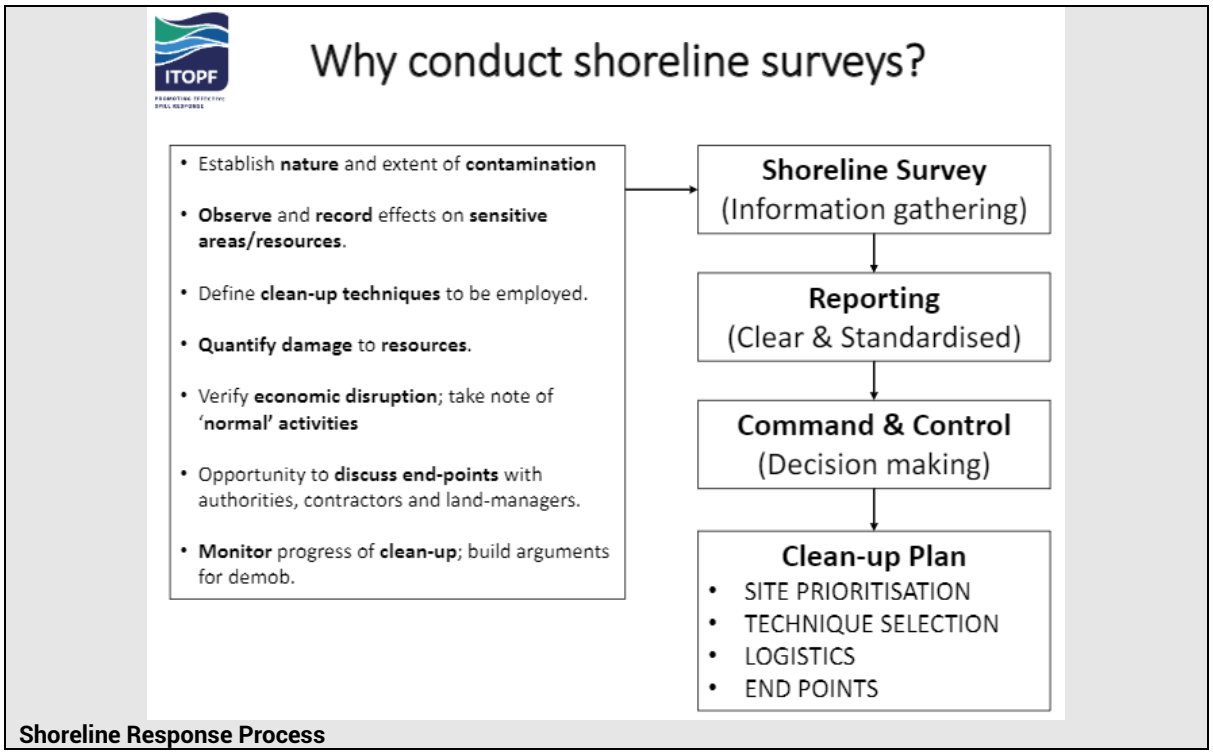
Scope and Summary

This lesson aimed to enhance participants appreciation and need for conducting surveys and assessments during shoreline oil spill response, using the example of SCAT. It discussed the assessments conducted in the emergency, operational and termination phases and the various methods to conduct shoreline surveys including aerial surveillance, by boat or foot. It also highlighted the key steps, essential tools and questions to be asked when conducting shoreline surveys.

Presenter :
Thomas Sturgeon, ITOPF

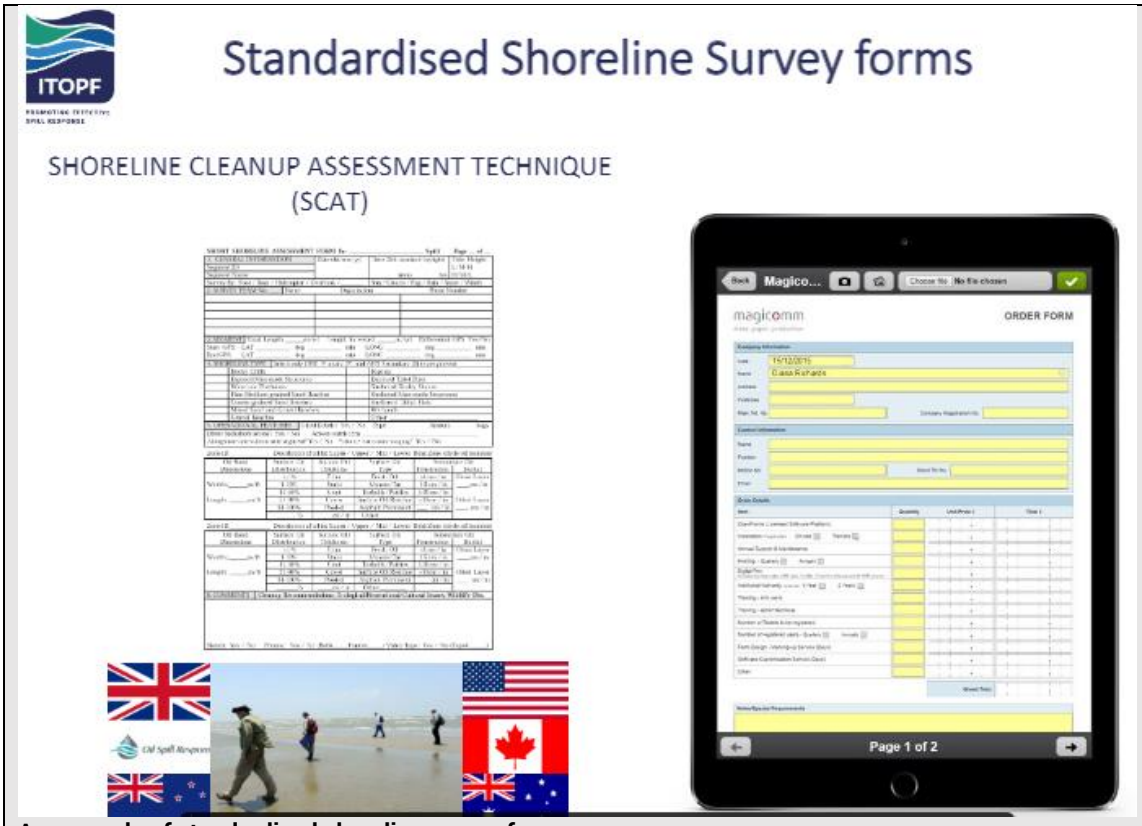
- Information gathered from shoreline surveys (air, boat, by foot) forms the basis of clean-up plan, which informs SITE PRIORITISATION –TECHNIQUE SELECTION – LOGISTICS –END POINTS
- Joint survey with key decisionmakers ensures all stakeholders are informed and aligned with the situation on the ground!
- Essential tools (GPS, camera, notebook, folding shovel) and safety gear (life jacket, first aid kit, cold/wet weather clothing, hot weather and sun exposure, provisions)
- Focus on the key questions: How much oil? False positives? Type of oil? Buried oil? Access? Waste? Clean-up method?

- Use a standardized data collection and reporting format e.g. SCAT or other, to ensure information is conveyed to the command centre.



Shoreline Response Process

Shoreline Survey Timeline



An example of standardized shoreline survey forms

Lesson 7. Making of 5-point work order

Scope and Summary

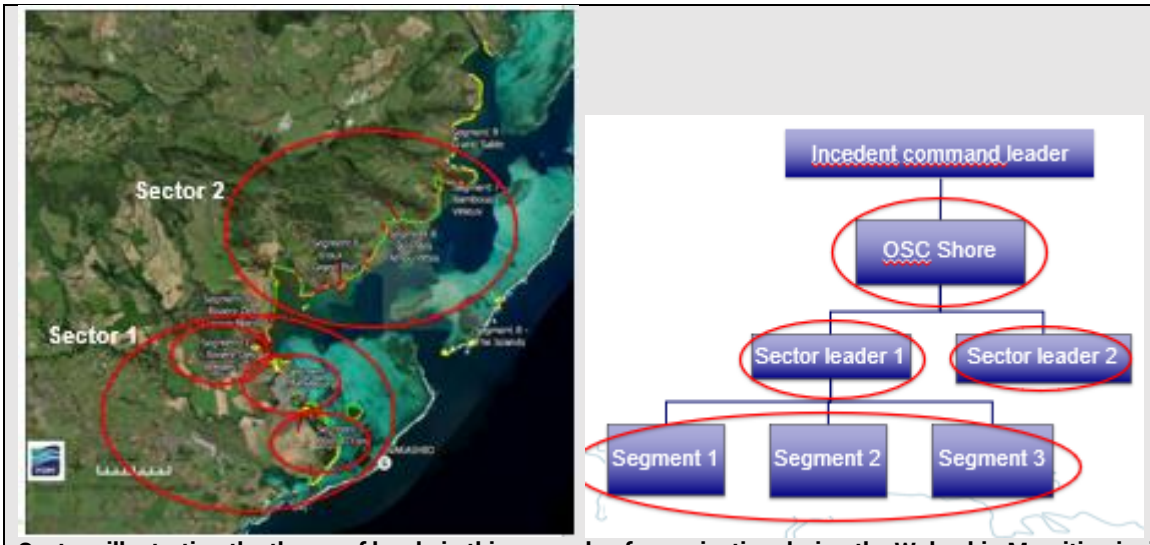
Based on Norway's 5-point order template for shoreline spill response – this lesson aimed to introduce and provide participants with basic knowledge of the process of issuing instructions for shoreline response and clean up, including the command chain for shoreline operations.

Presenter :
Kjesrti Dale, NCA

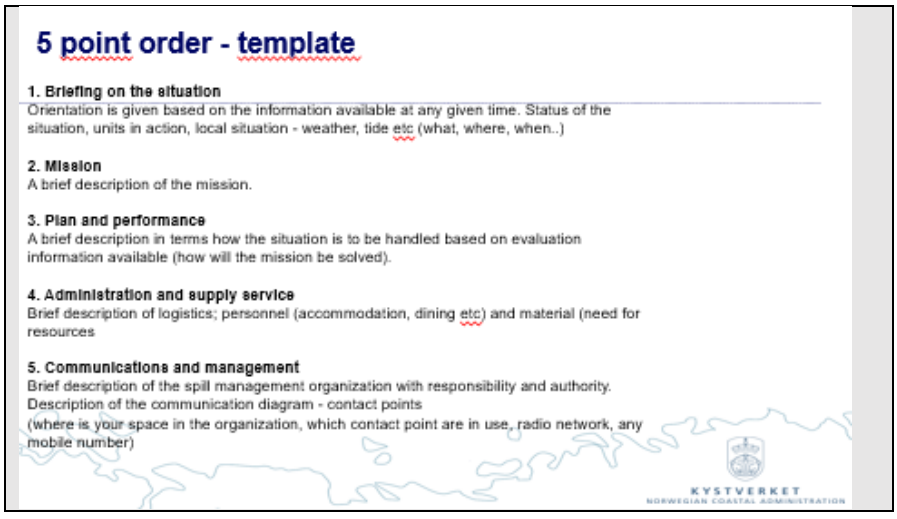
Some key conclusions from this lesson include:

- For lager oil spills, the organization can be organized into several levels in the command chain. It depends on the scope of the cleanup operation and the timeline how many command levels that is appropriate for the operation.
- The leaders for each level in the command chain have to produce their own order by extracting information from the given order and customizing it by providing more details on how to get the current mission completed.

- Making an order for a current mission is about sketching up a performance based plan, based on the information you have. This can be undertaken by prioritizing the available resources and making them available.
- The 5-point order template – is often used for organizing information about planning any kind of operation. The format presents all information to perform a task into five easily understood paragraphs - situation, mission, plan and performance, administration and supply service, and communication and management – for those who are receiving the order
- The 5-Point order is a tool used to make sure you as a leader at any level do not forget information when forwarding your intentions. As the operation goes on, multiple versions of a plan will be made, and sometimes just few of the paragraphs need to be updated



Sectors illustrating the theory of levels in this example of organization during the Wakashio Mauritius incident



5 point order - template

1. Briefing on the situation
Orientation is given based on the information available at any given time. Status of the situation, units in action, local situation - weather, tide etc (what, where, when..)

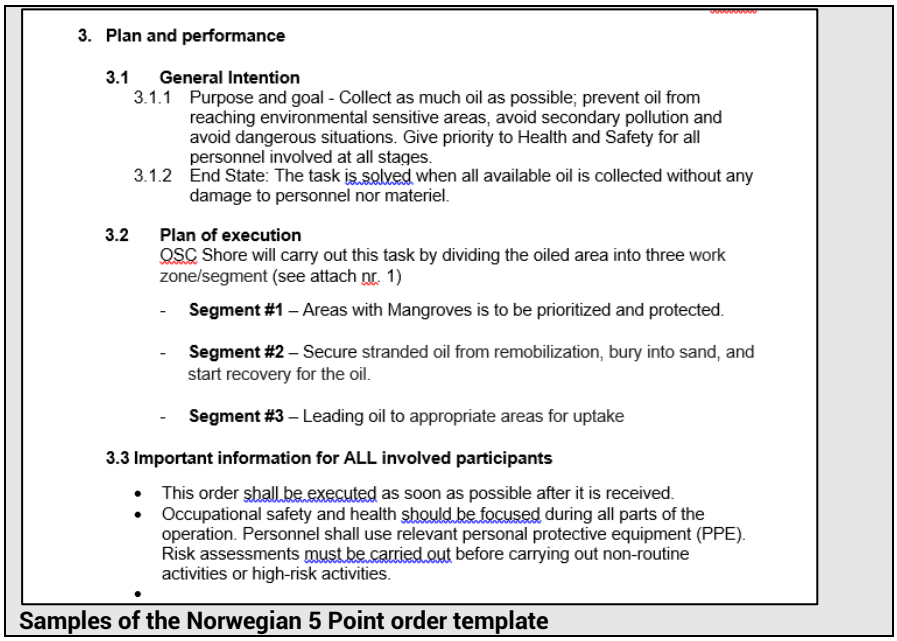
2. Mission
A brief description of the mission.

3. Plan and performance
A brief description in terms how the situation is to be handled based on evaluation information available (how will the mission be solved).

4. Administration and supply service
Brief description of logistics; personnel (accommodation, dining etc) and material (need for resources

5. Communications and management
Brief description of the spill management organization with responsibility and authority.
Description of the communication diagram - contact points
(where is your space in the organization, which contact point are in use, radio network, any mobile number)

KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION



3. **Plan and performance**

3.1 General Intention

3.1.1 Purpose and goal - Collect as much oil as possible; prevent oil from reaching environmental sensitive areas, avoid secondary pollution and avoid dangerous situations. Give priority to Health and Safety for all personnel involved at all stages.

3.1.2 End State: The task is solved when all available oil is collected without any damage to personnel nor materiel.

3.2 Plan of execution

OSC Shore will carry out this task by dividing the oiled area into three work zone/segment (see attach nr. 1)

- **Segment #1** – Areas with Mangroves is to be prioritized and protected.
- **Segment #2** – Secure stranded oil from remobilization, bury into sand, and start recovery for the oil.
- **Segment #3** – Leading oil to appropriate areas for uptake

3.3 Important information for ALL involved participants

- This order shall be executed as soon as possible after it is received.
- Occupational safety and health should be focused during all parts of the operation. Personnel shall use relevant personal protective equipment (PPE). Risk assessments must be carried out before carrying out non-routine activities or high-risk activities.

Samples of the Norwegian 5 Point order template

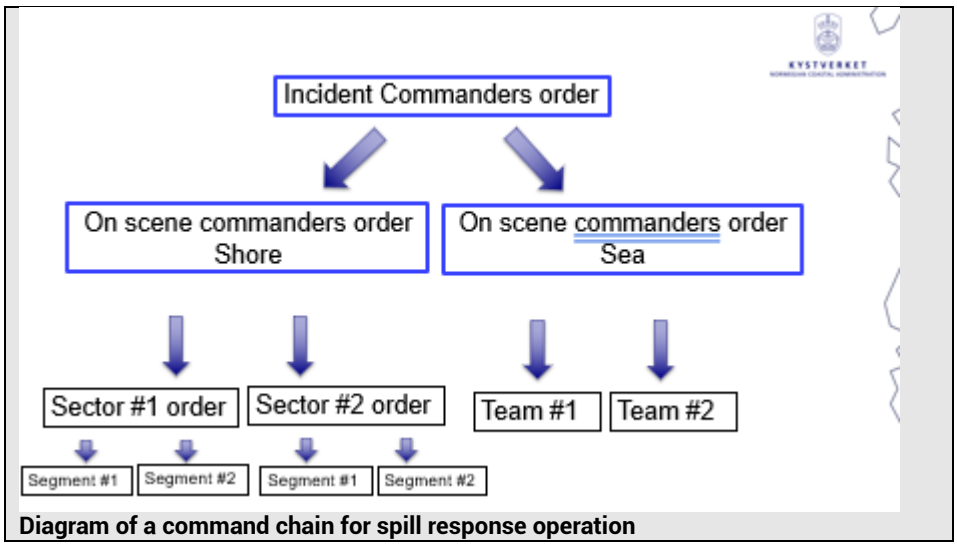


Diagram of a command chain for spill response operation

Results of Participant Assessments

Prior to and after the training, UNEP carried out a baseline and final knowledge assessment[4] using a set of "exam" questions (20 questions in total), which was one way of evaluating improvements in knowledge attained as a result of the online training. The set of questions was based primarily on the technical presentations delivered during the online training session. Responses were in multiple choice or responses.

[4] Due to the time constraints as the training was delivered online, the training was divided into two parts – for Part I, participants were required to take the baseline knowledge assessment before the training as a prerequisite to attending Part II of the training. The final knowledge assessment was taken online on the final day of the training.

It should be noted that this type of written assessment only provides a partial assessment of knowledge of individual participants to help in the evaluation of additional knowledge gained from training, through group work discussions and direct interactions with their peers and training experts from the workshop. Hence, it is important to view these assessments in conjunction with their own personal evaluation of the training and whether the training met their learning needs (discussed further below).

Of the total number of participants (31), 21 were able to complete both the baseline and final assessments, as others were unable to due to previous engagements. Participants who took both the baseline and final assessments registered a 21% average improvement in their knowledge of chemicals and hazardous waste management in the oil and gas sector. Of the 31[5] people who completed the baseline assessment, the average score was 70%. Of the 21 people who completed the final assessment, the average score was 91%.

Results of the Training Evaluations

UNEP provided the opportunity for participants to evaluate the training based on their own expectations and learning needs. 22 participants in total completed the evaluation.[6]

The majority of participants gave scores of 4/5 or 5/5 for meeting the set of learning objectives outlined by the training. Participants were also asked to rate the extent to which individual lessons (1-7) met their individual learning needs (score range of 1= not met to 5=fully met). Most participants scored each Lesson 4/5 or 5/5.

When asked to rate their experience using the 'Interactio' platform (user-friendliness), 41% of participants rated the training as 'excellent', while 32% rated the training 'highly satisfactory', 23% rated the training as 'satisfactory', and 5% 'needs improvement. When asked to rate how their internet access to the training was 23% of participants rated the training as 'very good', while 64% rated the training 'good, and 13% rated the training as 'poor'. When asked to rate their knowledge after this training 64% indicated they had gained significant new knowledge about the topic while 36% indicated they gained some new knowledge about the topic. When asked to rate their overall satisfaction with the training, 50% of participants rated the training as 'excellent', while 45% rated the training as 'highly satisfactory' and 5% as 'satisfactory'.

Participants appreciated the participatory/interactive training approach especially the group work exercises which they highlighted was very useful. Some participants wished to have a more extended training to have more time for discussions, team activities as well as additional face-to-face training to include field visits and physical on-site exercises.

Participants also gave feedback to be considered for future improvement of webinar trainings. Some of the feedback comments included highlighting the online training as very

[5] Total number of 31 persons completed the baseline knowledge assessment as part of Part I of the training. It is important to note that not all of them were able to participate throughout part II of the training due to prior engagements.

[6] The training evaluation as well as the final knowledge assessment was taken by participants at the end of the presentations on the final day of the training.

useful, additional time to be allocated for the Question and Answer session, as well as need for better internet connectivity (see Table 3).

Participants were also asked how they would apply knowledge gained from the training, 95% indicated that they would share workshop materials with colleagues, 73% indicated that they would organize a follow up meeting to share knowledge with colleagues who did not attend, while 86% indicated in the Review of NOSCPs or oil spill preparedness and response framework to include waste management plans, SCAT etc., 73% indicated in the Review checklists for prioritization and tools for shoreline assessment and 73% indicated in the Review / Updating / further finalizing existing checklists and/or guidelines and procedures for implementing regulations related to oil spill preparedness and response. Involve NGOs and Politicians when sharing training material so as to make them aware of it.

Future considerations for improvement include:

- greater time allocation for Question and Answer/comment session or possibility of extension of training days to provide more time for discussion
- possibility of convening participants from same country in one location to foster better concentration on training and avoid external interference
- the use of platforms with smaller bandwidth requirements should be considered to enable participants with limited internet connectivity to participate.
- Selection of one platform for group work exercises is essential to avoid confusion. Alternative platforms should also be available to support groups who indicate are unable to use selected platform due to internet connectivity challenges.

For further details of evaluation results, consult Annex 2.

Annex I. Participants' Questions/Contributions and Experts' Responses

Participant Name/Country/Institution	Questions/Comments	Responses from Experts
Alex Katama	Was there any readymade waste facility available in Mauritius prior to the spill?	Regarding contaminated waste transferred to facility already in Mauritius and we also exported to licensed facilities (Bheemul) The solid hazardous waste was packaged according to type of waste and shipped to Greece for disposal. The liquid waste was dealt with in-country (Thomas)
Michael Mbaru	There was a systematic shoreline cleanup response, were there were already resources for shoreline cleanup for all techniques used and were there already trained experts in Mauritius to undertake the role, and involvement of international experts and level of involvement of local expert in the cleanup process?	Number of experts involved, they did not have the expertise required and they requested for assistance through ITOPF, UN Experts and other government experts. Resources were brought in; POLYECO has an oil spill response arm which was used in the response. Large amount of equipment were brought in. Homemade scoops and basic equipment were used. Mauritius had preidentified the sensitivity areas in their NOSCP which helped in the response. It should have this in their plans. Booms used were not sufficient to protect the shoreline. They can protect certain location for certain amount of time. Recover the oil when collected if not they will go all over the place which was visible in Mauritius and some caused more damage. They have to be used correctly to avoid impact on environment and can create waste issues

Felizarda	Of all strategies used to respond to the pollution, what was the most difficult stage to overcome the challenge?	When spill occurs, rapid recovery is important if not it can be seeped in the sediment and this was one of the challenges. Regulate volunteer effort to avoid secondary contamination and this needs to be coordinated properly. This was crucial in Mauritius. Have this in place to mobilize local volunteers effectively and train them beforehand so they can take part in response. Norway does this type of trainings for volunteers. Good cooperation with NGOs used during oil spills. Register with personnel for organization and some training is also given to them. WWF is one of the collaborators. The spill occurred overnight so booms were deployed early morning. Challenge was preventing it from moving onshore. Dynamics in the region had tides and waves which complicated the response and the main challenge faced in recovering. Bulk oil was collected also in the first layer. It was also shallow there with corals and maneuvering in shallow water not to damage the corals was challenging. Blue bay marine bulk was prioritized to be protected. Artisanal booms placed by volunteers which were bursting caused damaged to the equipment, skimmers. We adopted a layered defense protection, trying to use boom at the wreck itself outside the lagoon and the wave did not let the strategy work with the oil entering the lagoon. A second layer of boom was used to contain some oil that were pumped and another layer in the deep

		channel were the drift was high. The shoreline was rocky which was a challenge and skimming was used. The area wasn't reachable by boats, maneuvering had to be slow.
Alex	The insurer of the ship came in after some days, how long did it take for the polluter to start cleanup? Were there available emergency funds before the polluter came in?	Response time- as soon as it was grounded ITOPF was notified and covid restrictions were a bit of a challenge. Response was made a couple of days after the spill date and there were people representing the insurer onsite to remove the vessel. The host country has to respond, in this case Polyeco had to respond trusting they will get paid back by the insurer
	What could Mauritius have done better to prevent contamination at the shoreline?	-Viswarnath: It was difficult because in a matter of 12 hours the oil spilled from the ship and made it to land. The local team put out deflection booms and boom towers which they prioritized to save oil from the spill, however the spill occurred at night and they were not allowed to operate on or address the issue at night due to risks. After a 2016 event, they realized they could sacrifice part of a public beach when diverting part of an oil spill. In the 2020 Wakashio accident, they tried to use booms to protect a local lagoon, but it was too late. -Helge Anderson of the Government of Norway noted that it is easier to collect oil from the water rather than the shoreline. Waves and currents for example can make it difficult. -Thomas Sturgeon of ITOPF noted that he could imagine that the 2016 spill and response would

		have been a hard decision, especially to sacrifice a beach, but it can also be a good strategy if needed. -Seebaruth: the booms and the distance to the shoreline all affected the outcome of the spill. By twelve hours most of the oil had reached the shoreline, and they couldn't wait more to respond. Only a certain vessel was able to reach the ship. -It was followed up upon by the Mauritius team that the Wakashio ship was being emptied at the time of the emergency. The operations were simultaneously to empty the ship and respond to the spill, and they were able to pump out over 300 tons of oil. High seas booms were used but were unsuccessful in this specific event due to large waves and stormy weather. Skimming was needed as well as equipment to pump the oil into; this could have been done for example by Eco-Fuel. Booms were placed outside of the lagoon to preserve the lagoon, but couldn't withstand the waves. -Ms. Komul Kalidin of the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping of Mauritius followed up with an elaboration of the strategy Mauritius used to preserve the lagoon. In order to address the poor weather at the time, multiple layers and widths of booms were set out at different times in order to protect the lagoon. Initially, vessels were unable to connect to the ship for stabilization or pumping operations, leading to the spill continuing.

Michael Mbaru	Volunteer engagement worked, what was the strategy to make it break even and work?	Looking toward external expertise on the side of the Mauritius; ITOPF was focused on assessment of the spill. Covid was in full effect during this making it difficult to coordinate for experts to come. The Minister of Health was on board and the proactiveness of the government to get assistance. The Ministry of Environment was coordinating the volunteers who were trained, including fishermen, members of the local community and employed by two response companies. The coordination made it easy to conduct the cleanup exercise.
Clever	Where are monitoring and surveillance?	This can be placed at the planning stage
	What could Mauritius do to make it better as they had challenges using booms?	Source control is important; empty the source, move the oil from the containers or ships. Have a broad knowledge and apply the best to your situation. It was envisaged during the first stages of the meeting to deflate the oil towers and sacrifice a bit; once deflection booms might have caused deflection in the oil tower; Bluebay marine parks was a priority. Part of the public beach was sacrificed in another incident but wasn't done in Wakashio as it may have contaminated of the Bluebay marine park. Do what you can to get all the oil from the water before it gets to the shoreline. When it gets to the shoreline is more time consuming and challenging. 10-15% are taken up from the sea before reaching the shoreline. It is a difficult decision to sacrifice a

		beach, even if you have the best resources and expertise, the oil will still reach the shoreline. Follow the oil into one collection point. In Norway, there are specific beach areas to put ships into when in distress and they will be grounded instead of getting them into vulnerable or difficult areas. In the case of Wakasio the booms were not placed on the sea when the spill occurred. Distance between the shoreline was close. Since oil had reached the shorelines in less than 12 hrs, stopping the leakage was left to the salvage experts. Emptying operations took longer time and a large quantity of oil was emptied. The oil was pumped and airlifted to shores, all operations carried out to empty the wakasio as soon as possible and if not it would have led to a more serious oil spill. About 3000 tones were pumped out. The travel time from the wreck to the shore was about 12hrs, of which the incident occurred at night and due to safety reasons work couldn't commence. Easy maneuvering areas were areas where booms were put. Bulgers were needed to pump the oil to be taken to shore and was a challenge. Put a layer of boom outside the lagoon but it didn't stay due to the waves and tides. Inside the lagoon a first layer of boom was put. Many strategies

	It was asked why Uganda would partake in the mapping activity as they are not near the ocean.	It is because of oil and gas exploration in freshwater resources like lakes that this type of mapping would be useful and relevant.
Selelah Okoth (Kenya)	Preparedness is key and the experience from Mauritius shows that spills happen and it's closer to home.	
Clever (Tanzania)	Lessons from how Mauritius government handled the spill and it depends upon geographical location, season etc. to identify challenges such as wind. Different types of shoreline (sandy beach, rocky beach, mangroves) and protected areas, we have learnt how to deal with them. The group work was very good and learning about MyMaps is going to be very useful. The team now has a better understanding of how to deal with these issues. If the spill happens in Tanzania, we have the NOSCP approved but need more. There will be more risk in Tanzania following the pipeline from Tanga. We will be able to respond but need to make sure everyone according to the plan at strategic tactical level needs to know their position in management level. How to include local community, NGOs in responding to spill is in the works to be implemented but is present in the contingency plan. Marine park is using donated equipment. Sensitivity mapping, experiences from different countries have shown there are challenges in	They require resources for maintenance and functioning, exploring partnerships to pull resource for this will be good. Kenya has World bank supporting them on this

	updating them. If it's possible for oil companies work together to pull resources together to have sensitivity mapping. Tanzania does have a contingency plan now, but it could be improved at the management level. They have parts, such as an Annex referenced, and have tried to be inclusive of other groups, such as local government and oil companies. They have gone far, and could handle a lot. They have now established teams and have a Tanga team that they have established since 2019 to run the proper exercises and going to have teams across the coastline. Equipment is another issue, and they currently share it with Tanga. Use different equipment in different cities.	
Jilani (Kenya)	Kenya has a sensitivity atlas.	Make your system functions interoperable so you have interactive layers, the system communicates with each other. It has to be a system (geospatial platform). MyMaps had the tools available that they could not access through the atlas directly, though the atlas did include the sensitive environmental areas.
Leila (Uganda)	Uganda has an atlas a book but not as computer plotting system. Though they have the book, they don't have techniques broken down. MyMaps was used but sensitive areas were gotten from the atlas. The challenge is that it isn't currently built out in a computer system.	Address the gap e.g in the emergency request procedure, ahead of time before the incident takes place

	Lacking in NOSCP- training for particular people are not extensively done. There's no request procedure for assistance immediately. We rely on phone calls and not email. Said the network still needs to be built out so people can request immediate response. Need a larger management/organizational response, so if there are requests they can be responded to faster.	
Mahmud (Somalia)	It is interesting to get the information to be prepared for incidents like this. Somalia does not yet have a national oil spill contingency plan. Did find it interesting to be able to prepare more material before something happens based on these trainings and examples. Hopes to have more GIS in the future.	
Bheemul (Mauritius)	GIS was used for the Mauritius incident but the challenge is that it was based in the headquarters. The MyMaps is good as you can produce a map under short notice as it allows multiple users	
Clever (Tanzania)	Regarding the sensitivity maps, noted that it could be interesting to connect them with other countries and private companies, compiling accessible maps together globally. The information could be present already and mapped more easily.	

Bheemul	Chidinma asked Mauritius team- did you train volunteers on sight or were they trained beforehand?	Bheemul responded: the volunteers were given instructions on sight, as well as PPE and how to properly store the waste. It wasn't necessarily in their NOSCP. However, there is a section on waste management in the NOSCP, just not on training volunteers specifically. Many people wanted to help, so the challenge was to determine how many volunteers were needed and how to not have them hinder or interfere with cleaning contractors. It was successful.
Viswarnath (Mauritius)	Wanted to discuss the collection of oil at sea. Had to rely on the collaboration of local peoples, since they know the sea and tides, as well as when to use them for the response at sea.	Thomas: agreed with everything. It was a really good effort and good logistics; the government was well co-ordinated and the volunteers were helpful. It can be difficult using volunteers since they aren't under direct instruction but there can also be a lot of passion from them.
Selelah (Kenya)	From the groupwork it was highlighted that the choice of equipment for Kenya wasn't appropriate due to the type of spill. What factors will guide you to know the correct equipment e.g laying of booms or their size?	The booms can't be too long; not more than 400m because the pressure from the sea and currents is hard that it makes it difficult for the boom to hold unto the oil pushing it underneath the boom and the forces or current can destroy the boom if it's too long. The longer the boom the bigger the sea pressure. If the boom is placed 60 degrees into the current it gets half the pressure of the water into the boom. If the current is moving along the coast you can use the boom as a leading boom and can be quite long. At the sea the current direction will change. Most of the pressure is into the boom and if you're anchoring 1: 25 meters. Keep in mind the water depth shouldn't be too deep so it doesn't go down to the sea floor because of the current.

		Never lead the oil into the mangroves because it's impossible to clean it
Viswarnath (Mauritius)	Mauritius had their booms under the channels of the east coast because that's where the bulk of the oil was moving to; to trap and collect it but there were challenges there with the boom cos of the tide. Concrete sinkers were used to tie the booms put in the bottom of the seabed 7-8mtrs depth. The booms can flatten on the surface with the oil going underneath. These were adjusted earlier with anchors and sinkers. Using long booms is challenging. Cleaning of the mangroves from the seafront was very challenging and was undertaken by two NGOs, especially from the tides, the artisanal booms placed made up of grass and caused a lot of waste trapped in the skimmers. Use of flat skilled boats to maneuver the shallow areas.	700 tonnes of oil were collected from the booms, found that using longer booms could be challenging, particularly to hold them in position due to currents. Recommended that this is something to be reviewed.
Seebaruth (Mauritius)	Commented that in the initial days of the spill, cleaning of beaches and rocky coastlines was conducted in the first ten days. Then, the cleanup was handed over to experts of the Polyeco and Le Floch groups which did the cleanup of the mangroves.	
Capt. Alex (Tanzania)	The choice of the size of the boom, what factors should be considered?	Currents, waves and force existing in the area should be considered as they will affect or destroy

		the boom if it's too long. You can make an opening in the boom for oil collection. Not only the length and width of the boom should be considered but also the angles at which they are deployed from (ie as shown on the diagram). This can cause different pressures and successes on the booms at sea.
Stephen Oluka (Uganda)	In Uganda, there are lakes characterized by papillas, muds and bushes. Since we don't have mangroves we will have to save the papillas, likely scenario from Uganda is a spill from pipeline running through areas toward those of economic value. This is what will be Uganda's focus to save areas of economic value. What tactics are available for responding to spill from broken pipelines including organization, responsibilities, etc.	Helge responded that it would be possible to provide information on how to respond to on-land oil spills. The type of viscous, heavy oil Uganda would be handling would also be taken into consideration. Some of the techniques for response to shoreline are quite similar for those onshore (in-land) especially in the case of Uganda
Selelah (Kenya)	Waxy characteristics of the oil in Kenya. What would the costs and techniques for cleanup be?	Specification of the oil to know the cost for cleanup. Lower cost will be for cleanup of heavy oils. Manual cleanup is more advantageous if its heavy oil in this case. It won't penetrate the sediment but will be persistent if not cleaned up properly. ITOPF provides services for countries including surveys and can be contacted via the number or email on their website
Michael (Kenya)	Dedicated Manual for SCAT in Kenya to support the NOSCP and is referred there. It contains the Onshore CP, training and	Has Kenya been trained in the SCAT procedure?

	equipment needs and forms for assessment stages A short training to appreciate what SCAT entails. The capacity built cannot be considered as adequate but their capacity for offshore response is higher	
Capt. Katama (Tanzania)	Shoreline survey form is missing in the NOSCP but there's provision for SCAT. Restoration of damaged environment where it can be put in the plan, should it be part of the NOSCP? Is there a Component related to environmental restoration in the NOSCP of Norway?	It doesn't need to be in NOSCP but it's upto the national authority dealing. It should be a clear concise document with instructions in bullet points - not bulky. Another document/s with clarification on different topics which is referenced in the NOSCP Guidance manual to address environmental restoration and is referred to in the Norwegian contingency plan
Seebaruth (Mauritius)	No SCAT Template or Volunteers/NGO mentioned; roles of govt institutions and oil companies are defined. roles and mgt of volunteers need to be elaborated; No defined plan for disposal	Post-cleanup monitoring is important
Clever (Tanzania)	Noted that Tanzania does not currently have a SCAT in its NOSCP but believes instead a separate special manual should be created for it. How to mark objects plotted in MyMaps?	Stig referred to the instructions in his slide and noted that content rather than design was more important.

Selelah (Kenya)	Noted a training on contingency plans (onshore/on-land) and offshore to consider a review of where there is or is not a need	Comment by Thomas: “Thank you for the information all. It is really useful for us to hear this. My suggestion would be to do regular (at least annual) training on the contingency plan. This could involve hypothetical scenarios and site visits to conduct shoreline surveys for example. If you would like assistance with any of this feel free to get in contact.“
Bheemul (Mauritius)	Is it possible to insert gps coordinates into MyMaps?	Segmenting areas (based on beach type or in case of same beach- in areas) during cleanup will be helpful so teams will be assigned areas to clean You can use android phones to put coordinates but it doesn’t let you put different colors so you will need a computer afterwards. You can buy professional add-ons into google MyMaps or use more professional platforms.
	Stig inquired the ways that Somalia has prioritized response areas to the map.	Stig: costs have to do with national regulations. Usual rule is that the polluter has to pay. The bill will be sent to the polluter afterwards, and there are regulations in the IMO system as well. Said he goes to areas that have the highest concentrations of oil to prioritize them, but there can be situations where there is little oil but perhaps animal populations are migrating there soon, etc, so those instead could/should be prioritized first. .
Stephen Oluka (Uganda)	Prioritization of animal populations and then shoreline protection for economic considerations.	

	Stig again inquired about the prioritization scheme for Mozambique. -Arminda: They prioritized sensitive environmental/protected areas due to endemic species, and then included some of the economic areas.	-Stig noted that sometimes you have to delay fishing even when those areas are economically prioritized, to abate any chemical ingestion hazards with fish consumption. Secondary ports and alternative landing sites for fishing boats etc can be parts of local contingency plans, so not all the details need to be in the national plan, for example.
	In regards to the map presentation by Tanzania	Think about various scenarios to allow you be prepared for response if it happens
Selelah (Kenya)	Asked about why this is all considered just planning and not communications?	Kjersti clarified that this isn't a mechanism for response, as in a timeline, but rather a system for organization as a whole. So it can be looked at as planning and organization.
Clever (Tanzania)	Inquired about the incident chain and the roles under the organizing sector.	Kjersti followed up that the command leader would have the primary information, but the command chain goes downwards and upwards. People at lower segments can also make requests to higher command leaders for materials requests, etc. Stig noted that the principle of the 5 point order is that the template can be used anywhere in the chain of command.
Viswarnath (Mauritius)	They used an SMS and the coast guard onsite for the incident command system for the Wakashio incident and shoreline cleanup. He noted that the commanders at sea were not under the same "Incident commanders order" as the commanders onshore. The onshore team was organized under a different branch,	It was noted that it is important for the volunteers to also have ample information provided to them so they can move forward quickly.

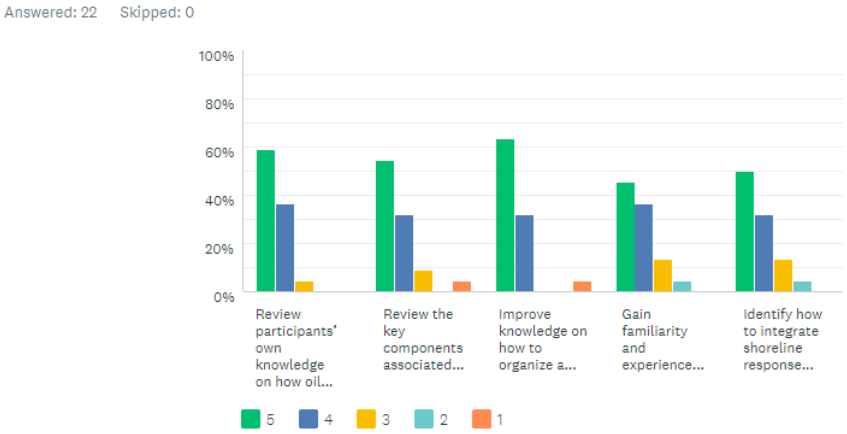
	and the separation was successful in their case. Orders were written, no template was used. They followed an NOSCP, more like military orders. The issue came when private companies joined for the shoreline clean up, the government of Mauritius didn't have any control over the private side.	
Stephen Oluka (Uganda)	When are the orders conducted? At the Incident commanders order, the On-q scene commanders orders on shore/sea, or at lower orders? Who gives the mission? Is it done at a national organizing level?	Kjersti noted the order, starting with the Incident Commanders order, down to the On-scene commanders order on Shore and at Sea, and then to lower segments. Noted it as a tool that can be used at any level of organization. There can be multiple versions of this plan and it should be updated accordingly. Incident Commanders at the top that have done the planning with the staff in the organization are always the ones at the top. She referred to the example in her slide that led to: 1. Incident Command leader 2. OSC shore 3. Sector Leaders 1 and 2 4. Segment leaders 1, 2, and 3 below...
Mahmud Mohammed (Somalia)	Asked if this is nongovernmental, based on military hierarchy, for Norway specifically?	Kjersti said it's internationally recognized along the lines of military. The 5 point order can be used for any operation. This is in the contingency plan to discuss who will give orders, etc and the supporting guidelines. Stig noted different roles, such as the incident command leader could be from the government, the on-scene commanders order at sea can be from the

		Coast Guard. Lower sectors and segments can divide themselves, etc.
Seebaruth (Mauritius)	Commented, “At the SMF we use fool headings for any ops. 1. Situation 2. Mission 3. Execution 4. Logistics and 5. Command and Signal.”	
Arabey (Somalia)	From Kjersti’s presentation, who is responsible for the response and cleanup operations specifically in Norway, the military?	Stig: The Ministry/Department of Transport and Communications systems. They have been under the Fisheries department earlier. Helge: Department of Transport and Communications. All under the Norwegian Coastal Administration.

Annex 2. Detailed results of Participants' Training Evaluations

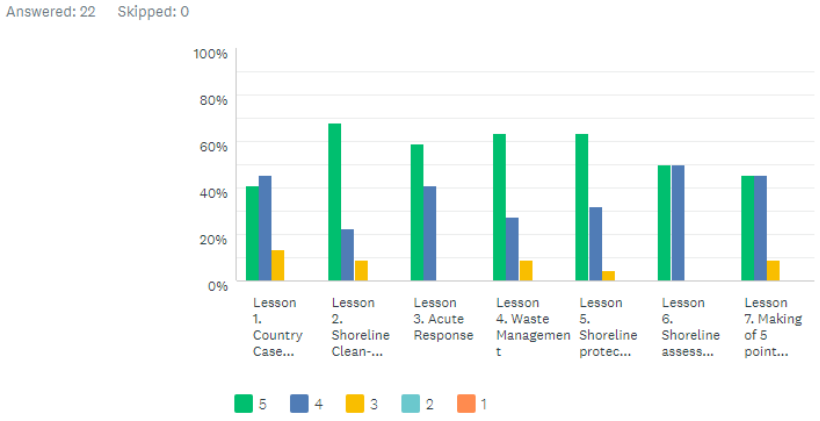
The majority of participants gave scores of 4/5 or 5/5 for meeting the set of learning objectives outlined by the training.

Table 1. Participant Rating of Learning Objectives Met (score range of 1= not met to 5=fully met)



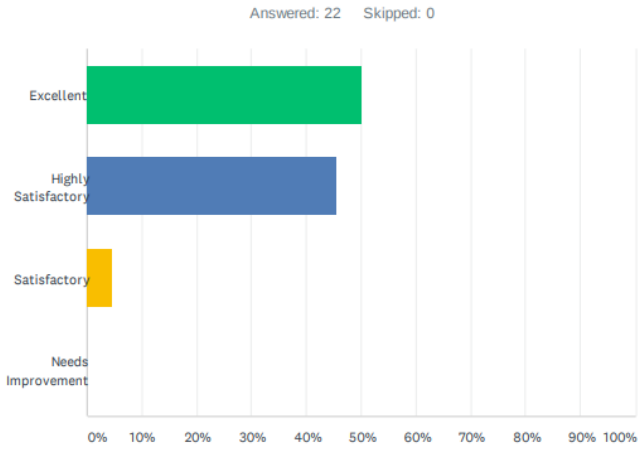
Participants were also asked to rate the extent to which individual Lessons (1-7) met their individual learning needs (score range of 1= not met to 5=fully met). Most participants scored each Module 4/5 or 5/5 (Table 2).

Table 2. Participant Rating of each Module against their learning needs



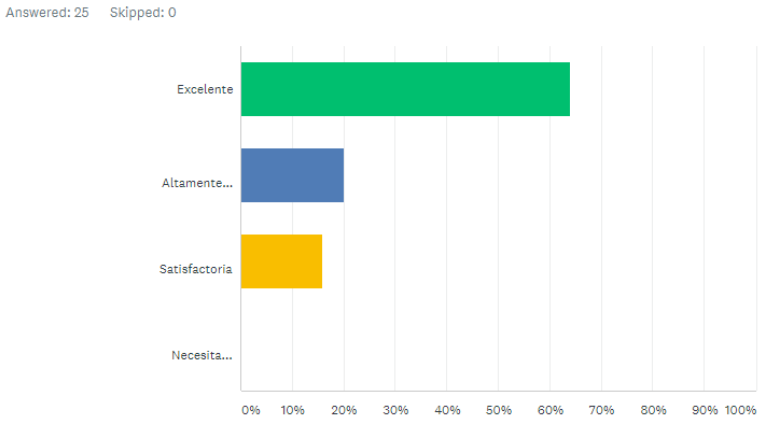
When asked to rate their overall satisfaction with the training, 50% of participants rated the training as 'excellent', while 45% rated the training as 'highly satisfactory' and 5% as 'satisfactory'.

Figure 3. Participants' overall rating of training



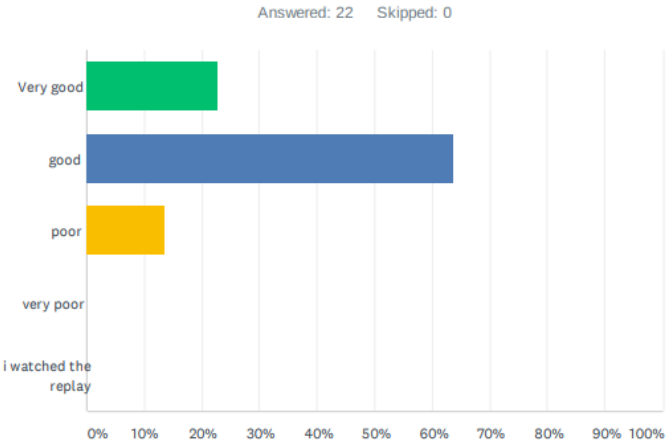
Participants were also asked to rate their experience using the 'Interactio' platform (user-friendliness), 41% of participants rated the training as 'excellent', while 31% rated the training 'highly satisfactory' 23% rated the training as 'satisfactory', and 4% as 'needs improvement'.

Figure 4. Participant Rating of Interactio platform used to deliver training



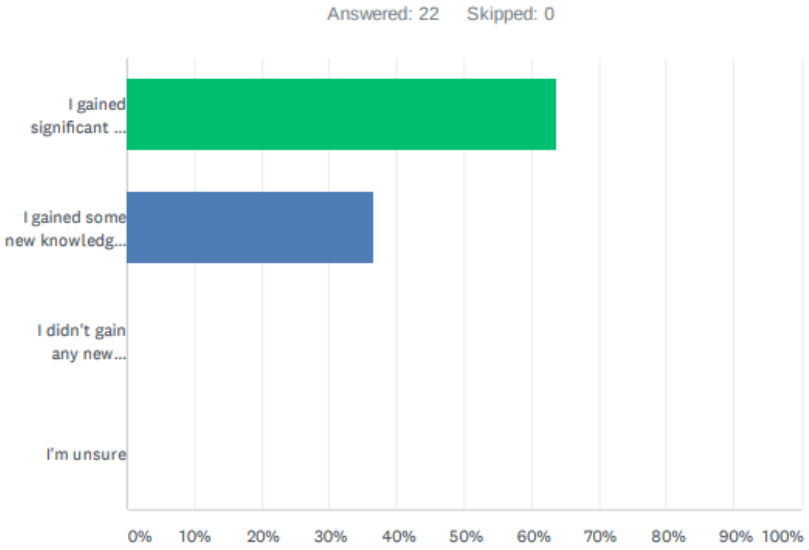
When asked to rate how their internet access to the training was 23% of participants rated the training as 'very good', while 64% rated the training 'good, and 13% rated the training as 'poor'.

Figure 5. Participants' evaluation of their internet connectivity



When asked to rate their knowledge after this training 64% indicated they had gained significant new knowledge about the topic while 36% indicated they gained some new knowledge about the topic.

Figure 6. Participants' evaluation of knowledge after training delivery



Sharing training materials with other colleagues	21
Organizing a follow up meeting to share knowledge and training materials with other colleagues who could not attend this training	16
Review of NOSCPs or oil spill preparedness and response framework to include waste management plans, SCAT etc.	19
Review checklists for prioritization and tools for shoreline assessment	16

Review / Updating / further finalizing existing checklists and/or guidelines and procedures for implementing regulations related to oil spill preparedness and response	16

Table 3. Participants' feedback on the training

What did you like about the training? Which part of the training was most useful to you?	• The Mapping part was the most I liked though some difficulty as I have little GIS knowledge • Practical part, group work activities are most useful • Shoreline assessment and cleanup; Operation Procedures; Oil spill response strategies; Group work 3 • All the parts were relevant to my daily work • NCA presentation; TRG shoreline clean up • The practical group work • Use of My maps to create own maps...layers and data tables • Using my maps • incident mapping; 5-point order template • I learned how to plot and insert the data in my maps... • 5-point order. The rest enriched my knowledge further. • The different sessions, the MyMap session. • Group work • I liked the way the Maps was introduced and how the works order template was generated • Use of tools to support the management of shoreline assessments and clean-up 2. Integration of shoreline response considerations with the national framework for preparedness and response to oil spills • The learning to plot on MyMaps was very useful. I believe that I will be using this tool in the future not only for oil spill but also for any other coastal development plotting. • using my maps • The identification of the oil spill areas and prioritizing using the MyMaps • All, though I loved the Waste Management, Shoreline surveys and clean up sessions. • The knowledge sharing and the hands-on training on my maps • About the course, I liked all the materials given, and especially the part of the group work that has to do with the use of the MyMaps tool.
Which session or part of the workshop did you find least useful, and why?	• They were all of equal importance because each stage led to the next iteratively • The fact that most of the training based on shoreline clean up. I would have loved to participate in the clean up on land • Both are useful i.e. like a chain

	• I liked each lesson. However, I think that the technical problems of the Interactio platform caused some problems to some of the participants. I was glad that the issue was resolved quickly and I must say that I did not encounter any problem later. • All sessions where very interesting in general. The Session on Waste Management was not very useful to me as there is another Division at the Ministry of Environment which looks into the management of wastes. • The technicality of the training required the physical presence of the trainer • Plotting the booms in group work 2. This part would have been more interesting with lessons on booming strategy • I found all the sessions important; I think one complements the other Others responded 'all were useful' or 'none'
What challenges, if any, did you encounter with online training?	• Internet access as Mobile data was used to access • I did not get good internet connection, I missed some parts of the training • To manipulate Maps, draw the necessary symbols; Interference from the department when the training is on; Long distance from the residence to the internet point (office) with traffic hold ups • internet connectivity • too long time • Some topics were discussed in a rush. • echoes • logging in • Our internet connection is not sufficient, and power cut off in the first day of the training • no one to one visual contacts and connection to interactio platfform • De um forma geral nao houve desafios era uam experiencia nova associado ao facto da distancia dos demais membros do grupo (In a general way, the challenges we experienced was associated with the distance of two other members of the group). • 1. Power breakdown in some time in my location; 2. Slowdown of internet in some time • The Mauritius Team could not group in together in one room. It is challenging to follow lessons when you are in country and at workplace as you get disturbed frequently by your colleagues. • Internet failure; Low level of interaction and engagement with the trainers • I encountered occasional disconnection although the internet connection was good. • Group working behavior, not committed to work together. • The platform was not consistent. It kept breaking hence could not consistently follow the sessions and also experienced similar challenges while presenting

	• I struggled with preventing external interaction given the fact that I was carrying out my online training from office. • The interaction platform requires very strong internet signal unlike Teams and Zoom. Therefore, this caused breaking in the sound and other issues • The challenge in using the MyMaps tool Others responded 'none' or 'they were satisfied' with the training
What do you think could be improved?	• For our internet situation, only improvement is to organize the training in one venue for all participants • The time offered for each period is short and before you internalise the ongoing lesson, another is already taking place • the online platform • really was good • Practical exercises should be more explained. • More practical • Logging in • More time is required • the training duration should be extended • Extend the time • prior testing of the platform before start • Deeper in the training • Time for practical exercise • I think that this training should be completed by onsite practical training • When it comes to using certain tools, such as MyMaps and GIS, physical trainings may be the best bet. Need to focus on onshore response as well. Offshore response is a fairly technically strengthened field unlike onshore. • The Interactio platform maybe. I had no issue when we did group discussion on Teams platform. • bring together same country working group. • Having a one on one training if not possible you may consider change of the platform • Maintain - Thumbs up!!! • More field-based training after the COVID_19 pandemic • I believe they are on a good path

Annex 3. Training Programme for Part I

PROGRAMME AGENDA – PART 1, SELF-PACED PREPARATORY TRAINING

18-21 May, 4 hours maximum			
Lesson	**Activity**	**Time**	**Individual Tasks**

E1	Complete online knowledge assessment	30 minutes	Click here
	Complete Training Needs Assessment	15 min	Click here
E2	Introduction to My Maps	15 min	Watch e-learning film on how to use MyMaps *See Logistics Note for further instructions*
E3	Individual assignment in My Maps	1 hour	Task to be completed and submitted *See Logistics Note for further instructions*
E4	Review of knowledge materials - Fate and behaviour of oil spills - Oil spill response techniques	30 min	Watch 2 ITOPF videos (click here and here)
E5	Review your country's National Oil Spill Contingency Plan and identify where shoreline considerations are referenced and list of available equipment	1 hour	Individual assignment – *See Logistics Note for further instructions*

PROGRAMME AGENDA – PART 2, ONLINE CLASSROOM TRAINING

Day 1, 25 May	
8:30	Participants log in
9:00	Welcome Introductions, Logistics, Course overview and Expected outcomes
9:30	**Lesson 1.** Country Case study: Mauritius oil spill Representative from Mauritius/ Technical partner Presentation – 1 hour (in 2 parts) Q & A/Discussions – 30 min
10:30	Coffee/Tea Break
10:45	**Lesson 1**. Country Case study: Mauritius cont'd Q & A/Discussions
11:15	**Lesson 2.** Shoreline Clean-Up: Organization and Management

	Norwegian Coastal Administration (30 mins) Q & A/Discussions
12:00	**Lesson 3.** Acute response Norwegian Coastal Administration (15 mins) Q & A/Discussions
12:30-13:30	Lunch
13:30	**Groupwork 1: Acute Phase** Build a situation picture in own area in My Maps
14:45	Country Team Reflections Country teams reflect on their National Oil Spill Contingency Plan and highlight any potential gaps in their NOSCP, based on what they have learned so far in the training End of Day 1
Day 2, May	
8:30	Participants log-in
9:00	Recap of Day 1
9:15	Groupwork 1 presentations
10:00	Tea/Coffee Break
10:15	**Lesson 4**. Waste Management ITOPF (25 minutes) Q & A / Discussion (20 min)
11:00	**Lesson 5.** Shoreline protection and clean up strategy: How to prioritize NCA (15 minutes) Q & A / Discussion (15 min)
11:30	**Groupwork 2 Beach cleaning in acute phase–** Prioritize beaches for clean-up, in an area in acute phase (1 hour)
12:30-13:30	Lunch
13:30	Groupwork 2 presentations
14:15	**Lesson 6**. Shoreline assessment and surveys: Introduction to SCAT (20 mins) Q & A / Discussion

	Introduction to Groupwork 3: Beach cleaning phase SCAT
14:45	**Country Team Reflections** Country teams reflect on their National Oil Spill Contingency Plan and highlight any potential gaps in their NOSCP, based on what they have learned so far in the training End of Day 2
Day 3, May	
08:30	Participants log-in
09:00	Recap of Day 2
09:15	**Groupwork 3 Beach cleaning phase SCAT** Build a situation picture in your own area in MyMaps mapping inspected shoreline and further findings for the respective area. Prioritize beaches in same area
10:45	Tea break
11:00	Groupwork 3 presentations and Discussions on shoreline clean-up strategies and techniques
12:00	**Lesson 7. Making of 5 point work order** Q & A/ Discussions
12:30 – 13:30	Lunch
13:30	**Groupwork 4- Make your own work order for beach cleaning in one specific beach**
14:15	Groupwork 4 presentations
15:00	Closing Final Knowledge Assessment Training Course Evaluations
End of Training	

Annex 4. List of Participants

Country	Participant Name and Designation	M/F	Email
Mozambique	Maria Arminda Mlauze	F	
	Felizarda Mangoele	F	
	Nilsa Racune	F	
	Eunice Paula Rafael	F	

Kenya	Selelah Okoth NEMA	F	
	Jilani Chigulu	M	
	Stellamaris Muthike	F	
	Michael Mbaru	M	
Tanzania	Befrina Igulu NEMC	F	
	Kulthumu Nancy Shushu	F	
	Gift Ngowo	F	
	Capt Alex Katama	M	
	Clever Mwaikambo:	M	
Zanzibar	Makame Haji Khamis Senior Officer, Division of Environmental Impact Assessment	M	
	Subira Thabit Mzee Head, Division of Environmental Monitoring and Operations	F	
	Said Mbarouk Juma Senior Officer, Division of Environmental Monitoring	M	
Uganda	Namuleme Immaculate	M	
	Akello Leila	F	
	Brig Gen Stephen Oluka Head National Emergency Coordination and Operations Centre - Office of the Prime Minister	M	
Somalia	Arabey Hashi Abdi Director General of the MOPMR	M	
	Abdirizak Kasim Ahmed Planning Assistant, Ministry of Ports & Marine Transport	M	
	Mohamud Hassan Mohamed Upstream Department Director	M	
	Idiris Abdullahi Ahmed Marine Officer, Somali Maritime Administration	M	
	Abdifatah Hared Director of Planning, research and development	M	
	Fahima Abdi Mohamud	F	

	Environmental Officer		
Mauritius	Viswarnath VIRAH SAWMY, Superintendent of Police, National Coast Guard	M	
	Bheemul THUMMANAH , Environment Officer/Senior Environment Officer, Ministry of Environment, Solid Waste Management & Climate Change	M	
	Bhavnah KOMUL KALIDIN, Marine Scientist Shipping Division Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	F	
	Deendradev Singh TOWAKEL, Inspector of Police Special Mobile Force	M	
	Manoj SEEBARUTH, Superintendent of Police Special Mobile Force	M	
	Steve BATTERIE Police Sergeant, National Coast Guard	M	

Resource Persons

Name	Institution	Contact
Gro Øfjord	Norwegian Environment Agency	
Michael Cowing	UNEP	
Marisol Estrella		
Chidinma Zik-Ikeorha		
Isabella Corpora		

Annex 5. Final Group Work -5 Point Work Order

5 point order – Group work 4

Based on your work in group work 1, 2 and 3, choose one "first priority" beach and make a work order for the personnel that shall conduct the cleaning there. Keep in mind that you should **describe information that is important for this specific group of working personnel in their specific beach**. Do not use many words e.g. describing the overall situation picture.

1. Briefing on the situation
Orientation is given based on the information available at any given time. Status of the situation, units in action, local situation - weather, tide etc (what, where, when..)

2. Mission
A brief description of the mission.

3. Plan and performance
A brief description in terms how the situation is to be handled based on evaluation information available (how will the mission be solved).

4. Administration and supply service
Brief description of logistics; personnel (accommodation, dining etc) and material (need for resources

5. Communications and management
Brief description of the spill management organization with responsibility and authority.
Description of the communication diagram - contact points
(where is your place in the organization, which contact point are in use, radio network, any mobile number)

KENYA

Team Leader Work Order nr.ken/5/21/001	Incident: MV. Shakahola
Segment: Shela 1,2 and 3	Time: 28th May 2021

50 Small & 10 big bags for collecting oiled waste, three boats with 300 litres of petrol, 4 large bins, 40 containers for recovered oil, 20 shovels, adsorbents, 2 mechanical agitators and 5 skimmers

3.3. General Information
-Use of safety clothing PPES (safety shoes, earmuffs, flirting masks, life jackets, chemical resistant gloves, helmet)
-Masks shall be worn, hands regularly washed, and safety distance observed in line with GOK guidelines for COVID 19
- Do not **OVERFILL** bins and waste bags

Daily Reporting to OCS Land

1 No. of workers in group
2 Estimated volume of oil removed
3 Estimated extent (Km) of beach recovered
4 Need for supplementary equipment
5. HSE incidents

4. Administrative and Supply Service

The team will be made up of 30 people daily. They will be dispatched to the to the wok area in Shela from Lamu Island by three boats. Boats will leave lamu at 7.00Am and return the team at 5.30Pm. Main depot set up at Mangrove resort in Lamu Island. Food, Water & PPEs will be issued to all team members before departure every morning.

5. Communications & Management
The contact point for team leader is OSC shoreline. Tel +254 722 176 561. Call in number of personnel in your work group when at segment daily. HSE incidents to be reported to OSC land on a daily basis.

1. Situation Description:

1.1 Status Segment Shela 1, 2 and 3

On 25th May, MV. Shakahola grounded near Shela beach leading to oil spillage that hit sections of the shoreline.

Segment Shela 1, 2 and 3 Centre position -2.29557, 40.90849
-Segment 3 (200m) light oiled
-Segment 2 (100m) Medium to heavy oiled
-Segment 1 (180m) Heavy oiled

Beach comprised of fine sand with no boulders. In the heavy oiled area, oil spread up to the 10cm of the upper surface of the sand. In the light and medium oiled area, there are patches of oil with diameter of 1-10cm.

1.2 Weather & Tide

27 - 28 Weather: light winds of speed 13km/hr from North East to South West

Tide : Low tide prox 9.00 LT (+8cm)
High tide prox 5.00 LT (+45cm)

Ocean Currents : *Kusi* (South East Monsoon

1.3 Other Considerations

Vulnerable area close to the segment is the shallow reef 35m in the sea from the beach line hence surf washing **SHALL NOT** be used due to potential harm to reef

2. MISSION

Task no. 1 – Remove the bulk oil from segment 1

Task no. 2 - Remove thick oil layer up to a depth of about 1mm. Start with Segment 1, 2 and 3

3. PLAN AND PERFROMANCE

3.1 Execution Plan

Divide work area into hot, warm and cold zones for safe work in the segments. Organize waste management area into dedicated sections for pure recovered bulk oil, oiled litter and non -oiled litter. Secure the beach with boom to prevent stranded oil from re-mobilizing and hitting the reef.

3.2. Equipment

MAURITIUS

GROUP WORK 4 - TEAM MAURITIUS

Team leader work order nr. 1	**Incident Collision between MV Wreck 1 & MV Wreck 2**
Segment: Le Goulet Public Beach, Tombeau River, North Bank and Tombeau River, South Bank	**Date:** 27.05.21

1. Situation description

1.1 Status of segments Le Goulet Public Beach, Tombeau River, North Bank and Tombeau River, South Bank

The MV Wreck 1 & MV Wreck 2 came into collision on the 18 May 2021 in the lagoon of Baie du Tombeau at a distance of 2 km from the harbour. The accident has resulted in a Tier 3 spill, of 1000 metric tonnes of low sulphur fuel oil. The oil spill has moved towards the northern part, at Le Goulet Public Beach area and a patch of heavy fuel oil of about 100 m² has been contained inside the lagoon booms.

Segment 1: Le Goulet public Beach: 20° 6'19.70"S, 57°31'3.29"E, heavily oiled over 200 metres of sandy beach

Segment 2: Tombeau River, North Bank: 20° 6'28.49"S, 57°31'15.08"E, lightly oiled over 200 metres over mud and pebbles in Mangrove areas

Segment 3: Tombeau River, South Bank: 20° 6'34.29"S, 57°31'13.29"E, lightly oiled over 150 metres over mud and pebbles in Mangrove areas

Le Goulet Public Beach consists mainly of sand and, mud and pebbles further up towards the Tombeau River. Le Goulet Public Beach area was heavily oiled as it was the sacrificed location used to concentrate and collect oil. The beach area has stretches of oil that was mixed with the fine sand during tidal movements and can remobilise during high tide.

The lightly oiled areas contained mainly patches of oil of 2-15 cm in diameter on the mud and pebbles and some oil trapped under the pebbles.

1.2 Weather and Tide

27 May 2021- Weather: Light breeze, ENE'LY 24 KM/H

Tide: High 00:48, 14:03
Low 07:43, 19:54

Current: 0.6 knots Easterly

1.3 Other considerations

- The mangroves cover along the Tombeau River are highly sensitive areas.
- The Balaclava Marine Park would also be at risk if oil accumulated at Le Goulet passes below the booms during swells.
- There is no change in the current drift inside the bay but changes in tides (ebbing and flooding) may cause the oil slick to spread back to sea. Booms positions are to be adjusted at changing tides.

2. Mission

Task no.1: Protect and prevent the spreading of oil outside the lagoon of Le Goulet

Task no. 2: Skim and collect the oil accumulated at the booms at Le Goulet into IBCs

Task no. 3: Remove bulk oil at the sacrificial beach of Le Goulet

Task no. 4: Manual cleaning at banks of Tombeau River

Task no. 5: Segregation and storage of collected oil and wastes at the Oil Collection Bay located at the designated area of the public beach of Le Goulet

3.1 Plan of execution

(a). Removing oil collected inside the lagoon and preventing the remobilisation of stranded oil

i. The beach area will be secured with booms to prevent the remobilisation of stranded oil in the Balaclava Marine Park.
ii. Two flat keel boats (P01 and P02) inside the working area will be deployed with power pack of skimmer on deck of P01 and IBCs on deck of P02.
iii. Coxswains of the two boats will manoeuvre at same speed and the skimming and collection of oil will be carried out simultaneously.
iv. P02 will proceed to oil collection bay when IBCs are full with oil and will return to working site with empty IBCs.
v. HDB01 will maintain security coverage outside the lagoon to prevent unauthorized access to the work zone.

(b). Zoning for safe work in the segments

Segment 1:

- Hot zone: stretches of oil that was mixed with the fine sand and waste collection area.
- Warm zone: small, dispersed patches of oil
- Cold zone: oiled wastes and algae

Segment 2:

- Hot zone: oil trapped under the pebbles and waste collection area.
- Warm zone: patches of oil of 2-15 cm in diameter on the mud and pebbles.
- Cold zone: oiled wastes and algae

Segment 3:

- Hot zone: oil trapped under the pebbles and waste collection area.
- Warm zone: patches of oil of 2-15 cm in diameter on the mud and pebbles.
- Cold zone: oiled wastes and algae

(c). Waste management

Recovered wastes will be segregated in different categories such as pure recovered bulk oil, oiled litter and other litter and disposed of accordingly.

3.2 Equipment

Equipment needed for these segments are big plastic bags, light equipment, pump & hose, shovels, absorbent mats, three pirogues with OBMs, skimmers and IBCs (as required) and big bins for wastes disposal. One Pirogue and skimmer shall be kept on standby at the Incident Command Post (ICP) for back-up. Flood lights to be positioned for night operations, if required. Disposable Coveralls to be in sufficient quantity.

3.3 General Information

Safety and health should be focused during all parts of the operations, pointing out that:

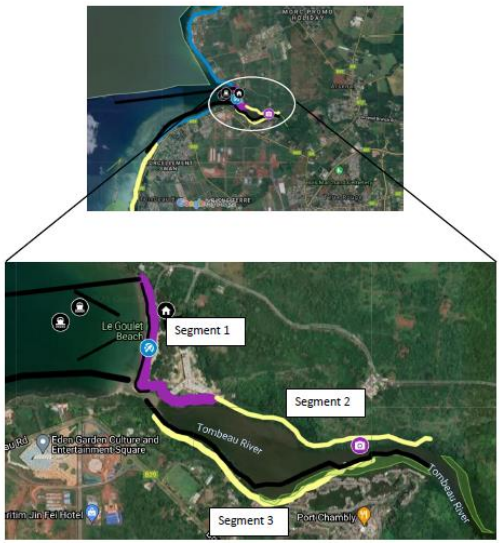
- All personnel shall use protective personal equipment (PPE) when recovering oil and as a minimum include skin protection (resistant clothes and gloves), and eye protection (safety glasses/ face shield).
- Life jackets to be also worn at all times during operations within the lagoon.

Daily reporting will include the following:

a. Number of workers in groups
b. Estimate of volume of oil removed
c. Estimate of volume/amount of wastes collected
d. Estimate of number of metre recovered beach
e. Need of other supplies/equipment in the further operations
f. HSE incidents

6. **Attachments**

1. Survey Map of segments 1, 2 & 3



2. Shoreline Sediment Types

4. Administration and supply service

- The National Coast Guard Command Post will be inside the kiosk of public beach.
- Logistics Officer will arrange for camp beds and inlying tents with necessary amenities.
- Maintenance Officer will ensure operational status of equipment at all times.
- Decontamination area (including changing rooms) will be arranged for relieving crew near collection bay.
- Transport facilities to be arranged by Logistics Officer.
- The team will consist of 40 people every day.
- Twenty (20) workers will be assigned on Segment 1 and 20 workers will carry out cleaning at Segments 2 & 3.
- Work team will be transferred to the work area via inland road to the beach at Le Goulet.
- The team will be briefed on the activities of the day before the start of work and Personal Protective Equipment (PPE) will be provided on site.
- All PPE will be stored in the depot at the Le Goulet public beach and used and contaminated PPE will be properly disposed of.
- Provisions (Food, water etc.) will also be provided for everyone at the depot every morning.
- Each boat will be manned by four personnel, rotating after every 04.00 hrs.

5. Communication & management

Team leaders contact point is Le Goulet Shoreline and each segment will have a team leader who will coordinate the work. Their contact details are as follows:

Segment 1:

- Team Leader 1 (On shore) - Mr. P. Jones, Phone No. +230 57767688
- Team Leader 2 (Overall in Charge, at sea) – Mr. V. Virah Sawmy, SP, Phone No. +230 57889065
- In Charge Command Post and Coordination from Shore- PS Batterie, Phone No. +230 57653976
- In Charge P01 - PS Jodhee, Phone No. +230 59231620
- In Charge P02 - PS Nothoo, Phone No. +230 52883546
- In Charge HDB - CPL Chinasamy, Phone No. +230 57676848
- Logistics Officer - PC Seebaluck, Phone No. +230 57657800
- Maintenance Officer - PC Runglall, Phone No. +230 57773465

Segment 2:

Team Leader 3- Mr. Seebaruth, Phone No. +230 20834567

Segment 3:

Team Leader 4- Mr. Towakel, Phone No. +230 25678600

NCG Command Post's Phone No. +230 2122747

Officer in Charge's Phone No. +230 52511058

- Every day, each team leader must call in the number of personnel in their work group when they are at place at their assigned segment.
- The leaders will have to give reference of their assigned segment(s) while communicating any information.
- The leaders need to report any HSE incidents immediately to the onshore commander (OSC).
- Sitreps: Hourly Situational Reports will be submitted to Command Incident Post
- VHF Sets Channel 69. Call Signs for each Team will be as conveyed during briefing.

3. SHORELINE MANUAL CLEAN UP WOKSHEET SEGMENT 1

Le Goulet Public Beach: 20° 6'19.70"S, 57°31'3.29"E, heavily oiled over 200 metres of sandy beach

AFFECTED SHORELINE SEGMENT 1 - HEAVY OILED		**TEAM LEADER REPORT**			
INCIDENT: SHIPWRECK ONE AND TWO		DATE	27.05.2021		
TEAM LEADER 1	MR. PHIL JONES	SHORELINE SITE NAME	LE GOULET PUBLIC BEACH		
SHORELINE DESCRIPTION		SANDY BEACH			
ACTIVITY	MANUAL COLLECTION OF EMULSIFIED OIL ON BEACH				
EQUIPMENT USED	1. SHOVELS 2. SMALL PLASTIC CONTAINERS 3. FAST TANKS				
CONSUMABLES	PLASTIC BAGS FIVE LTS (TO COLLECT OIL) 100 UNITS SORBENT PADS (ABSORB OIL ON WATER SURFACE) 50 UNITS SORBENT BOOMS(TO CONTAIN OIL) 30 MTS				
WORKFORCE NAME	EMPLOYER	TIME START	TIME ENDS	HRS	REMARKS
MR. T. Z	SMF	0900	1600	0700	
MR. C. T	SMF	1000	1500	0600	
WASTE GENERATED/TYPE	LIQUID: 100 LTS	SOILDS: 50 TONS			
FUTURE WORK AND RESOURCES REQUIRED:					
SIGNATURE OF LEADER					

4. SHORELINE MANUAL CLEAN UP WOKSHEET SEGMENT 2

Tombeau River, North Bank: 20° 6'28.49"S, 57°31'15.08"E, lightly oiled over 200 metres over mud and pebbles in Mangrove areas.

AFFECTED SHORELINE SEGMENT 2 – LIGHTLY OILED			**TEAM LEADER REPORT**		
INCIDENT: SHIPWRECK ONE AND TWO			DATE	27.05.2021	
TEAM LEADER 3	MR. SEEBARUTH		SHORELINE SITE NAME	TOMBEAU RIVER NORTH	
SHORELINE DESCRIPTION			MUD AND PEBBLES IN MANGROVE AREAS		
ACTIVITY	MANUAL COLLECTION OF EMULSIFIED OIL ON MUD AND FLUSHING TO REMOVE OIL TRAPPED UNDER THE PEBBLES				
EQUIPMENT USED	1. SHOVELS 2. SMALL PLASTIC CONTAINERS 3. FAST TANKS 4. PUMP & HOSE				
CONSUMABLES	PLASTIC BAGS FIVE LTS (TO COLLECT OIL) 100 UNITS SORBENT PADS (ABSORB OIL ON WATER SURFACE) 50 UNITS SORBENT BOOMS (TO CONTAIN OIL) 30 MTS				
WORKFORCE NAME	EMPLOYER	TIME START	TIME ENDS	HRS	REMARKS
MR. B. M	SMF	0900	1600	0700	
MR. K. L	SMF	1000	1500	0600	
WASTE GENERATED/TYPE	LIQUID: 90 LTS		SOILDS: 50 TONS		
FUTURE WORK AND RESOURCES REQUIRED:					
SIGNATURE OF LEADER					

5. SHORELINE MANUAL CLEAN UP WOKSHEET SEGMENT 3

Tombeau River, South Bank: 20° 6'34.29"S, 57°31'13.29"E, lightly oiled over 150 metres over mud and pebbles in Mangrove areas.

AFFECTED SHORELINE SEGMENT 3 - LIGHTLY OILED			**TEAM LEADER REPORT**		
INCIDENT: SHIPWRECK ONE AND TWO			DATE	27.05.2021	
TEAM LEADER 4	Mr. TOWAKEL		SHORELINE SITE NAME	TOMBEAU RIVER SOUTH	
SHORELINE DESCRIPTION			MUD AND PEBBLES IN MANGROVE AREAS		
ACTIVITY	MANUAL COLLECTION OF EMULSIFIED OIL ON MUD AND FLUSHING TO REMOVE OIL TRAPPED UNDER THE PEBBLES				
EQUIPMENT USED	1. SHOVELS 2. SMALL PLASTIC CONTAINERS 3. FAST TANKS 4. PUMP & HOSE				
CONSUMABLES	PLASTIC BAGS FIVE LTS (TO COLLECT OIL) 100 UNITS SORBENT PADS (ABSORB OIL ON WATER SURFACE) 50 UNITS SORBENT BOOMS (TO CONTAIN OIL) 30 MTS				
WORKFORCE NAME	EMPLOYER	TIME START	TIME ENDS	HRS	REMARKS
MR. T. L	SMF	0900	1600	0700	
MR. H. M	SMF	1000	1500	0600	
WASTE GENERATED/TYPE	LIQUID: 75 LTS		SOILDS: 35 TONS		
FUTURE WORK AND RESOURCES REQUIRED:					
SIGNATURE OF LEADER					

MOZAMBIQUE

5 Point Order

1. Situation description

1.1 Status segment

On 19th May 2021, at about 23:00, a vessel (MV Boxer III) collided with a rock and caused an oil spill in the Port Beira channel in the position -19.84199S, 35.02135O

- Segment 1 (6,0km) is heavy oiled
- Segment 2 (3,0km) is light oiled
- Segment 3 (4,0km) non oiled beach

The beach consists mainly of sand. The heavy oiled area has several oil ponds that may re-mobilize during high tide and oil has been distributed into the upper 20cm of pebbles. The light oiled area has patches of oil 2-10cm in diameter; same of oil is trapped underneath the mangrove.

1.2 Weather and tide

20-21 May:

1.3 Other considerations

Vulnerable areas close to the segment is the mangrove, endemic species, important biodiversity area. Manual recovery used to prevent biodiversity damage.

2. Mission

Task 1: Remove bulk oil from oil ponds in segment 1.
Task 2: Remove thick layers oil down to a prominently layer of 1mm. start with segment 1.

3. Plan and performance

3.1 Plan of execution

Secure beach area with booms preventing remobilization of stranded hitting the mangrove and endemic species area. Three work zones established: hot, warm and cold. Temporary waste management divided in pure recovered bulk oil, oiled litter and other litter.

3.2 Equipment

Equipment needed: big bags, shovels, buckets, absorbents mats for path, plastic bags, trowels, pushcart, ect.

-100 People divided in ten teams to cover all oiled area;

-Estimated 1000kg/Day;

-Aprox 1km/Day;

-Until now no HSE incidents reported:

-Provide more PPEs and big bags.

4. Administration and supply service

Work stars at 0700 and finish at 1700. Work team will use bus. Water, food and other provisions will be provided.

5. Communications and management

Team leaders contact point is OSC shoreline phone number +258 21301963. Call in number of personnel in your work HSE incidents is to be reported immediately to OSC land.

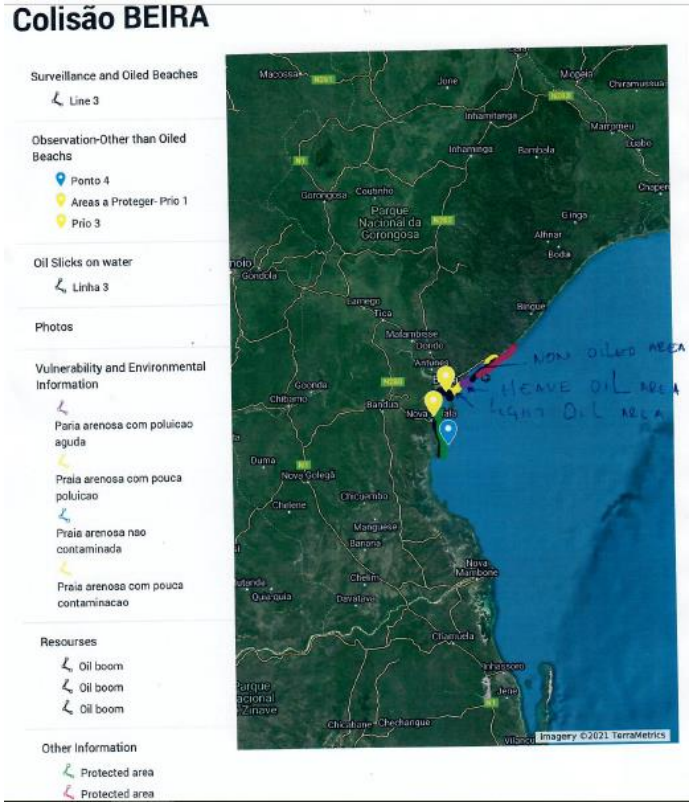
Attachment:

In attachment find a map indicating the areas of contamination where:

- Purple is the most contaminated area – Heavy Oil,
- Yellow is a light area and
- Blue is a non-oiled area

MOZAMBICAN TEAM:

1. Eunice Paula Rafael
2. Felizarda Mangoele
3. Maria Arminda Uamusse
4. Nilsa Racune



TANZANIA

5 POINT ORDER – TEMPLETE, SHORELINE CLEAN-UP (TEAM TANZANIA)

Based on our work in group work 1, 2 and 3, we selected "first priority" beach and make a work order for the personnel that shall conduct the cleaning there. we Kept in mind that we described information that is important for this specific group of working personnel in their specific beach.

Describing the overall situation picture.

1. Briefing on the situation

On 21st May 2021 MV Skylink grounded outside the city of Tanga near Marine Protect Area (Toten Island) and caused an oil spill/oil pollution that have now hit at several locations on the coastline of Tanga Bandari manmade structure and deep sea beach area where there is few mangroves and sand beach, it is good luck that oil could not go to Toten Marine Protected area with shallow coral reefs and turtle nesting and Chongeleani beach where there is a lot of mangrove after we properly directed the booms and sacrificing the oiled area, and that recovering/collecting oil from sea is stopped as there is no more oil floating, a survey/SCAT made on 26th May 2021 at 09:00hrs, it requires an immediate attention to the few mangrove we have at the area of boundary between Red (heavily oiled) and Yellow (light to medium oiled) segments.

1.1: Segment identification and status in Tanga:

- Red segment 758m is heavily oiled
- Yellow segment 411m is light to medium oiled and
- Blue segment not oiled at all

1.2: Whether and tides were:

Wind speed is 20Kn, current is 3Kn and Low tide is approximately 0/87m at 7:37AM and High tide is approximately 2.85m at 2:00PM on 26th to 28th May 2021.

1.3: Other Considerations:

We do not have shallow reef vulnerable area 50m in the sea from the beachline area where oil spilled hits, except at protected area which far beyond 200m from beachline, but we do have mangrove within 80m and care should be taken to that as well despite the truth that oil did not hit the area.

2. Mission

A brief description of the mission: while we are taking care of order of Health, Safety and Security of responders, Protect Sensitive parts and protect economic interest our specific mission here are:

i. To first remove stranded oil from few mangroves at the boundary between Red (heavily oiled) and Yellow (light to medium oiled) segments.
ii. Secure stranded oil from remobilization, bury into sand, and start recovery for the oil on RED/oiled segment.
iii. To remove stained thin layer oil (0.5mm) on the Tanga Port Authority manmade structure (concreate wall) which is light to medium oiled.

3. Plan and performance

Based on evaluation information we are going to mobilize quick all the material and different types of resources to the site while scanning for several changing factors such as wind, current etc. as any other factor that may influence positively or negatively to our plan, site is accessible on both land and sea.

3.1 Plan of execution:

Arrange work area in hot (RED/oiled), Worm (YELLOW/decontamination station) and Cold (GREEN/clean or treated) zone for safe work in the segments. Arrange Waste Management in fraction for recovered oil (pure, oiled littler and other littler) secure area with booms preventing remobilization of stranded oil hitting the reef or the area.

3.2 Equipment:

Equipment resources are absorbent, Shovels, Mats for pass in and out of the area, big bags, Personal Protective Equipment (PPE), Skimmers, Transfer pumps, Power pack, vacuum tankers, Flushing machines, Dump trucks, Tapes (red/white) for zoning etc.

3.3 General Information:

Safety, Health and Security should be observed during the whole process of cleaning operations pointing out:

- All responder shall be using PPE when recovering oil and minimum requirement will include skin protection (resistant cloth and gloves) and eye protection (safety glasses/face shield)
- Use of life jackets when travelling to and from the Island

General reporting to On Scene Commander (ONC) on matters related to:

- Number of respondents/workers in the group
- Estimate of volume of oil removed
- Estimate number of meters recovered in beach
- Need for other supplies/equipment and further operations
- HSE incident

4. Administration and supply service

The team will consist of 35 people every day. Work team will be transferred to the Deep-Sea area from Tanga Habour office by min-Bus every day at 7:30hrs and back at 18:00hrs. Main depot with manual equipment is set-up near Tanga Port – Deep Sea Area. The provision of different supplies (water, food etc.) is provided at Tanga Habour Office before responder are transported to Deep Sea Beach area which is affected every day morning, though close to the area there is provision of water and soft drinks at Cold (GREEN) zone. Accommodation is near Tanga Habour Office and Bombo referral hospital will be used to attend responders in case of emergency or any need as the case may require.

5. Communications and management

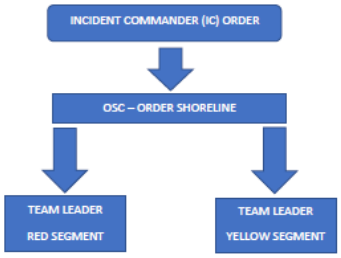
The Team Leader (manage teams in shoreline segments) contact person is OSC Shoreline (who manage the shoreline operations and communicate to Incident commander and back to team Leaders).

Depending on the complexity of the situation you may have team leader for several segments and segment leader or team leader in each segment. Several segment leaders communicate and commands/orders segment leaders and himself being commanded/ordered by OSC shoreline.

For our case in Tanga we had only team Leaders in each and every segment, hence these team leaders commanded by OSC Shoreline with Phone number +255 783 018 018 and VHF handheld radio Marine Pre-programmed channel number 10 on standby mode and Channel number 09 on Communication who's orders and commands are from Incident Commander (IC). The communication is every day when at work, giving reference to the assigned segment as they might be several segments. For our case we had only RED which represents heavily oiled and YELLOW (light to medium oiled) segments as referenced with two team Leaders.

All cases from operations such as HSE and other issues are reported to OSC who immediately and quickly arranges necessary action and follow-up on the same as well as related activities, reporting and sending photos up of communication stream via Vodacom network internet which is strong enough compared to other service provider internet network.

THE COMMUNICATION DIAGRAM DURING TANGA SPILL - CONTACT POINTS



SOMALIA

5-point order – Group work 4.

1. **Briefing on the situation**

Somalia has a long Coastline in Africa 3,333 Kilometres in length so it's an increasing number of shipping docking at the Ports of Mogadishu we made a plan 5-point order.

- We look and find out the situation of the area has an oil spill
- how much oil spill in the area Status of situation, priorities,?
- what kind of pollution?
- We made a risk assessment.

After that

- We gave an all the information available
- We shall check a situation
- We look the weather
- We get all the situation the area
- We mobilize all the people
- Then we create an Oil spill map area.

2. **Mission**
- Our mission is to create a map to clean oil spill at Lido beach Mogadishu Port.
- To Protect, prevent remobilization and start removing oil all the area at Lido beach.

3. **Plan and performance.**
   - We collect as much possible oil at lido beach Surveillance and oiled beaches.
   - Lido-beach-fish landing, Old port, Lido beach far area also we made an assessment on the other area such us Newport area. Geel laq, Airport area and Secondo lido.
   - We find the area need to clean,
   - We make a Photos where is the Egyptian Birds,
   - Lido Beach, Ship tanker and Incident place.
   - We look Vulnerability and environment information and Egyptian Birds area.
   - Our team leader will brief our team members.
4. **Administration and supply service**
   - We must find the logistics such us boats, depots, cars, toilets and others resource. Local stockpile for equipment, personnel, accommodation etc.

5. **Communications and management**

- We made a team who can work an oil spill.
- Team leader can explain everything.
- We appointed a team leader
- We create contact person and contact point area.
- Radio station and Radio network.
- Mobile numbers to contact each other.

In Somalia we do not have an organisation call **Incident Commanders** Order but we learn from the training so for the future we must establish that organisation and how is work.

I will give you here some other information from the country. Due to the increasing number of ships docking at the ports in Somalia; Especially-Mogadishu Port. So and initial risk assessment area has conducted on Mogadishu where a number of threats related to shipping operations; precisely oil tankers, oil transfer through pipelines and etc. Since Somalia will soon start oil exploration activities, mechanisms to counter environmental problems has been put in place with primary legislation.

Oil spill map area

Surveillance and oiled beaches.
- Lido-beach-fish landing
- Old port
- Lido beach far area
- Line 5
- Depot+Newport area
- Geel laq
- Airport area
- Secondo lido

Observations-other than oiled beaches (e.g. oiled animals).

2 oil slicks on water
- Oil slick1
- Oil Slick2

Photos
- Egyptian Birds
- Lido Beach
- Ship tanker
- Incident

Vulnerability and environmental information.
- Egyptian Birds area

UGANDA

5 point order: Group Work. 4 – Ugandan Team

June 2021

Team Leader Work Order: Leila Akello Gonasa	**Incident:** Oil Tanker
Segment: Lido Beach on Lake Victoria and the areas of Ntirizi, Kisubi, Namulanda, Entebbe.	**Time:** 10:00hrs, 4th June 2021

1. Briefing on the situation

1.1 Status segment

The oil tanker that had been used at Lido Beach in Entebbe Municipality at Lake Victoria in Wakiso District caused an oil spill and affected several sections of the beach along Lake Victoria in Entebbe Municipality.

1.2 Weather and tide

4 – 6th June 2021: Weather — It was mostly sunny, Temperature was 23° C
Precipitation: 4%, Humidity: 74%, Wind: 14 km/h

Tide — No tide data is available for this location

1.3 Other considerations

Lake Victoria Basin is the heart of East Africa and it covers 194,200 square kilometers. It is Africa's largest lake by area, the world's largest tropical lake, and the world's second-largest fresh water lake by surface area after Lake Superior in North America.

2. Mission

Task 1: Remove bulk oil from soaked areas of Ntirizi and Kisubi
Task 2: Remove thick layers of oil to a substantial amount starting from Kisubi, Ntizi, Namulanda then Entebbe

3. Plan and performance

3.1 Plan of execution

Work will be arranged in sections depending on the activities in the affected areas but most especially vulnerability of the areas. Waste management will be arranged in fraction for pure and proper recovery of bult oil, oiled litter and other generated waste during the exercise. The beach areas to be secured with booms to prevent remobilization of stranded material.

3.2 Equipment

Equipment needed for this segment are big bags, plastic ladies, trowels, aluminum shovels and absorbent mats for path in and out of the area.

3.3 General information

Safety and health should be focused during all parts of the operation, noting:

- Personnel should all use personal protective equipment (PPE) when recovering oil. As a minimum, include skin protection (resistant clothes and gloves) and eye protection (safety glasses or face shield).
- Use life jackets when travelling to and from the protected areas
- Adhere to Standards Operating Procedures (SOPs) to protect against Covid19.

Dailing reporting to OSC:

1. Number of workers in the group
2. Estimated volume of oil removed
3. Estimated number of meters recovered beach and surrounding areas
4. Need for other supplies/equipment the further operations
5. HSE incidents

4. Administration and supply

The team will consist of 30 people every day. Work team will be transferred to the work areas at Lido Beach every day and by boat to the neighboring islands. Main depot with manual equipment is set up in before transportation to the island areas every morning.

5. Communications and management

Team leaders contact point is OSC Shoreline. Phone number is +256 743 111111. Call in number of personnel in your work group when at segment every day. Give reference to your assigned segment(s).
HSE incidents is to be reported immediately to OSC land.

Feedback on Final Groupwork Activity

Specific feedback per Country Team submission

Team	Comments from the Training Team
Team 1: Kenya	Clear and concise work order with well-presented information about situation, priorities and tasks for the segments. Consider whether the map can be an attachment. The map will, maybe for a team leader in the field, be the most important information to do further planning. Attaching it separately is therefore advantageous.
Team 2: Tanzania/Zanzibar	Very well constructed and articulated. Page 2, Point 2, i, - ii & i could maybe be swapped around? Generally speaking, the recovery of shoreline oil on a sandy beach is often easier than from mangroves. Although mangroves are a more sensitive habitat, bulk oil recovery from sandy shorelines will be fairly quick and efficient and is likely to reduce further impacts from remobilisation. However, booming could be a simple solution to prevent oil remobilisation from around the mangrove.
Team 3: Uganda	This is more like a Sector leader order and not a team leader order as the document headline refers to. But it does follow the 5 point order template as instructed. Remember that a team leaders order is a detailed description on handling the actual beach/segment. The order is presented in a clear and well-structured manner which allows the key objective to be easily understood. It includes a clearly sketched map as a separate attachment that can be easily forwarded to individuals throughout the chain of command. A clear daily summary of key information for the OSC was also included that was both concise and relevant. Such information provides a good example of the content required for efficient daily reporting.
Team 4: Mozambique	Prioritising was good generally throughout. Nice, brief and concise which is important, but probably could do with some more detail and think about the level from which you are writing this order to. Sector leader or segment leader. (Ref feedback Uganda)
Team 5: Somalia	A good start and good thoughts of intentions of a plan. Very well-presented map, with key information displayed (movement of oil and the main sensitivities). Interesting to hear that oil exploration will start soon.
Team 6: Mauritius	Segments are organized into a sector. Segment 1,2 and 3 is in one Sector - this seems like a “Sector leader plan”. On page 3 - a misunderstanding of the terms hot, warm and cold zone - see general feedback. Hourly steps to command post seem like overkill? - we suggest daily reporting. All in all a very good order.

General

First there are processes that are going on as planners in the command center - and then we can look at how to bring this information with the right intentions from the very top of the organisation down to the level that will take action. The plan is given through the chain of command.

- For larger oil spills the organization can organize into several levels in the command chain. The number of command levels that is appropriate for the operation depends on the scope of the clean up operation and the timeline. The system is dynamic and can be **stretched** both vertically and horizontally.
- The leaders for each level have to produce their own order by **extracting information** from the given order and then going into detail on how to get the current mission completed.
- Making an order for a current mission is about sketching up a plan for performance based on the information you have. This can be about prioritization based on available resources, such as numbers of workers and equipment available.

The 5 point order template – is often used for organizing information about planning any kind of operation and can be used at any place in the command structure. The format organizes all information needed to perform a task into five easily understood paragraphs for those who are receiving the order. Naming the document can differ between organizations and down through the chain. Naming the document should give clear information about where you are in the organization and what role you have (e.g.: Incident command order → OSC order → Sector leaders order → Segment leader work plan) but each will have a very recognizable 5 points for consistent formatting.

1. Situation
2. Mission
3. Plan and performance - how will the mission be solved
4. Administration and supply service - Logistics
5. Communication and management. Who to report to, contact point

Feedback on county team group work

In general you have all worked well and we are very impressed by both the creation of the maps and for following orders as presented. In some cases we would like to see a more detailed plan on a specific segment. For this you have to organize the work site, the knowledge of clean up techniques, and equipment suitable for the task as well as available equipment in your organization. This is hands-on work on the oiled beach.

- Think about at what level the work order you are in the position of creating and about what information is needed for your order.

- A tip: Think about what is on the first written page and then about what information to attach. Example: Text on one page and maps with related registrations as well as a sketch of how the area should be organised on a separate page. This is important information for a leader to plan in more detail and therefore have it easily available, separate from the text.

If the influence area has several localities of oiled shoreline you can organize this into a sector and then divide each site into proper beach segments.
The Sector leader's job is to organize the affected area into different segments → Segment leader's job is to organize the segment into teams if necessary. How do you think the work order for a Sector leader will differ from a Segment leader's order?

Organizing the work in a segment - site management

The basic approach is to establish three distinct **zones:**
1. Hot zone - Ongoing clean up operation in a contaminated segment
2. Warm zone - Contamination reduction (transition zone), change PPE, segregated waste can be stored, and remember avoid secondary contamination
3. Cold zone - Clean area and support zone

See presentation by ITOPF - Shoreline cleanup, fate, and effects.