

BULETINUL Universității Petrol – Gaze din Ploiești	Vol. LX No. 4B/2008	133 - 138	Seria Tehnică
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Oil Spill- Implementation of Environment Management Strategy and Modern Policy in Naval and Portuar Activities of Danube- Black Sea Canal

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Abstract

One of the priority issues in case of accidental or operational hydrocarbons overfall and hydrocarbon residues is implementing procedures to limited and combating pollution. In these circumstances the phenomenon of pollution issues associated with such an accident has a very complex character, which puts very difficult issues that require high purchasing costs. The paper integrates these policies and strategies in a plan of intervention in case of oil pollution on the Danube - Black Sea Canal and particularly in the area of confluence with the sea-especially in case of inaccessible areas because of the buff. The aim of the plan is to establish a support mechanism, in which the competent authorities will cooperate to coordinate the actions of intervention in case of accidental pollution on the Danube-Black Sea canal, affects or may affect port areas, banks, the territorial sea and economic zones.

Key words: *Danube-Black Sea Canal, oil pollution, contingency plan.*

1. Introduction

Danube-Black Sea Canal in maritime activity and inland waterway transport plays an important role in supporting the integration of the internal market develop the geographical position of Romania as a transit zone. The opportunity created by the Danube-Black Sea canal, Danube River and Black Sea coast may occupy a key position for attracting international flows of goods in relations between Europe and other continents. By putting into operation of the Rhin-Main-Danube Canal (1992) has provided direct link between water port of Constanta and the port of Rotterdam. The advantage of this main route lies in the fact that this canal entered directly in Constanta port, falling from the south-east of it, which ensures real development perspectives. In this context ecological approach of this activities involves analyzing the current situation recorded on the national plan and the need to align the activities of shipping and transportation sector including port related services supplied to ships and goods at european standards. Contradiction between environment and economic activity specific of naval transport is manifested through more extensive and ecological disasters whose marks can not be stopated by costly actions to establish the natural wealth integrity. When a decision is taken to collect or attempt to protect a sensitive area, a quick reaction is essential. In the same way very important

is the rapid removal of hydrocarbons contained. Given the causes and effects leading to deterioration of the environment, is necessary and should be required to establish national and international rules, which impose restrictions and measures that can firm practical actions necessary so that both transport and operation goods by sea, river and inland waterway can be performed safely. Pollution by petroleum products and oil spread is recognised as one of the major threats to the marine environment of the Black Sea and the Danube -Black Sea canal. The risk associated with heavy traffic asses to coordinate all intervention resources in case of emergency. It is necessary to develop an integrated monitoring of aquatic environment in terms of chemical, biological, ecotoxicological at Danube-Black Sea canal level with the expected effect of the protection and conservation of biodiversity aquatic and protection of water quality as a resource.

2. Environmental Impact Assessment for the activities of the shipping industry unreel on the Danube-Black Sea canal

Environmental Impact Assessment for the activities of the shipping industry carried on the Danube Black Sea canal reveals that the expansion of the damage caused by the discharge does not always reflect the quantity of oil discharged. A small amount in a sensitive area can cause considerable damage in comparison with a large amount discharge in a less sensitive area. Restoring normal balance of the aquatic environment from pollution can take, in extreme cases, many years. In the case of navigable canal or course of a clean water is even more difficult due to a restricted area of action and a large area of spread. From this perspective this paper proposes a guide for the implementation of a contingency plan to combate and intervention in a rapid way in case of hydrocarbon discharge on Danube-Black Sea canal. International practice shows that in this field such a plan must have attached some essential details regarding the evolution of oil slick [1], [2]. The processes that determine the slick evolution are dispersion, evaporation, oil in water emulsion, photooxidation, biodegradation, sedimentary, and the movement of the oil slick on the water surface. These processes contribute to changes in time of the characteristics of oil discharged and the quantity of product remained on the surface of the water. In view of these and hydro-meteorological conditions can evaluate the existing quantity properties and petroleum products remained at a given moment in the aquatic environment. The transformation will be treated so that it can be put into visibility (percentage) qualitative and quantitative changes that occur in the structure of oil slick accidentally discharged into the aquatic environment. To this end it is convenient classification of the four main groups of the most frequently transported types of hydrocarbons, depending on their density, to determine their persistence on the surface of the water from the first hours after discharge. The plan must be fully in this regard so as not to require additional information from other sources on the oil film which would cause delays in applying the techniques of intervention.

3. The assessment of pollution situations and intervention characteristics

Regardless of how efficient it would be the forecasting model of oil slick evolution in the aquatic environment (refer here to any incident or accident recorded in the area of interference Danube-Black Sea canal and the sea area, but also on the Danube river) it must be permanently monitored. This monitoring should be done in the air, from land or from a ship. Experience has shown that it is important advance preparation of a monitoring plan (including aerial observation) that contains a map at a scale closer supported by making available all information

to improve predictability of this phenomenon. Proof of oil pollution is necessary to determine the damage or costs. Sometimes it's easy to determine what charges involving pollution because of chemical analyses of oil taken occasionally from suspected source in the polluted area. It is not always possible for a potential plaintiff to procure a reference sample from suspected source, but an analysis of pollutant samples can sometimes be a sufficient evidence to indicate the probable source. With oil processes knowledge occurring in time with informations on wind and currents may deduct the approximate position where discharge took place. Following information about the film should be assess the danger that it may have and then make a decision for an enterprise shares. Factors considered in assessing the danger include:

- size of oil film and the likelihood dispersion in several oil film ;
- the type of oil- physical and chemical characteristics;
- hydro-meteorological conditions (the direction of atmospheric currents, water temperature, water current direction)
- oil film heading towards shore;
- the probability of moving oil film;
- risk areas.

Because the intervention of depollution be immediate, the emergence of any traces of oil pollution is a necessary general strategie to determine and correct the state of pollution that has changed and affected sensitive areas and possible steps that might be valid in preventing or reducing damage. Responsibilities on the side, after oil discharges may be at national authorities, at polluter or those who have taken an a emergency plan. They may have different views on how implementing a depollution plan. For an application most efficient and correct use of techniques the paper shows the intervention need based of a contingency plan.

It is very important that these criteria of choice of how the intervention should be applied on the basis of a contingency plan because in this way those involved can take quick and correct decisions in case of oil pollution.

4. Technical Solutions for solving the problem of prevention and pollution control

The maximum share - in connection with the accidental discharge or aware of hydrocarbons and / or hydrocarbon residues, constitutes a removal, which puts very difficult problems that require large expenditures and investments. The main purpose of the paper is determination of the technical solutions needed to tackle the issue of prevention and control of pollution. These solutions are provided in a contingency plan in case of oil pollution on the Danube-Black Sea :canal, particularly in the key areas like canal locks, ports and the confluence area of canal with the Black Sea. The disadvantage of these river areas consists in the weight intervention or even impossibility of intervention, because of relief conditions specific to these areas of the rugged shore. It is important that plans include a clear structure on the type of pollutant and the manner by which it can be removed. Selecting intervention techniques depends on the requirements and conditions prevailing, as must be taken into consideration the availability, safety, the ease with which it handles and last but not least associated costs. The experience of firms and institutions specialized allowed us, based on quantitative and qualitative assessments, substantiation of recommendations on the use of equipment and technologies represented by the recovery of hydrocarbons, floating dams, skimmers, dispersions, absorbents [1], [2]. The oil recovery may be placed on any type of ship and it doesn't need to be a special arrangement to act against oil film, these systems may be permanent, classical or flexible. Universal skimmer represents a multifunctional cleaner (used in various places) and is designed for multiple types of cleaning operations. Very small but extremely robust and easily to manage is so easily transported by rail, air or road. Thanks to years of practice and testing system now has a wide area of

operation for the purpose of cleaning oil slick. Universal skimmer is intended to clean the oil films with a 'mother ship' can work independently in ports, rivers, navigable canals, beach areas (the oil residue can be loaded on the ship and may be used as fuel for other equipment).

Using the normal form of arms "V" can be cleaned between 10-100 m. A big advantage of floating booms regarding storage and oil transportation is easiness to bulge. The nonsubmerge property is due to imersate party and floating disc with foam. Dams do not require floating valves, pumps or line, being ideal for oil pollution advertisements on navigable canals or rivers. Where access is difficult, hydrocarbons will be removed using buckets, hand shovel and other simple equipment. Manual recovery of large quantities of very viscous oil products and / or hydrocarbons mixed with debris, where hydrogliders are not able to depart, can be done using a mechanical equipment non-specialized. When it reaches the final stages of cleaning appropriate use absorbats or dispersions to help remove thin films of hydrocarbons in inaccessible places. The application is normally manually or, if a large-scale use with the help of special devices. Although it is preferable a full protection of navigable canal, water may be too deep or the currents too strong to achieve this. In case of an intervention, to be searched the right area is downstream, taking into account the need for a way of access to carry arms of collector ship for removal of oil collected. If oil is not removed with the same rate that reached upstream, it will accumulate and move towards the centre where the water currents are strong and could shave oil under collector barriers. If speed of the currents is unknown, they can be estimated by timing the movement of objects floating on a known distance. To limit the oil film in a certain portion in the navigable channel Danube-Black Sea, a solution that would be advantageous two sections collector barriers to be installed in the steps of different sides.

5. Contingency plan

Communities located near the Danube -Black Seacanal may be affected by an oil discharge. In the same context a number of organisations will have to accomplish and other tasks besides combat and limiting due to the effects of pollution. European and international practice in this area (we have spanish experience in Prestige case or french experience in Erika case) shows that it is wise for the first part of the plan to include the general strategy to combat hydrocarbons over- flows, and the second part contains the operational procedure to be followed when a discharge takes place. Foundations ability response plan is specific to local infrastructure, such as a port or an oil terminal or an exposed area with overflow risk. These local plans can be a part of a wider plans, even at national level. In turn, national plans can be integrated into regional strategies, covering two or more neighbouring countries (for example for maritime Danube Romania and Bulgaria). Segment of the strategic plan must define how to share responsibilities and reasoning behind the operational plan which essentially is a list of actions with references to sources of information. Strategy cleaning should be determined according to overflow risk assessment, the hierarchy of priorities and resources with risks. Responsibility for the control of discharges of hydrocarbons, usually an incumbent government agencies (in our case Romanian Navigabile Canals Administration) to deal with fluvial sector. Normally the best solution is coordinating centralized under a single organisation which has full responsibility to conduct the operation. For fluvial area this is not possible (responsibilities being divided between the concerned parties: Romanian, Bulgarian and Serbian). The contingency plan may be included and procedures for collaboration with other stakeholders such as government authorities and organizations not implicated directly in combat operations, but interested in certain points of overflows view. For example, ports operators, industrial targets (including here nuclear power plant in Cernavoda) groups of environmental protection and other government departments. Places of temporary storage of waste oil should be established in the early stages. Locations near-risk areas for temporary storage of oil and waste must be identified and exhaust options be discussed. Decision adopted must take into consideration the

consequences of each method on the environment and cost about transport and disposal. The methods of disposal chosen to be attached to the operational plan. Temporary places storage are best outlined in the documents to determine intervention techniques from shore. Training programmes should be tried at all levels, including personnel from ships and management teams interveție from shore. The exercises carried out we ensure that procedures are established and functioning angrenat staff is familiar with the techniques of intervention. A discharge of oil provides the best opportunity for improving the feasibility of the plan. The events should be reviewed immediately after the cleaning operation has been completed and the plan was revised based on the experience learned. The plan should provide various options to consider

- if Key resources are not endangered (in the sense that the film is hydrocarbon degrades naturally) is no longer necessary nor a reaction besides monitoring the movement and behaviour of the end

- if no one method protection is not possible or if the resources have already been affected, determine the priority areas for cleaning

- are moving to the selection of equipment and personnel required intervention, and determination availability and location.

The arrangements must include in the plan placing staff and equipment in case of emergency. The equipment can be loaded into vehicles are ready for action and the documents are completed before the mobilization order be given. In the end stage of the cleansing plan must provide information to:

- Location of communications / command post nearest to the place deversării ensuring that the entire area affected by the discharge of oil can be easily accessed by radio or telephone

- The supervisory committee radio equipment are needed and are familiar with procedures for communications, telephone, telex numbers and telefax, radio.

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6. Conclusions

Experience in the field of shipping and port channel Danube-Black Sea, shows that so far a systemic approach to technical and managerial problems specific to a pollution has not been made. Such an analysis carried out economically, socially and ecologically reliefează significant environmental impact associated with these activities. For these reasons the study of possible causes that may cause pollution by oil-Danube canal to the Black Sea area and its confluence with the sea should be permanent as a necessity in the context of the relaunch of transport European naval inland waterway. In this regard the proposal of a plan to combat and intervention in case of emergency (contingency plan) becomes a necessity. Since the structuring of such a project at institutional level (I refer here to Administration Navigabile Canal, Romanian Naval Authority, the Ministry of Transport, etc.). Phase in the pioneering work can represent a solid base of departure for a theoretical and practical approach to complex problems a plan contigență in case of pollution on the canal Danube-Black Sea. Simbiose technical and economic problems specific to the field analysed in this work, in line with performance-enhancing environment associated not only will lead to prosperity areas and regions bordering the Danube-channel Black and integration to European standards of the whole transport system on inland waterways.

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Poluarea cu hidrocarburi - implementarea unei strategii și politici moderne de management al mediului în activitatea navală și portuară pe canalul Dunăre-Marea Neagră.

Rezumat

Unul din aspectele prioritare în cazul deversării accidentale sau operaționale a hidrocarburilor și reziduurilor de hidrocarburi îl constituie implementarea procedurilor de limitare și combatere a poluării. În aceste condiții problematica fenomenului de poluare asociat unui astfel de accident are un caracter deosebit de complex, care pune probleme deosebit de dificile și care necesită cheltuieli și investiții ridicate. Lucrarea integrează aceste politici și strategii într-un plan de intervenție în cazul poluării cu hidrocarburi pe canalul Dunăre – Marea Neagră și în special în zona de confluență cu Marea-Neagră mai ales în cazul zonelor greu accesibile datorate malului abrupt. Scopul planului este de a stabili un mecanism de asistență, în cadrul căruia autoritățile competente vor coopera pentru coordonarea acțiunilor de intervenție în caz de poluare accidentală pe canalul Dunăre- Marea Neagră, care afectează sau pot afecta zonele portuare, malurile, marea teritorială și zonele economice.