CONTINGENCY PLAN FOR THE PORT OF HUELVA

Jose F. Sánchez
Centre for Harbours and Coastal Studies, CEDEX

Abstract

This presentation deals specifically with the complementary studies for the Contingency Plan of the port of Huelva (Spain) carried out at the CEDEX Maritime Engineering Department from 2004 to 2006.

In order to reduce the risk of oil pollution, the IMO's International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC 90) requires to the Parties to establish measures for dealing with incidents, either nationally or in co-operation with other countries.

Firstly, it aims for the development of Oil Pollution Emergency Plans or similar arrangements in all ships and offshore operators, which must be co-ordinated with national systems for responding promptly to potential incidents. Besides, the convention calls for the establishment of stockpiles of oil spill combating equipment, the holding of oil spill combating exercises and the development of detailed plans for dealing with pollution incidents.

In Spain, the Local Contingency Plan (known as PICCMA) represents one of the main tools (among with the National and Regional Contingency Plans) established by the General Directorate of the Merchant Marine of the Ministry of Development to overcome the regulations coming from the OPRC 90. The Royal Decree 253/2004 of February 13th regulates the PICMMA, stating its scope and minimum contents.

Regarding the scope, the PICCMA is broadly compulsory for every company, terminal or port authority involved with oil loading or unloading, handling and bunkering. With reference to the contents, it must have at least an Operational Project that establishes the main organizational aspects, and a Response System Project that describes the equipment, preparedness and training necessary to overcome the objectives set by the OPRC convention.

Among these main parts, and with the aim of giving support to the Response System project, the decree lists a set of Complementary Studies coping with the ecological, meteorological and oceanographic variables in the area potentially affected by an oil spill. These studies have a double objective: on the one hand, to identify and determine the risk of incidents; on the other hand, to analyse the fate and effects of oil spills under different environmental conditions. The complementary studies are divided in two sections:

I. General Description of the Environmental Conditions in the Zone of Influence of a Terminal

Although not a piece of the response or preparedness systems, these studies are fundamental since they will be used as the data source to include in the determination of risk, fate and effects of the oil spills, commented hereafter. This description comprises different types of studies on: 1) geographic location and morphologic description of the coast; 2) an important number of exhaustive studies regarding climate (both atmospheric: winds, temperatures, and oceanographic: waves, water, currents, etc); 3) fisheries and aquiculture; 4) sensitive and protected areas; 5) touristic areas and 6) hydrology.

II. Study for the Fate and Effects of the Potential Oil Spills.

This section is essential since some of its studies constitute a real part of the Contingency Plan. It is also divided in 5 different subsections: 1) Identification and description of the incidents with a major risk of producing an oil spill, including the location of the spots where this risk is greater; 2) calculation of the

trajectories of an oil spill at every terminal and location of the coastal areas potentially affected; 3) description of the spill weathering, taking into account the physical and chemical properties of the product, and under different environmental conditions; 4) location and description of the natural barriers or booms that could act as an obstacle to the oil slicks; 5) location of the places where contaminants could be driven in order to recover them and accesses to those places.

In order to accomplish the PICMMA requirements, the Port Authority of Huelva commissioned CEDEX the main parts of the complementary studies.

The General Description (Section I) was entirely commissioned to CEDEX by the Port Authority of Huelva. To overcome these studies it was necessary an extensive work that included field data surveys and numerical modelling (with MIKE 21 HD) for the calculation of the current fields due to the presence of tides and river discharges. Some of them will be briefly commented in the presentation.

Concerning the Section II, the parts (II.1) to (II.3) were commissioned to CEDEX by the port authority of Huelva, while for the other two only some succinct guidance was inserted as part of the official reports delivered to the client.

To carry out the first subsection (Part II.1, “Identification of spills”) some international studies on spill events statistics were collected so that spill rates and volumes could be assigned to the potential incidents. Given such information, the type and location of the most probable incidents were determined through the Poisson distribution. Finally, the study set the criteria for selecting the spill incidents that would be modelled.

The “Study of Trajectories” (part ii) was accomplished starting from the latter information and the data coming from the Section I, and making use of the numerical model MIKE 21 PA/SA. Its main result was the “Atlas of trajectories”, an efficient tool consisting of 890 maps that could be used in case of a real oil spill. Among this, and using simple assumptions, a probability of being affected by a spill was calculated for each surrounding area of interest.

Concerning the oil weathering (part iii) the “Study of weathering” uses the numerical model ADIOS 2 to simulate the fate of two crude oils and two oil products in three different conditions each one, giving a total of 12 scenarios. Such a difference with the number of trajectories comes from the lower number of products and their similarity on the one hand and from the independence of the fate on the wind and wave direction on the other hand. The results constitute an essential source of information when designing the combating equipment as well as the strategy.

As it was said before, parts (II.4) and (II.5) were not commissioned and hence carried out, although some guidance was given starting from the trajectories analysis and the weathering results.