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**MEDITERRANEAN ACTION PLAN (MAP)  
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE  
MEDITERRANEAN SEA (REMPEC)**

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Thirteenth Meeting of the Focal Points of the Regional  
Marine Pollution Emergency Response Centre  
for the Mediterranean Sea (REMPEC)

REMPEC/WG.45/13/2  
Date: 30 April 2019

Malta, 11-13 June 2019

Original: English

Agenda Item 13

**MEDITERRANEAN OFFSHORE GUIDELINES AND STANDARDS:  
DRAFT GUIDANCE ON THE DISPOSAL OF OIL AND OILY MIXTURES AND ON THE USE AND  
DISPOSAL OF DRILLING FLUIDS AND CUTTINGS**

**Note by the Secretariat**

**SUMMARY**

**Executive Summary:** This document provides background information which outlines the process leading to the preparation of the Mediterranean Offshore Guidelines and Standards: Draft Guidance on the Disposal of Oil and Oily Mixtures and on the Use and Disposal of Drilling Fluids and Cuttings. The Draft Guidelines are presented in Annex to the document under review.

**Action to be taken:** Paragraph 12

**Related documents:** UNEP(DEPI)/MED IG 20/8, REMPEC/WG.35/INF.3; UNEP(DEPI)/MED IG.22/28; REMPEC/WG.45/13/2; UNEP/MEDWG.461/20; REMPEC/WG.45/INF.16; REMPEC/WG.45/INF.17 and UNEP/MED WG. 461/INF.9

**Background**

1 In accordance with Decision IG.20/12<sup>1</sup> adopted by the Seventeenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("the Barcelona Convention") and its Protocols (COP17) (Paris, France, 8-10 February 2012), an analysis of existing recognized international best practices and regulations relevant to the implementation of the Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil, hereinafter referred to as the Offshore Protocol, and a comparative analysis of existing legislative and administrative framework in the region<sup>2</sup>, were prepared within the framework of the Ecosystem Approach (EcAp) Med Project and were submitted to the 3<sup>rd</sup> Offshore Protocol Working Group Meeting (Attard, Malta, 17-18 June 2014).

2 The Study on International Best Practices provided an in-depth analysis of existing recognised international best practices and regulations relevant to the implementation of the Offshore Protocol and a comparative analysis of existing legislative and administrative framework in the region in order to highlight potential gaps between the Offshore Protocol requirements and the existing laws or practices.

3 Based on the findings of these studies, the recommendations made by the Contracting Parties and a wide consultative process, Decision IG.22/3<sup>3</sup> related to the Mediterranean Offshore Action Plan in the framework of the Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its

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<sup>1</sup> UNEP(DEPI)/MED IG 20/8

<sup>2</sup> REMPEC/WG.35/INF.3

<sup>3</sup> UNEP(DEPI)/MED IG.22/28

Subsoil, hereinafter referred to as the Mediterranean Offshore Action Plan, prepared by the Secretariat with substantive contribution of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), was adopted by the Nineteenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols (COP19) (Athens, Greece, 9-12 February 2016).

4 In accordance with Specific objective 3 of the Mediterranean Offshore Action Plan and Article 23 of the Offshore Protocol, as the core substance of the Offshore Protocol aims at establishing common standards and guidelines to harmonise regional practices in the Mediterranean region, Contracting Parties agreed to consider relevant existing standards and guidelines in line with overarching ecosystem-based ecological objectives, EcAp Roadmap and in particular with the Integrated Monitoring and Assessment Programme (IMAP) of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP). Contracting Parties further agreed to develop and adopt the regional offshore standards and guidelines identified in Specific objective 7 and Specific objective 8, respectively.

5 Since the adoption of the Offshore Protocol, numerous standards and guidelines applicable to the Convention and Protocol objectives have emerged from a wide variety of industry, national and international organisations. Consolidation of these standards and guidelines into a common set of working practices for use at the regional level is important to ensure that Contracting Parties are applying working practices that are in harmony with one another and in a manner that ensures that the objectives of the Barcelona Convention and Offshore Protocol are being achieved. In this regard, REMPEC in close cooperation with UNEP/MAP and the Specially Protected Areas Regional Activity Centre (SPA/RAC) implemented the following activities pursuant to the UNEP/MAP's Programme of Work for 2016-2017 adopted by COP 19:

- .1 Prepare Environment Impact Assessment guidelines from Offshore activities;
- .2 Develop the common offshore standards on the disposal of oil and oily mixtures, the use and disposal of drilling fluids and cuttings and analytical measurements; and
- .3 Develop the offshore common standards and guidelines for special restrictions or conditions for specially protected areas.

6 The resultant common offshore standards and guidelines following completion of these activities are presented in the following documents:

- .1 Mediterranean Offshore Guidelines and Standards: Draft Guidance on the Disposal of Oil and Oily Mixtures, and on the Use Disposal of Drilling Fluids and Cuttings, in Annex to the present document;
- .2 Mediterranean Offshore Guidelines and Standards: Draft Guidelines for the Conduct of Environmental Impact Assessment (EIA) (REMPEC/WG.45/13/1); and
- .3 Mediterranean Offshore Guidelines and Standards: Draft Common Standards and Guidelines for Special Restrictions or Conditions for Specially Protected Areas (SPA) within the Framework of the Mediterranean Offshore Action Plan (UNEP/MED WG.461/20).

7 The focus of developing these guidance documents has been on the existing standards and operating procedures within the offshore oil and gas industry as an example of a mature industry with a long history of development of standards and guidance documentation, particularly with regards to mitigating impacts on protected areas and valued features, and which is representative of an exploration and exploitative industry relevant to the Offshore Protocol.

8 To inform the guidance documents regarding the current status of the conduct of EIA, the use and disposal of drilling fluids and cuttings and the disposal of oil and oily mixtures, a questionnaire was sent to all Contracting Parties for comment. The questionnaire was also sent to International Association for Oil & Gas Producers (IOGP) who, in turn, requested four international oil & gas operators, as well as the Norwegian Oil and Gas Association to provide feedback.

9 A separate questionnaire was provided to SPA/RAC requesting information on specially protected areas in the Mediterranean.

10 Concurrently, a desktop study was undertaken reviewing international and national legislation and guidance from areas and countries with a mature offshore oil and gas industry, as well as guidance from industry organisations and international money lenders organisations, in order to identify best practices from around the world.

11 Descriptions of the best practice and guidance documentation reviewed and the rationale underpinning the current common standards and guidelines presented here is provided in the following information documents:

- .1 Rational for the Guidelines for the Conduct of Environmental Impact Assessment (EIA) (REMPEC/WG.45/INF.16);
- .2 Rational for the Common Standards and Guidance on the Disposal of Oil and Oily Mixtures, and the Use and Disposal of Drilling Fluids and Cuttings (REMPEC/WG.45/INF.17); and
- .3 The Rationale for the Common Standards and Guidelines for Special Restrictions or Conditions for Specially Protected Areas (SPA) within the Framework of the Mediterranean Offshore Action Plan (UNEP/MED WG. 461/Inf.9).

#### **Actions requested by the Meeting**

12 **The Meeting is invited to:**

1. **take note** of the information provided in this document;
2. **examine and agree upon** the guidelines and standards included in the present document; and
3. **request** the Secretariat to submit it to the next Meeting of the Barcelona Convention Offshore Oil and Gas Group (OFOG) and the Meeting of MAP Focal Points.



**ANNEX**

**MEDITERRANEAN OFFSHORE GUIDELINES AND STANDARDS:**  
**DRAFT GUIDANCE ON THE DISPOSAL OF OIL AND OILY MIXTURES AND ON THE**  
**USE AND DISPOSAL OF DRILLING FLUIDS AND CUTTINGS**



## **1 Use and disposal of drilling fluids and cuttings**

### **1.1 Introduction**

1. This chapter of the document provides guidance on the use and disposal of drilling fluids and cuttings from offshore oil and gas installations in the Mediterranean Sea. This guidance has been derived from international best practices as outlined by organisations and institutions such as the Secretariat of the Convention for the Protection of the Marine Environment of the North-east Atlantic (OSPAR), International Finance Corporation (IFC)/World Bank and the International Association of Oil and Gas Producers (IOGP), as well as from countries with mature oil and gas industry with well-developed regulatory frameworks, such the UK, Norway, the Netherlands and the US.

### **1.2 Legislative Background**

2. All countries around the Mediterranean Sea have signed up to the Barcelona Convention. As such, the Barcelona Convention and its supporting Protocol on the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (Offshore Protocol), provide the overarching regional legal driver unpinning this guidance document.

3. Article 8 of the Offshore Protocol imposes a general obligation upon Operators to use the best available, environmentally effective and economically appropriate techniques. Operators should also observe internationally accepted standards regarding wastes, as well as for the use, storage and discharge of harmful or noxious substances and materials with a view to minimizing the risk of pollution. Articles 9 and 10 of the Protocol provide more specific requirements on the use and disposal of drilling fluids and cuttings.

4. This guidance document provides further definition/clarification to the general obligations outlined above.

### **1.3 Use and Disposal of Drilling Fluids**

#### **1.3.1 The Chemical Use Plan**

5. A Chemical Use Plan shall be prepared for the use of all drilling fluids by the Operator. The Chemical Use Plan must quantify and assess the environmental risk of each chemical additive that may potentially be used during the drilling, cementing and completion of the well. Subsequent well operations, including well intervention, workover, suspension and abandonment operations will be subject to similar requirements. The Chemical Use Plan should include all chemicals that will be onboard the drilling unit, comprising all operational as well as contingency chemicals. Only chemical additives that are approved for use by the Competent Authority may be used. In order to be approved by the Competent Authority all chemicals must be tested for toxicity, bioaccumulation and biodegradability. If the Competent Authority does not have a defined chemical authorisation system in place, the Offshore Chemical Notification Scheme (OCNS) chemical list used by the UK and the Netherlands should be used as a proxy. The Centre for Environment, Fisheries and Aquaculture Science (CEFAS) list of chemical additives is updated regularly and is available at: <https://www.cefas.co.uk/cefas-data-hub/offshore-chemical-notification-scheme/>

6. The Chemical Plan shall be submitted to the Competent Authority for review and approval. Operations may only commence once the Competent Authority has issued a permit, specifying usage and discharge, and monitoring and reporting conditions.

7. The disposal of the drill cuttings shall either be made on land or into the sea at an appropriate location as specified by the Competent Authority. Further detail on disposal options at sea are provided below.

#### **1.3.2 Water Based Drilling Fluids**

8. Water based drilling fluids (WBM) are the most commonly used drilling fluids. WBMs consist of water mixed with bentonite clay and barium sulphate (barite) to control mud density and thus,

hydrostatic head. Other substances are added to gain the desired drilling properties (OGP, 2003<sup>1</sup>; IOGP, 2016<sup>2</sup>).

9. Effective solids control equipment shall be used to remove formation solids from the drilling fluid and to recover the used drilling fluid, so that it can be reused. Under most circumstances, used WBM and associated drill cuttings may be disposed of by discharging into the sea. A permit from the Competent Authority must be obtained for the usage and discharge of WBM offshore, as described in section 1.3.1 above.

### **1.3.3 Non-Aqueous Based Fluids**

10. Non-aqueous based fluids (NADF) are regularly used to drill the deeper sections of wells when using NADF is considered advantageous over drilling with WBM as it can provide faster drilling rates, increased stability in water-sensitive rock formations and is more effective for drilling deviated, deep, high temperature wells. NADFs comprise all non-water and non-water dispersible base fluids, including mineral and synthetic oil base fluids (OGP, 2003; IOGP, 2016).

11. The use of NADF of sufficiently low toxicity (i.e. with a total aromatic hydrocarbon content < 5% and PAH content < 0.35%) is permitted for use in the deeper well sections (i.e. from the 12¼" section onwards). The use of diesel-based drilling fluids is prohibited.

12. The discharge of NADF to the sea is prohibited. Any unused or recovered NADF from the drilling operations shall be shipped back to shore, where it may either be reconditioned for re-use, or can be treated for appropriate disposal onshore. Alternatively, used NADF and NADF contaminated cuttings may be disposed of by re-injection into a suitable porous rock formation, if it can be proven this represents Best Environmental Practice (BEP) and if permitted to do so by the Competent Authority.

13. Drill cuttings contaminated with NADF may only be discharged if they are (thermally) treated and contain less than 1% oil content (i.e. less than 10 grams of oil per kg of dry cuttings). The discharge point of the cuttings should be well below the surface of the water (i.e. at least 15 m below sea surface). The discharge of any drill cuttings contaminated with NADF in specially protected areas (SPA) is prohibited under all circumstances.

### **1.3.4 Discharge of Cuttings Contaminated with Reservoir Fluids**

14. When drilling through reservoir sections of the well, cuttings from the payzone (oil-bearing formation) returned to the surface along with their associated drilling fluids may be contaminated with (small amounts of) liquid reservoir hydrocarbons (i.e. crude oil or condensate). Any cuttings and/or WBM contaminated with reservoir fluids should be contained and sent back to shore for appropriate treatment and disposal. Alternatively, these cuttings may be re-injected into a suitable formation, if possible to do so.

15. Under certain circumstances it may be possible to clean the contaminated cuttings and/or drilling fluid, so that they can be discharged to sea, if allowed to do so by the Competent Authority. If this option is available, a permit should be obtained from the Competent Authority. Individual discharge conditions should be set for each permit, and any discharges should be monitored accordingly.

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<sup>1</sup> OGP, 2003. Environmental aspects of the use and disposal of non-aqueous drilling fluids associated with offshore oil & gas operations. International Association of Oil & Gas Producers. Report No. 342, May 2003

<sup>2</sup> IOGP, 2016. Environmental fate and effects of ocean discharge of drill cuttings and associated drilling fluids from offshore oil and gas operations. International Association of Oil and Gas Producers. Report No. 543, March 2016.



## **2 Disposal of oil and oily mixtures**

### **2.1 Introduction**

16. This chapter of the document provides guidance on the disposal of oil and oily mixtures from offshore oil and gas installations in the Mediterranean Sea. This guidance has been derived from international best practices as outlined by organisations and institutions such as OSPAR, IFC/World Bank and IOGP, as well as from countries with mature oil and gas industry with well-developed regulatory frameworks, such as the UK, Norway, the Netherlands and the US.

17. Oil and oily mixtures are generated throughout various stages and processes onboard offshore oil and gas installations and will need to be managed and disposed of in a responsible manner. For example, drilling operations generating oil contaminated fluids include well clean-up, cementing, mud pit cleaning and operations where well bore fluids become contaminated with oil-based mud, crude oil or condensate. In addition, fluids from rig floor drains and other tank cleaning operations are also included. During the production phase, the main sources of oil and oily mixtures will be produced water, produced reservoir sands and scales, and machinery space drainage.

### **2.2 Legal Background**

18. The Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("the Barcelona Convention") and its Protocols provide the overarching environmental legal framework in the Mediterranean Sea Region.

19. The 22 Contracting Parties to the Barcelona Convention are: Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, Turkey, and the European Union.

20. The Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (adopted in 1994), entered into force in 2011. The Protocol, known as "The Offshore Protocol", sets out specific commitments for the Contracting Parties to "take appropriate measures to prevent, abate, combat and control pollution in the Protocol Area resulting from activities, inter alia by ensuring that the best available techniques, environmentally effective and economically appropriate, are used for this purpose".

21. One of the commitments in the Offshore Protocol is for the Contracting Parties to formulate and adopt common standards for the disposal of oil and oily mixtures from installations into the Protocol Area.

22. In addition to the specific requirements for the Contracting Parties set out in the Offshore Protocol, MARPOL Annex I, provides the worldwide standard for oil content of machinery space drainage from ships, as well as for fixed or floating platforms including drilling rigs, floating production, storage and offloading facilities (FPSOs) used for the offshore production and storage of oil, and floating storage units (FSUs) used for the offshore storage of produced oil. These fixed or floating platforms must comply with the same requirements applicable to ships having a gross tonnage of 400 or greater.

23. The Mediterranean Sea is designated as a "Special Area" under Annex I and is therefore subject to more stringent requirements than those that apply outside Special Areas.

### **2.3 Produced Water Discharges**

24. The term "produced water" is used for formation water that is produced along with the oil from the reservoir, as well as for water that is condensed during the production process. Produced water is separated from the produced hydrocarbon fraction onboard the offshore installation.

25. Where possible, produced water should be re-injected back into the reservoir. If re-injection is not possible, then the produced water may be discharged under the permitting and reporting conditions described below.

### 2.3.1 Discharge Limits

26. The discharge of produced water is allowed if the oil and grease content does not exceed 30 mg/l, as an average in any calendar month. The discharge concentration of oil in produced water shall not exceed 100 mg/l at any time.

27. The dilution of treated or untreated produced water for the purpose of lowering the average concentration of oil or achieving compliance with the performance standard is prohibited. If produced water is mixed with other waters after the treatment process, the Operator must be able to demonstrate that the original concentration of the oil content in the produced water can be measured, and the quantity of oil discharged can be calculated.

28. Batch discharges of produced water are permitted. A batch discharge is an intermittent discharge where treatment of produced water to remove oil takes place between batches, for example settlement/slops tanks with capability for oil removal.

29. In addition to the dispersed oil content, produced water may also contain dissolved hydrocarbons (PAH and phenols), heavy metals, inorganic compounds from the formation (both dissolved salts and precipitates) and Naturally Occurring Radioactive Material (NORM). Therefore, the concentration of heavy metals and PAH compounds, BTEX, phenols, alkyl phenols and carboxylic acids in discharges should also be determined as part of the analysis of produced water.

### 2.3.2 Sampling

30. The sampling strategy for dispersed oil in produced water depends on the volume of produced water discharged, and the type of installation. For manned offshore installations which discharge continuously, the determination of the quantity of dispersed oil discharged should be based on the results of at least 16 samples per month. Samples should be taken at equal time intervals. The first sample should be taken within 4 hours of the start of the discharge, after which the minimum sample frequency shall be as detailed in the table, below.

31. The sampling point must be immediately after the last item of treatment equipment in, or downstream of, a turbulent region, and in any case before any subsequent dilution.

**Table : Oily Mixtures Discharged Per Discharge Point for Manned Installations**

Type of Discharge	Discharge Amount Per Annum	Sample Frequency and Analysis
Dispersed oil	< 2000 kg	Once a week
	≥ 2000 kg	Every second day
BTEX	< 200 kg	Twice a year
	200 kg to 2000 kg	Once every quarter (i.e. 4 times per year)
	≥ 2000 kg	Once per week

BTEX = Benzene, toluene, ethylbenzene and xylene (ortho-xylene, meta-xylene and para-xylene)

### 2.3.3 Analysis of Dispersed Oil Content and BTEX

32. The dispersed oil content in produced water should be determined by means of gas chromatography and flame ionisation detection (GC-FID), as described in OSPAR Agreement 2005/15. This method is designed for produced water and other types of waste water discharged from gas, condensate and oil platforms and allows the determination of the dispersed oil content in concentrations above 0.1 mg/l.

33. The OSPAR produced water analysis reference method is a modified version of the ISO 9377-2 method. This method is to be used only for the determination of dispersed oil in produced

water. This method is not to be used for the determination of oil in other discharges for oil on sand, drains discharges, etc. Details of this sample analysis method are published in: 'Oil in Produced Water Analysis – Revised Guideline on Criteria for Alternative Methods Acceptance and General Guidelines on Sample Taking and Handling – OSPAR Agreement 2006-6'.

34. For certain instances, there may be scope to use a simpler analysis method offshore if that has been correlated against the OSPAR Reference Method in an onshore laboratory. Therefore, a suitable Infra-red (IR) analysis method (or other analysis methods) may be accepted as an 'alternative' analysis method, but only if it is correlated against the OSPAR Reference Method.

35. Additional guidance on alternative sampling methods can be found in a guidance document published by the UK Department of Energy and Climate Change: Methodology for the Sampling and Analysis of Produced Water and Other Hydrocarbon Discharges (DECC, 2014).

36. The 'BTEX content' should be determined by taking the sum of the levels of BTEX obtained by the application of the static headspace method described in ISO 11423-1, using gas chromatography - mass spectrometry (GC-MS) or another method that produces equivalent results. The amount of BTEX should be calculated on the basis of the quantity of water per year (m<sup>3</sup>) and the yearly flow-weighted average values of BTEX analysed in the produced water discharged into the sea.

## **2.4 Drainage System Discharges**

37. Discharges from drainage systems (open/closed, hazardous/non-hazardous discharge to a 40 mg/l monthly average oil concentration limit as set by the Paris Commission (PARCOM).

### **2.4.1 Machinery Space Drainage Discharges**

38. Because the MARPOL Annex I standards for machinery space drainage (such as slops and bilges) are already implemented worldwide, no additional requirements are required for with regard to drainage of drilling rigs and platforms.

39. The following MARPOL requirements should be met:

- The drilling rig or platform must be equipped "as far as practicable" with the oil filtration equipment and the discharge of oil or oily mixtures from machinery drainage spaces is prohibited unless the oil content does not exceed 15 ppm;
- All facilities are required to keep a record of all operations involving oil or oily mixture discharges;
- Oil filtering equipment must be of an approved design by the Administration, must be provided with an alarm arrangement to indicate when the 15-ppm level cannot be maintained, and must ensure that any discharge of oily mixtures is automatically stopped when the oil content exceeds 15 ppm.

40. For further information, the Revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships are contained in resolution MEPC.107(49). The IMO maintains a list of approved oil filtering equipment.

## **2.5 Produced Sand and Scale Discharges**

41. Annex V (A.2) of the Offshore Protocol states that all "Oily waste and sludges from separation processes shall be transported to shore".

42. Therefore, any reservoir sand and production scales contaminated with oil (e.g. sludges or slurries removed from processing vessels) should be transported to shore for appropriate treatment and disposal.

## 2.6 Other Operational Discharges

43. Most discharges of oil will normally be routed to the production process, produced water treatment system, or to the drainage systems, and will be treated to minimise the discharge of oil. Therefore, such discharges will be subject to the same discharge limits for produced water and drainage systems, as discussed in Sections 2.3 and 2.4 above. For example, displacement water (ballast water) from storage facilities for oil is subject to the same discharge requirements as produced water.

44. Notwithstanding the above, it is accepted that certain operations may result in a separate discharge of oil into the marine environment, for example during certain types of maintenance or sub-sea pipeline operations e.g. installation tie-in, commissioning and decommissioning operations. In all cases where such a discharge of oil is planned, the Operator must obtain a permit/consent from the Competent Authority. Each permit application should contain sufficient information to allow an assessment of the potential environmental impacts and to justify the proposed discharge.

## 3 Bibliography

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