



Wintershall Noordzee BV
P.O. Box 1011
NL 2280 CA Rijswijk
Netherlands

DEPA Industrial Division
J.nr. 2022 - 29374
Ref. hebec/jeppj
Date 7. June 2024

Att. Arthur van Dalen

E-Post: Arthur.van-dalen.partner@wintershall.com

Permit for use of chemicals for P&A activities at Ravn Platform

With reference to § 3 of the Danish “Order on discharge into the sea of substances and materials from offshore oil and gas facilities and on monitoring in the sea around the facilities” Bek. No. 571 of May 23, 2023, DEPA hereby grants permission to use the chemicals as applied for the plug and abandonment operations of the Ravn installation wells.

Background

Wintershall Noordzee BV (Wintershall) has by mail dated May 1, 2024 to the Danish Environmental Protection Agency (DEPA) applied for the use of additional chemicals for the plug and abandonment operations of the Ravn installation wells. Further, Wintershall has by mail dated May 31, 2024 sent an updated application.

The chemicals applied for are as follows:

Chemical	PR. No	Color Classification	Use (t/y)	Discharge (t/y)
Deck Wash	4453841	Yellow	1	1
BOB Fluid*	4477333	Yellow	0,1	-
Jacking grease	1640262	Yellow	0,5	0,5

*) Contingency chemical only, closed system, no planned discharge. Ref. Wintershall.

Environmental impact assessment

Wintershall has by e-mail dated May 31, 2024 sent an update with an environmental impact assessment related to the use and discharge of the applied chemicals as follows:

- The **Deck Wash** chemical which is a yellow substance is significantly diluted before being discharged to the sea,
- The **BOP Fluid** is not discharged and contained in a closed system.
- The **Jacking Grease** chemical which is a yellow substance will dissolve into the seawater from the rig legs.

The discharge of the **Jacking Grease** can potentially impact the surrounding aquatic environment by affecting eggs, larvae, and fish. The assessment is based on following info:

- Estimated use and discharge amounts of chemicals for the P&A, cementing and rig related activities
- Discharge patterns for the P&A, cementing and rig related activities

- Environmental hazard assessment of the chemical substances based on HOCNF information.

To assess the impact of the discharge of chemicals related to the rig operations to P&A the wells, discharge calculations have been conducted.

The discharge calculations estimate the distance measured from the platform, where the discharged chemicals are expected to have no biological impacts. The calculations are conducted in a dispersal model developed by COWI and based on the CHARM-model. The dispersion model is a modified version of the CHARM-model, whereas the PEC/PNEC-ration is based on the OSPAR guidelines, and thus assesses the potential impact for each substance individually.

The discharge calculations have not been conducted for PLONOR substances, as these are considered to Pose Little Or No Risk.

The **Jacking Grease** discharge has been modelled with the point of discharge located near the water surface, as the chemicals will be discharged from the rig.

In accordance with OSPAR, the PNEC-value is determined so the environment is protected against negative effects also by long-term impacts. However, during P&A the discharges will be short-term and the impacts will occur once or very rarely during a short period of time. Thus, it is the acute effects that are used as basis for the assessment (PEC/PNEC-ration for acute effects).

Since the discharge will only occur over a short time, an assessment of the distance of impact based on acute criteria should be taken into consideration. Thus, as for the P&A chemicals the distance of impact is modelled based on PNEC-values derived based on acute L(E)C50 data with an assessment factor of 1000.

Discharge from the P&A activities will only be related to rig jacking grease and significantly diluted rig wash chemicals, as all other chemicals are either shipped to shore for treatment or left in the well. The modelling has only been conducted for the chemicals which are prescreened as yellow or red, as these are the chemicals which can cause negative effects.

It is assumed 50% (not 100%) of the jacking grease will be discharged to sea, over a period of 12 hours. The jacking grease is assumed to be discharged undiluted. The result of the modelling can be seen in Table 9-4¹.

Table 9-4: Results for the PEC/PNEC discharge calculations for chemicals used and discharged during P&A activities. The discharge calculations have not included PLONOR substances as these are considered to Pose Little Or No Risk to the environment.

¹ From EIA - closure of wells at RAVN (Ravn A1 and A2), March 2023.

Table 9-4: Results for the PEC/PNEC discharge calculations for chemicals used and discharged during P&A activities. The discharge calculations have not included PLONOR substances as these are considered to Pose Little Or No Risk to the environment.

Activity	Type of chemical	Max. distance (m) from discharge point at which PEC/PNEC = 1 (assessment factor = 1000)	Duration of discharge
Rig chemicals	Jacking grease	<250	12 hours

It can be seen that the Jacking Grease chemical will exceed the PEC/PNEC ratio on shorter distances of below 250 m. Discharge of chemicals will potentially affect pelagic species consisting of fish, fish larvae, zooplankton and phytoplankton in the affected area. Since the duration of the impact is short term (within hours) and the magnitude of the impact is marginal, it is assessed that the impact of discharge on pelagic organisms is negligible.

Based on the above conclusion, the potential impact is assessed to be negligible, as can be seen below at table 9-5².

Table 9-5: Environmental severity and risk of impacts discharge of chemicals of activities related to P&A of A1 and A2.

Impact	Extension of impact	Duration of impact	Magnitude of impact	Severity of impact	Probability of impact	Frequency	Reversibility	Environmental risk
Impacts of discharge of chemicals to sea during P&A	Local	Short term	Small	Minor impact	Probable	Low	Reversible	Negligible

Table 7-8 Use and discharge of rig chemicals related to rig operations during P&A of Ravn A1 and A2.

Activity	Function	Expected use [Tons]	Expected discharge [Tons]	Other [Tons]	Pre-screening category
Rig chemicals	Jacking grease	0,5	0,25	0,25 remain in rig system	Yellow
	Rig wash	1,0	1,0	0	Yellow
	Pipe dope	0,5	0	N/A (will be contained in WBM and brine shipped to shore)	Yellow
Total		2	1,25	0,25	
Total Red		0	0	0	
Total Yellow		2	1,25	0,25	
Total Green		0	0	0	

As can be seen from the above, no chemicals or fluids will be discharged to sea during the plug and abandonment process, except for some of the **Jacking Grease** being washed from the rig legs and the **Rig Wash** chemicals. The rig wash chemicals are significantly diluted before being discharged to the sea, and therefore the impact is insignificant. All P&A chemicals and cementing chemicals

² From EIA - closure of wells at RAVN (Ravn A1 and A2), March 2023

will be contained in the well and there will be no discharge to the sea. Any P&A chemicals and cementing chemicals not used will be taken to shore for disposal.

DEPA Comments and Assessment

DEPA has verified the eco-toxicological features of the three chemicals. DEPA agrees to the assessments of the color classification informed by Wintershall. All three chemicals are assessed to be yellow or ranking, according to OSPAR. The substances composing the chemicals are not found to be toxic at a level, where the OSPARs PBT test and criteria for toxicity is challenged and call for substitution.

DEPA finds, that the environmental impact assessment is adequately described and that the risk is at an acceptable level.

The Environmental Assessment Act

Based on the application, the Danish Environmental Protection Agency has consulted the Danish Energy Agency on 13 May 2024. The Danish Energy Agency is the EIA authority for offshore installations in the Danish part of the North Sea. It is the Danish Energy Agency that handles the overall assessment of emissions in the light of the Danish Energy Agency's authority role in connection with EIA reports for offshore installations.

The Danish Energy Agency, has sent the following consultation response on 16 May 2024 in relation to the application from Wintershall.

"On May 13 2024, the Danish Energy Agency received a hearing from the Danish Environmental Protection Agency regarding an application from Wintershall for permission to use and discharge of 1,6 ton of chemicals from the Ravn-3 closure."

"The Danish Energy Agency, as the EIA authority, has no comments on the discharge permit."

Based on this, the Danish Environmental Protection Agency can state that the use and discharge of the applied chemicals do not conflict with the Danish Energy Agency's area of competence regarding the Environmental Assessment Act.

BAT considerations

Pursuant to the Danish Order on offshore oil and gas installations' substance and material discharge into the sea, as well as sea monitoring around these installations (Order no. Nr. 571, dated May 23, 2024), the Danish Environmental Protection Agency (DEPA) only issues a permit following an assessment of the Best Available Techniques (BAT) applicable to the project.

The European Commission published a BAT Guidance Document concerning upstream hydrocarbon exploration and production on 27 February 2019. This document outlines, that it is considered BAT to implement the OSPAR Harmonised Mandatory Control System (HMCS) for chemical usage and discharge. It also advocates providing the Regulatory Authority with comprehensive data and information about the chemicals intended for offshore use and discharge. Additionally, conducting a Risk Assessment to evaluate the potential risks posed by key concern chemicals is deemed as BAT. As part of this process, the discharge of Jacking Grease has been modelled with the discharge point located near the water surface, given that the chemicals will be discharged from the rig.

DEPA, after reviewing the information provided, concludes that Wintershall is in overall compliance with the BAT protocols for handling and discharging rig chemicals in the well closure project. The company demonstrates adequate observance of these guidelines.

Assessment of impact on the Natura 2000 site

According to the EIA for the Ravn wells closure project, discharge of the chemicals – Rig (Deck) Wash and Jacking grease – the maximum distance for an impact will be <250 meter from the discharge point. DEPA assess that the environmental impact from the use of the chemicals at the Ravn-3 well closure project has very little or no effect on the Natura 2000 site (Dogger Banke) which is located in a distance of 15 km from the Ravn field.

Wintershall is to be informed, that the use of chemicals is required to be reported to DEPA for the agency's obligation for annual offshore chemical reporting to OSPAR. Hence, use of chemicals in 2024 will have to be reported to DEPA latest by 1. March 2025.

Publication and complaints guidance

The Danish Environmental Protection Agency's decision is published exclusively digitally. The material can be accessed at www.mst.dk. The public has access to the other information of the case with the restrictions that follow from the legislation.

The following can appeal the decision to the Environment and Food Complaints Board, cf. Section 22 of the emergency preparedness order and Chapter 15 of the Marine Environment Act:

- the addressee of the decision
- anyone who has an individual, significant interest in the outcome of the case
- the municipal council
- The Danish Health Authority,
- The Consumer Council,
- Denmark's Fisheries Association,
- The Association of Danish Ral- and Sandsuckers,
- The Danish Shipping Association,
- The Car Ferry Shipping Association,
- The Labor Movement's Business Council,
- Danish Ports,
- The Association of Marinas in Denmark (FLID) and
- Danish Offshore.
- nationwide associations and organizations which, according to their statutes, have the protection of nature and the environment as their main purpose
- local associations or organizations that, according to their purpose, look after significant recreational interests, to the extent that the association or organization has requested notification of the decisions, cf. section 49, subsection 3, when the decision affects such interests,
- local associations and organizations whose purpose is the protection of nature and the environment or recreational interests, and who have requested notification of the decision, cf. Section 49, subsection of the Marine Environment Act. 3.

It should be noted that no national or local associations and organizations have approached the Danish Environmental Protection Agency with a request to receive a copy of this type of decision.

If you wish to appeal this decision, you can appeal to the Environmental and Food Complaints Board. You complain via the Complaints portal, which you will find a link to on the front page of www.naevneneshus.dk. The complaints portal is located at www.borger.dk and www.virk.dk. You log on to www.borger.dk or www.virk.dk, just as you normally would, typically with NemID/MitID.

The complaint is sent through the Complaint Portal to the Danish Environmental Protection Agency. A complaint has been submitted when it is available to the Danish Environmental Protection Agency in the Complaint Portal. When you complain, you must pay a fee of DKK 900 for individuals and DKK 1800 for companies and organisations. You pay the fee by payment card in the Complaint portal.

You can read more about the fee scheme and complaints on the Environment and Food Complaints Board's website (<https://naevneneshus.dk/start-din-klage/miljoe-og-foedevareklagenavnet/>).

The Environment and Food Complaints Board must, as a rule, reject a complaint that comes from outside the Complaints Portal, if there are no special reasons for this. If you wish to be exempted from using the Complaints Portal, you must send a reasoned request to the authority that has made a decision in the case. The Danish Environmental Protection Agency then forwards the request to the Environmental and Food Complaints Board, which decides whether your request can be granted.

The complaint must be received by 19 July 2024 at the latest.

Conditions for environmental approval while a complaint is being processed:

Complaints do not have suspensive effect unless the Environmental and Food Complaints Board decides otherwise.

Information on complaints

If the Danish Environmental Protection Agency receives notification from the Complaints Portal that a complaint has been lodged against the decision, the Danish Environmental Protection Agency informs the company about this.

The Danish Environmental Protection Agency also informs the company if the Danish Environmental Protection Agency receives a complaint about the decision from a complainant who, upon request to the Environmental and Food Complaints Board, has been exempted from complaining via the Complaints Portal.

In addition, the Danish Environmental Protection Agency does not inform the company.

With best regards

Henrik Bechmann Nielsen
Miljøstyrelsen – Virksomheder