Fisheries and Oceans Canada (DFO)

Review of Cenovus Responses to Previous Comments:

Comment 1 *– Section 2.4 Summary of Updated Modelling, page 3 of 10*

A more detailed description of modelling results would be helpful, such as thicknesses (maximum, average) at various distance ranges from the origin, as was provided for the original drill cuttings deposition model.

Cenovus Response:

SINTEF Ocean AS (SINTEF) has conducted a lifecycle analysis of different methods for handling solids during and after drilling operations (West White Rose Platform Solid Control Drill Cuttings Dispersion Modelling – WH-DAC-RP-0019). SINTEF used the Dose-related Risk and Effects Assessment Model (DREAM) to assess environmental risk in combination with the resulting discharges of the remaining waste to the marine environment after different solid treatment options (shaker / dryer vs. Thermomechanical Desorption Unit).

DREAM includes tailored modules for modelling transport and fate of the discharged solids and chemicals including nearfield modelling, dispersion, advection, and settling, as well as biodegradation, oxygen depletion, grain size change and burial with resulting restitution time for the sea floor and impacted sediments.

Environmental risk is measured in terms of an environmental impact factor (EIF) which is defined as a reference area (seafloor) and volume (water column) where the risk for a negative impact on 5% or more of the most sensitive species is considered above accepted levels and contributes to the EIF.

The modelling results show that due to the design geometry of West White Rose Platform (WWRP), the majority of large-particle cuttings will accumulate on the base caisson roof and perimeter cells of the Concrete Gravity Structure (CGS) and not reach the sea floor; however, the remaining sea floor area exhibits risk above accepted levels for oxygen depletion and grain size change in different degrees for the considered cases.

DFO Comment:

A description of the results outlined in the Wood Modelling Report should be referenced and elaborated on in the EA Amendment, instead of just the SINTEF Report. Please provide thicknesses (max, average) at various distance ranges from the origin, as was provided for the original drill cuttings deposition model.

Comment 2 *– Section 3.1 Findings of the Original Environmental Assessment, page 5 of 10, paragraph 2*

The Proponent should provide a brief explanation as to why Sensitive and Special Areas and Fisheries VCs do not need to be assessed. Revision recommended.

Cenovus Response:

The maximum extent of the 1.5 mm drill cuttings is entirely within the White Rose Safety Zone (see Figure 2.1 in the Environmental Assessment (EA) Addendum Report).

The nearest federally designated Sensitive and Special Areas is a small Significant Benthic Area of small gorgonian corals located 110 km west of the WWRP and spotted wolffish critical habitat located 60 km northeast of the WWRP (Figure 1). The nearest internationally designated Sensitive and Special Area is a shrimp closure area located 15 km from the White Rose Safety Zone (Figure 2).

No commercial fishing occurs within the White Rose Safety Zone. While fishing does occur east of the White Rose Safety Zone, there has been no commercial fishing activity in the area of the White Rose Safety Zone for at least the past decade (Figure 3).

DFO Comment:

The extent of 1.5 mm drill cuttings may extend outside the Safety Zone (see above comments). Otherwise satisfactory.

Comment 3 *– Section 3.2 Summary of Existing Conditions*

To assist DFO in completing a risk assessment to evaluate effects on fish and fish habitat, we would appreciate if the Proponent could provide a description of the habitat within the updated modelled dispersion area (0.1 mm boundary), as well as in the vicinity. The Proponent has provided information on aquatic species (including species at risk). If there is additional information on species in the updated modelled dispersion area (0.1 mm boundary), that would also be appreciated.

Cenovus Response:

Environmental Effects Monitoring (EEM) Stations 21 and WWRP2 are within the 0.1-mm boundary. Particle size analysis characterized Station 21 as 97.9% sand, 3.4% gravel, 0.89% clay, and 0.81% silt. Station WWRP2 was characterized as 96.2% sand, 1.40% gravel, 1.39% silt, and 1.01% clay. This is consistent with the White Rose field as a whole, and as in previous years, sediments collected in 2022 were predominantly comprised of sand. Median gravel content was 0.9%, median organic carbon content was 0.9 g/kg, and median percent fines (i.e., silt and clay fractions combined) content was 1.45% (Cenovus, in prep.)

Station 21 has a long / large benthic invertebrate dataset and Station WWRP2 was sampled during the recent (2022) EEM cycle. In 2022, Station 21 recorded a maximum of 172 individuals in 24 taxa and Station WWRP2 recorded 381 individuals in 31 taxa. The majority of individuals were polychaetes, and included Ampharetidae, Cirratulidae, Opheliidae, Orbiniidae, Paraonidae, Spionidae, and Terebellidae (comprising a combined 126 (73%) and 262 (69%) individuals at Stations 21 and WWRP2, respectively) (Cenovus in prep.)

DFO Comment:
Is this description representative of the updated modelled dispersion area (0.1 mm boundary), as well as in the vicinity, for repeated drillings of 40 wells? If not, please provide additional habitat and species information to assist in DFO's assessment of impacts on fish and fish habitat.

Additional DFO Review Comments

General Comments

1. The EA Amendment should discuss results shown in the "West White Rose Project, Far-Field Drill Cuttings Dispersion Modelling" Wood Report, instead of only referencing the SINTEF report. The EA Amendment should present the greatest possible effects from the Project (e.g., 40 wells, greatest extent, maximum thicknesses). Revisions recommended.

2. To assist DFO in completing a risk assessment to evaluate effects on fish and fish habitat, it would be helpful to include the total footprint (in m2) of the drill cuttings deposition (1.5 mm and 6.5 mm thicknesses) for 40 wells. If 1.5 and/or 6.5 mm were not specifically modelled, then the nearest values below those would be fine.

Specific Comments

Section 2.4; Page 3; Paragraph 2

" The outcome of the SINTEF modelling predicted that, for SBM cuttings treated with Shaker + Dryer +centrifuge, most (89.4 %) threat comes from oxygen depletion related to biodegradation of chemicals in areas with cuttings deposition > 0.3 g/m2 and that this effect may extend up to 1000 m from the origin for a 40 well program".

DFO Comment:
Is this statement referring to Figure 6.3 in Section 6.3 (page 53), which illustrates deposition mass from repeated drillings (results from the model postprocessed for repeated drillings)? In Figure 6.3, deposition mass above 0.3 g/m2 (< 1 kg/m2 from the Figure scale) extends 1 km from the center when drilling 1 well was modelled; deposition mass above 0.3 g/m2 extends more than 2 kms from the center for 40 wells. Statement should be updated to indicate which section/figure(s) from the SINTEF modelling report is being referred to and accurately characterize results for a 40 well program.

Please include details on why 0.3 g/m2 was selected as the threshold for oxygen depletion in the EA Amendment.

Section 2.4; Page 3; Paragraph 3

"The results of the SINTEF model are illustrated in Figure 2-1. A cross section through the deposited area shows that the area where the thickness is above the effect limit 0.65 cm is

within 175 m of the discharge. The largest impacted area is the 0.1 to 6.5 mm cuttings deposition thickness (red line in Figure 2.1)."

DFO Comment:
Figure 2-1 of the EA Amendment appears to be modified from Figure 4.11 (Section 4.2, page 38) of the SINTEF report, where the deposited area described is only for a single discharge. In Section 6.2., the deposition thickness above 6.5 mm is within ~500 m of the drill centre for 40 wells. The Wood report also indicates that 6.5mm thickness will be within 500m of the drill center (if considering average +/- standard deviation). If max thickness is considered, it extends to 16 km (Table 5-2, page 27).

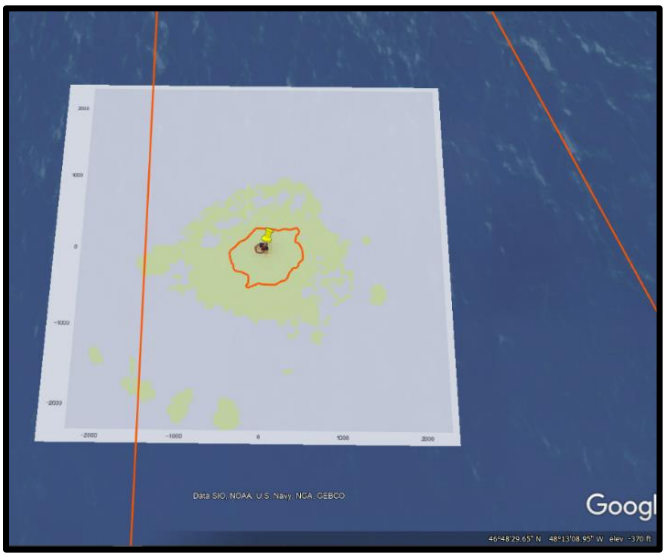
This statement and associated figure seem to be for 1 well, which should be clearly indicated. The EA Amendment should be updated to include results from 40 wells. Results from the Wood modelling report should be included in the discussion of thicknesses and extent of the dicharge. As noted in comment 1, the greatest possible effects (e.g., 40 wells, greatest extent, max thickness) should be described in the EA Amendment. Revisions recommended.

Section 2.4; Page 3; Paragraph 3 Sentence 6
"The affected area is around the discharge location within a radius of approximately 1 km"

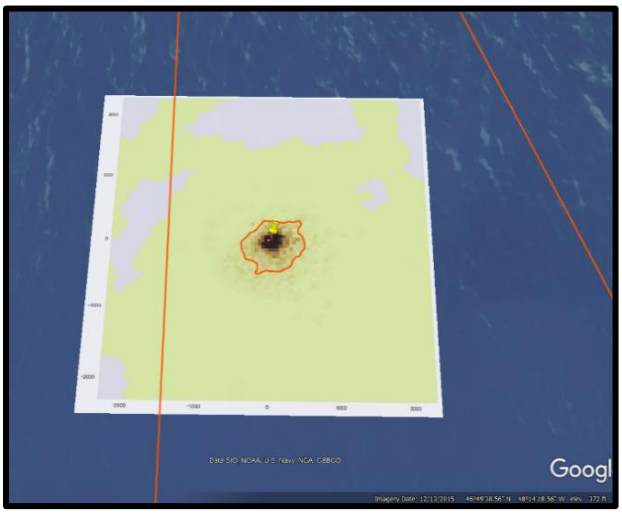
DFO Comment:
When referring to "affected area", it should be clarified what drill cutting deposition thickness and number of wells were taken into account. As noted above, DFO is interested in the 1.5 and 6.5 mm thresholds for 40 wells. Revisions recommended.

Section 3.3; Page 5; Paragraph 3
"The SINTEF model indicates that the extent of the drill cuttings at 0.1 mm depth do not extend beyond the White Rose Safety Zone (Figure 2.1)"

DFO Comment:
It is possible that drill cutting deposition at 0.1 mm may extend to the boundary or slightly beyond the safety zone after drilling 40 wells (see images below of sections from Figure 6.4, Section 6.2 - page 54 overlain on Google Earth). In the Wood report, considering the mean deposition thickness, 0.7mm extends out to 10-16km (Table 5-2, page 27). This would also be outside of the safety zone. The EA Amendment should be revised to reflect a 40 well program (with consideration of results from the Wood report).



Deposition Mass from 1 drilling operation. Straight red line is Safety Zone boundary. Red circle is the 6.5-0.1 mm thickness boundary (Figure 4.11) from Section 4.2.



Deposition Mass from 40 drilling operation. Straight red line is Safety Zone boundary. Red circle is the 6.5-0.1 mm thickness boundary (Figure 4.11) from Section 4.2.