

Review of the GSR's Environmental Impact Statement for small-scale testing of nodule collector components on the seafloor of the Clarion-Clipperton Fracture Zone and its environmental impact.

Executive summary of the Review

The GSR described a disturbance project of nodules from the seafloor at GSR location in the CCZ. This application is well written, well organized and most of the lay out follows the template suggested by ISA, Appendix V of Draft mining code under review. GSR spent a great deal informing about the collector's characteristics.

Overall the missing section/comments/recommendations do not take away the value of the EIA. The activity will bring a breath of knowledge to understand the many impacts likely to happen with this disturbance experiment.

The bulk of the environmental monitoring relies on the MiningImpact2 initiative of the European Join Programming Initiative - Oceans (JPI-O); that it is not part of GSR.

Only major relevant chapters are presented here where some comments/recommendations needed to be pointed out, for applicant's reply.

Review:

Introduction

Some missing information on project proponent and viability. Not clear explanation on how data will be shared taking into account that the environmental information should be shared publicly for future developments.

Some assumptions are opinions rather than based on scientific facts: "...impact will be limited to the vicinity of the direct impact area..."

Policy, Legal and Administrative Context

The section clearly establishes the right institution, policies and legal framework for work in the Area dealing with deep sea mining.

Project Description

The project is clearly described: remotion of sediment and nodules and dumping of 3 m³ of nodules at the end of each collecting track as explained in the design.

Some inconsistencies in formatting, different lat/long - UTM systems used; - difficult to compared-, different acronyms for similar objects (PRZ-IRZ etc).

Description of existing Physico-chemical Environment

Assumptions are not always based on scientific facts. For example variability in the areas of GSR are considered limited (?), but no explanations is given.

Meteorological information is only given. No description of storms, eddies, tidal waves or tsunamis that are accounted for, as major natural disturbances in the seafloor.

Description of existing Biological Environment

Major constraint comes from low sampling efforts to date. The available data is well treated, but poor sampling effort makes difficult to get accurate biological description of the sites that will be intervened and monitored. This fact also makes difficult to establish statistical robustness on biological community parameters (diversity index, SD overlapping).

Natural Hazards

Storms and hurricanes are mentioned as potential natural; hazards for the region. Volcanisms and seismicity is ruled out locally, but tele-connectivity is not mentioned, tsunamis passing by for example that could explain several geo-morphologies found in the area, erosion and deposition around seamounts. It is mentioned here that a characteristic of bottom waters, at the CCZ, is its extreme clarity; the disturbance monitoring plan should certainly bring new light on suspended sediment caused by the testing.

Impact Description: physical and chemical

The description of the physico-chemical impacts are known by the applicant, in the sense that there is no enough information on the harmful effect that a sediment plume depositional event will cause in the deep seafloor of CCZ. As mentioned above: 1) this part of the seafloor has no evidence that such erosion/deposition happens often and 2) the low rate of sedimentation in these areas makes the disturbance experiment proposed a significant one in the local (close range) and distant impact. Most likely benthic communities are not subject to such events, as mentioned by the applicant.

The applicant described track impact, and nodule-sediment removal impact will cause biogeochemical changes that are unknown and were not studied in past disturbance experiments. The ecological design of the test may be could account for track impact by leaving (passing the Patania only no extraction of nodules) every other track in the Patania II track collecting pattern presented in the application.

Impact Description: biological

Historical description of past disturbance experiments well presented. All the potential impact well defined. The environmental monitoring plan, design by a third party; JPI-Oceans should be accountable for monitoring each one of the impacts presented by the applicant.

Environmental management/repairing

There is substantial information on this chapter. However very little on repairing strategies after impact. No Repairing experiment will be assessed in this project.

Data management

Few specifics given except that data production will follow standard operating procedures in terms of information sharing. It would be useful to have more specifics here as to where and when data will be shared and be made available since the primary described benefit is information for future efforts. Most of the procedures are directed to EU initiatives not to ISA; although ISA is a partner of JPI-O; data must be submitted to ISA to continue with the EIA process.

Recommendations

1. Ecological connectivity is unknown. How would it be improved?
2. Temporal variation (abundance) is uncertain. How would the monitoring plan would account for this weakness?
3. Difficult to believe that monitoring program will account for any impact. Statistical robustness = higher sampling resolution in time and space.
4. Data **must be** submitted to ISA to continue EIA process and evaluation