



Responses - Public Hearing of Application for 3D Seismic in  
South Greenland Block

22-07-2011

English

## Summary of Consultation Response – NERI

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	Remarks to the EIAs		
N1	<p>NERI has a number of comments to the EIA-report.</p> <p>First of all we wonder why no reference is made to the seismic guideline prepared by NERI is not mentioned. These guidelines contain essential information to be included in the EIA (<a href="http://www2.dmu.dk/Pub/FR785.pdf">http://www2.dmu.dk/Pub/FR785.pdf</a>).</p>	<p>NERI's Seismic Guidelines are extensively referenced in the EIA and specifically incorporated Section 5 'Recommendation of best practice' of the Guidelines in Appendix 2 of the EIA.</p>	None
N2	<p>In these guidelines it is a.o. stipulated that two MMSOs are on board the seismic ship.</p>	<p>The requirement for two MMSOs, as included in the Appendix 2 of the EIA, has been referred to in the relevant mitigation sections of the EIA.</p> <p>It is acknowledged that use of 'MMO' and 'MMSO' is inconsistent throughout the document and this will be corrected.</p>	Term 'MMSO' is now used consistently in the EIA
N3	<p>All maps should preferably include the project area for easy assessment of importance.</p>	<p>The comment is not clear as the project area and area of operations had been clearly indicated on all maps generated for the permitting documentation.</p>	None
N4	<p>The EIA should state clearly that the knowledge base especially regarding marine mammals is very limited for the survey area, making it difficult to conclude on effects on seismic surveys.</p>	<p>Noted for update.</p>	Relevant statements included throughout the EIA
N5	<p>There is no mentioning of search time (when and with what duty</p>	<p>As per JNCC (August 2010) and NERI (2010) guidelines, the duration of pre-shooting search in</p>	None

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	cycle will the survey run).	deep water will be extended to 60 min.	
N6	The use of dB is not correct or consistent. It must always be referred to either rms (with stated duration), peak or peak-peak.	Noted for correction.	References to rms, peak or peak-to-peak are made throughout the EIA.
N7	The EIA contains chapters with irrelevant information for example on species not present in the survey area and information on Inuit culture and practices.	<p>The social elements of the report will be excluded from the EIA as suggested above. The species that are not present within the survey area but can be potentially present in the vicinity were covered by the EIA. In addition, it was deemed relevant to mention protected and highly vulnerable species that occur in the region.</p> <p>Paragraphs related to Inuit culture and practices will be removed.</p>	Amendments are made as per response.
N8	The EIA does not use up-to-date references from the primary literature.	Primary literature, where publicly available, had been referenced otherwise other high level credible publications and documents were used.	None
N9	The EIA does not use primary literature sufficiently to document facts.	See above	None
N10	A lot of references in the text are not included in the references list.	Noted for cross check.	Reference list amended
N11	The EIA is not up-to-date on neither catch quotas nor species.	Quantitative information on commercial species is included; catch quotas are not perceived as critical for the impact assessment of the proposed survey.	None
N12	NERI has prepared a set of	Received with thanks on 1 <sup>st</sup> June	None

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	guidelines for the MMSO's. These are still in draft, but can be requested at NERI.	2011.	
N13	Specific comments (quotes from the PEIA are in italics and NERI remarks are in normal text):  <b>These are mainly meant for next time RPS will prepare an EIA from Greenland.</b>		
N14	<b>Page 15 (and 23):</b> Regarding the alternatives considered: There is no reference stating the needed source level for this water depth.	The water depth does not determine source level – the requirement to adequately penetrate and image the sub-surface is the determining factor. Data acquired in 2008, 2009 and 2010 confirm that the source used on those surveys was appropriate for the geophysical objectives and therefore a source with the same output will be used for the 3D.	None
N15	<b>Page 17:</b> <i>Two energy sources which operate at a pressure level of &gt;2000 psi and a peak output (3-128 Hz) of 261 db re 1uPa@ 1m.</i>  Always specify reference, i.e. rms with duration of impulse, peak, or peak-peak or energy. There is no consistent use of dB in this PEIA. We have not included all the examples.	Noted for correction.	References amended throughout the EIA
N16	<b>Page 24:</b> <i>... acoustic positioning units.</i>  What source level and frequency content?	Streamer acoustics - 55-110 kHz – max acoustic range	None
N17	<b>Page 24:</b> <i>One of the primary aspects of the proposed seismic</i>	Noted. Reference to site survey will be deleted from EIA.	Amended as per response

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	<p><i>and site surveys...</i></p> <p>Will both site survey and seismic survey be carried out? There is no further mention of a site survey.</p>		
N18	<p><b>Page 24:</b> <i>The unit for measuring sound level in water is decibel (dB) referred to</i></p> <p><i>1 μPa (dB re 1 μPa @1m), which is the pressure of sound at 1 meter from a point sound source. Wherever the term dB is used in the text, it should be read as dB re 1 μPa @1m.</i></p> <p>This is not correct. Only in the case of source level is the term dB ... @ 1 m. Again without a reference to either peak, peak-peak or rms (with duration of pulse).</p>	Noted for correction.	References amended throughout the EIA
N19	<p><b>Page 24:</b> <i>Figure 5.7 and Table 5.4 compare underwater sound levels from different offshore sources. The maximum sound level generated during seismic acquisition is expected to be 261 dB re 1 μPa @1 m distance from the airgun, whereas sound frequencies will vary between 3 and 128 Hz (Table 5.2).</i></p> <p>There is also energy above 128 Hz. Such statement does not make sense without a reference to how much energy is used to define the frequency content. Preferable add a frequency spectrum.</p>	<p>Source output criteria are referenced to pressure levels usually in terms of bar at 1m pressure forming the input and measured response – audible energy is not measured.</p> <p>The max frequency content for deep seismic exploration is of the order of 128 Hz and it is usual to quantify output and frequency over the 0-128 Hz range. It is also usual to quantify output over the range as determined by the recording filters which is usually of the order 3-200Hz (depending on filter settings). See attached current spectral plot with open filters).</p>	Added frequency spectrum (Figure 5.9)

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
N20	<b>Page 25:</b> Table 5.4 is not necessary, especially not without references to original sources.	Noted for review.	Table removed
N21	<b>Page 28:</b> <i>Water depths within the proposed 3D survey area will vary between 1500 m to 3100 meters (Figure 6.2)</i>  This means that they must use long search time before commencing soft start/ramp-up. This is not concluded in the PEIA because they have not used the guidelines by NERI (Boertmann et al. 2010)	The section of the EIA "Mitigation Measures" states that seismic operations will be conducted in line with the JNCC requirements, which are consistent with NERI's Guidelines Section 5, included in the Appendix 2 of the EIA. Section 6.1.1 only covers bathymetry of the area of operations.	None
N22	<b>Page 32:</b> <i>Fog is expected on 20-30% of the days.</i>  Search for marine mammals and birds cannot be performed during fog. So if you seriously stick to the JNCC guidelines start up must be postponed till fog has cleared.	Capricorn is committed to fully comply with JNCC and NERI Guidelines. JNCC refer to use of PAM as best practice for start during hours of darkness and low visibility. Whilst it is recognised that there are limitations on the use of PAM with respect to range and bearing of targets which may be further compromised by ambient noise levels, the use of PAM along with other mitigation measures is under consideration by Capricorn.	None
N23	<b>Page 49:</b> <i>Table 6.4.</i>  Needs to be updated on fin whales and humpback whales with regard to hunting. Harbour seals are almost extinct, but is in the table referred to as lower risk –it makes no sense to state the international IUCN status, when a national redlist is available specifically for Greenland	Noted for future work.	None

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	<p>(<a href="http://www2.dmu.dk/Pub/Groenlands_Roedliste_2007_DK.pdf">http://www2.dmu.dk/Pub/Groenlands_Roedliste_2007_DK.pdf</a>).</p> <p>Very superficial knowledge on marine mammals in the area, which may be due to lack of knowledge in general. The porpoise is also a whale species and should not be included in the chapter on seals.</p>		
N24	<p><b>Page 56-57.</b> The entire chapter on culture, economy, political living is unnecessary and should not be included in an EIA report.</p>	<p>Noted. Section will be deleted from the EIA.</p>	<p>Section deleted</p>
N25	<p><b>Page 59:</b> <i>Nationally hunted marine mammal species include seals, walrus, white whale, narwhal, minke whale, fin whale, and harbour porpoises. The only whale species targeted in the southern municipality is the minke whale. They usually migrate through the Greenlandic waters between April and November, in the coastal areas. Other migratory marine mammals may move through the proposed surveys areas, with some present in Greenlands waters all year round.</i></p> <p>They have forgotten bowhead, fin-, humpback whales, killer whales and other smaller toothed whales.</p> <p>Very superficial on migration and why in this chapter? Should be in chapter on marine mammals.</p> <p>Harbour porpoise is also hunted in South Greenland.</p>	<p>Noted for future work.</p>	<p>None</p>

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
N26	<p><b>Page 59:</b> <i>Aboriginal subsistence whaling in Greenland is one of five hunts permitted by the International Whaling Commission (IWC). Under current IWC regulations, aboriginal subsistence is permitted in Greenland for the fin and minke whales (<a href="http://www.iwcoffice.org/">www.iwcoffice.org/</a>) with quotas of:</i></p> <ul style="list-style-type: none"> <li>- <i>West Greenland fin whales – an annual catch of 19 whales allowed for the years 2003–2007.</i></li> <li>- <i>West Greenland minke whales – the annual number of whales struck for the years 2003–2007 shall not exceed 175</i></li> </ul> <p>The report is not up to date on species and quotas!</p>	Noted for the future work.	None
N27	<p><b>Page 59:</b> <i>Seal hunting is a common and traditional activity, with the meat forming the national dishes and skins used for clothing and building kayaks. Sealskin furs and trousers are no longer part of daily wear but are reserved for special occasions. Despite global debates on annual seal hunts, in Greenland it is regarded as sustainable and necessary for Inuits whose livelihood depends on the sale of seal pelts.</i></p> <p>This information is completely outdated and unnecessary. The harbour seal has been hunted almost to extinction, so generally speaking in this way of seals as one species makes no sense.</p>	Noted. Information will be removed from the EIA.	Information removed



Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
N28	<p><b>Page 62:</b> <i>The critically endangered (CR) species comprise six species/populations of marine mammals: Atlantic walrus, Northwater population (Odobenus rosmarus); harbour seal (Phoca vitulina); bowhead whale, Spitsbergen population (Balaena mysticetus); northern right whale (Eubalaena glacialis); white whale (Delphinapterus leucas); and narwhal, West Greenland population (Monodon monoceros).</i></p> <p>Good to use national redlist evaluations, but why provide information about animals not present in the area?</p>	<p>The species that are not present within the survey area but can be potentially present in the vicinity were covered by the EIA. In addition, it was deemed relevant to mention protected and highly vulnerable species that occur in the region.</p>	None
N29	<p><b>Page 63-64:</b> <i>The caribou population and the wolf population are very small.</i></p> <p>Why at all consider species (terrestrial mammals) that are not relevant for this seismic survey?</p>	<p>The erroneously included terrestrial species will be removed.</p>	Reference to terrestrial species removed
N30	<p><b>Page 67:</b> <i>Greenlandic wildlife considered to be vulnerable to underwater noise</i></p> <p><i>(Mosbech et al. 2007, Boertmann et al. 2009) include:</i></p> <ul style="list-style-type: none"> <li>• <i>Cetaceans (protected under national and international law);</i></li> <li>• <i>Marine mammals (walrus, narwhal and pinnipeds);</i></li> <li>• <i>Fish (especially species with a swim bladder);</i></li> <li>• <i>Invertebrates including small effectively immobile pelagic organisms(including eggs</i></li> </ul>	<p>Noted for correction.</p>	Correction made as per comment

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	<p style="text-align: center;"><i>and larvae);</i></p> <ul style="list-style-type: none"> <li>• <i>Benthic organisms.</i></li> </ul> <p>Strange distinction! Illustrating lack of knowledge. Cetaceans are marine mammals; the narwhal is a cetacean. There is no specific mention of baleen whales.</p>		
N31	<p><b>Page 68:</b> <i>Behavioural effects on marine wildlife generally start at a sound threshold of 160 dB (and even lower).</i></p> <p>Where does this information come from?</p>	Reference will be provided.	Amended as per response
N32	<p><b>Page 68:</b> <i>Deep sea shrimp has low sensitivity to sound pulses. Evidence suggests that most invertebrates would only be able to "hear" seismic survey sounds at very close range (perhaps less than 20 meters) via mechanoreceptors (i.e. tactile hairs).</i></p> <p>What evidence (reference is missing)? 20 m to what: where the sound pressure wave hits the bottom, from the pressure wave, from the air gun itself?</p>	Reference will be provided.	Amended as per response
N33	<p><b>Page 70:</b> <i>The waters of South Greenland contain much lower concentrations of larvae compared to the West Greenland (except of redfish larvae). The seismic survey will be conducted 50 kilometres away from the coast and is likely to have a 10 kilometres egg/larval damage zone around the seismic source (Medium Impact).</i></p> <p>So in effect an area larger than 1490 km<sup>2</sup>. Where does the 10 km</p>	10 km correspond to propagated noise levels of (180 re: 1µPa, which corresponds to the egg/larvae damage threshold.	None

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	come from?		
N34	<p><b>Page 70:</b> <i>Fish species will generally avoid the areas of seismic survey operations and will only be susceptible to serious injury in a close proximity to the airgun array, whereas behavioural change and auditory damage could extend to 10 kilometres (Figure 7.2).</i></p> <p>Where do the 10 km arise from?</p>	10 km correspond to propagated noise levels of (180 re: 1µPa, which corresponds to the fish auditory damage threshold.	None
N35	<p><b>Page 70:</b> <i>Atlantic cod stock could be displaced within a radius of few kilometres of the airgun array. The effect would be temporary and localised.</i></p> <p>What happened with the 10 km from above?</p>	Will be reviewed to reflect the above.	Paragraph amended
N36	<p><b>Page 71:</b> <i>Toothed whales (Odontoceti) rely on sound for echolocation, foraging and communication. Their auditory sensitivities range from 75 Hz to 150 kHz, with greatest sensitivities around 20 kHz.</i></p> <p>Some species have their greatest sensitivity above 100 kHz.</p>	Noted for future work.	None
N37	<p><b>Page 71:</b> <i>Since the hearing of most toothed whales is largely outside the dominating sound frequencies of seismic sources, they are regarded as being relatively insensitive to seismic sounds (Evans and Nice 1996; Richardson et al. 1995).</i></p> <p>It is correct that most odontocetes hear best at frequencies above the</p>	Noted for future work.	None

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	<p>typical noise of airguns, however, neither the hearing of sperm whales nor northern bottlenose whales have been tested and sperm whales in fact do react to airgun noise (Southall et al. 2007). Porpoises that have their best hearing around 70-110 kHz react behaviourally to airgun noise by aversion and stress, and experience temporary threshold shifts from exposure to airgun pulses already at received level of 200 dB re 1 µPa peak-peak. (Lucke et al. 2009). The used references are simply too old.</p>		
N38	<p><b>Page 72:</b> <i>As discussed above, baleen whales would be the most susceptible to the masking effect of the noise produced by seismic airgun array and could be potentially affected within at least 100 kilometres from the seismic source (where noise drops to 160 dB). The physiological damage to cetaceans and pinnipeds can occur within 40 m and 150 m around the airgun (Figure 7.2) and a general behavioural response is expected within at least 10 km from the seismic source based on 180 dB criteria.</i></p> <p>The predicted distances of hearing damage and TTS are too large based on the actual levels within the near field of the array. Because there are several airguns the source level in the near field of the array is very different from the far field.</p>	Noted for future work.	None

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	<p>Thus inside the near field of the array the experienced source level is more likely to correspond to the largest of the airguns (Richardson et al. 1995; Caldwell and Dragoset 2000). In this array 249 dB re 1 µPa peak-peak. When in the far field it is correct to use the source level of 261 dB re 1 µPa peak-peak.</p> <p>The PEIA should have concluded from this information that a long search time and soft start/ramp-up is needed in order to mitigate hearing loss of marine mammals, and that this search can only be performed in light hours without fog and in sea state below 3.</p>		
N39	<p><b>Page 7.3. Table 7.1. High Impact:</b> <i>potentially significant impacts, particularly on baleen whales, but can be mitigated to lower significance</i></p> <p>The high risk for baleen whales, as compared to other marine mammals, is primarily in masking and this effect cannot be mitigated.</p> <p>For all cetaceans and fish the mitigation is only in terms of a soft start/ramp-up and ensuring that no animals are within 500 m from the array, and the only effect can thus be to, hopefully, make the animals leave the area before full power is emitted. Behavioural disturbances and masking cannot be mitigated.</p>	Noted for correction.	Table amended.
N40	<b>Page 74:</b> <i>The direct impact of</i>	Noted for correction.	Reference made

Ref	NERI's Comments	Capricorn/RPS Response	Amendment to EIA where applicable
	<p><i>underwater noise on marine mammals is assessed to be of high importance. This impact can be mitigated through the use of airgun „soft starts to encourage mobile species to move away before full power operations commence and the use of an independent marine mammal observers in accordance with the UK JNCC Guidelines for the minimisation of acoustic disturbance to marine mammals from seismic surveys (Appendix 2). The use of the „soft start mitigation measure will ensure that effects on adult mobile wildlife, including cetaceans and pinnipeds, are limited to behavioural responses (i.e. diversion away from the survey vessel), which will be short term in duration. Masking of baleen whale communication and behavioural changes within 100 kilometres of the airgun arrays are unavoidable however.</i></p> <p>The EIA must refer to the NERI guidelines for seismic surveys (Boertmann et al. 2010) as these regulations are more strict and made for Greenland waters. These also refer to the UK JNCC guidelines.</p>		to NERI Guideline (2010)

## Summary of Consultation Response – GINR

Ref	Greenland Institute of Natural Resources:	Capricorn/RPS Response	Amendment to EIA where applicable
G11	<p>The airgun array that Cairn/Capricorn intent to use in this exploration is operating with a higher output level than large area 2D seismic surveys. The higher output level will pose an increased risk for the fauna sensitive to acoustic energy, such as marine mammals and some species of fish. The frequency range is specified as to be between 3 to 128 Hz. However, field recordings of airguns with low target frequencies showed that they produced severe energy at higher frequencies as a by product. This may affect high-frequency hearing animals, such as toothed whales that are normally expected not to experience masking by low frequency seismic survey activity. Thus, the conclusion that mainly the low-frequency baleen whales are affected by the survey is most likely not correct and the applicant should supply data on the effective frequency output of the airguns proposed for the survey.</p>	<p>The source being used in 2011 is consistent with that used in 2008, 2009 and 2010 – i.e. 4135 cubic inches volume operating at 2000 psi. As previously stated the measured response varies as a function of the different filter settings applied in the recording system.</p> <p>Frequency spectral plot over an open filter range have been requested. The attached frequency spectral plot relates to the filter settings that will be used in the recording system during the 3D survey.</p> <p>See also above response.</p>	None
G12	<p>Most of the available knowledge on marine mammal distribution and occurrence is from the nearby banks, and very little is known from the trench where the survey would take place. However, it is known that the area is inhabited by a number of toothed whale species and that baleen whales</p>	Noted for future work.	None

Ref	Greenland Institute of Natural Resources:	Capricorn/RPS Response	Amendment to EIA where applicable
	<p>most likely use the trench area as well. Telemetry records of whales tagged in the Azores suggest that the area may be important for sei whales. Besides the en-dangered blue whales, the sei whale is the baleen whale species we have least information on in West Greenland.</p>		
G13	<p>The PEIA does not mention that the proposed survey area is next to one of two key feeding areas identified for minke, sei, fin and humpback whales in West Greenland (Laidre et al. 2010). This feeding area is covering the Saqqamiut block, adjacent to the trench area where the 3D survey would be carried out. Due to lack of data we do not know if the feeding area extends to cover the trench area. The PEIA specifies that baleen whales can be displaced by seismic impulses in a radius of more than 100 km. This radius covers the feeding ground in Saqqamiut. Also the PEIA suggests that a displacement is not a problem for the whales and the catches in the area as the whales can move to other areas. However, it is not clear where they should move to. The other main feeding ground is at Lille and Store Hellefiske bank about 600 km north from Saqqamiut.</p>	Noted for future work.	None
G14	<p>Another important point is that Saqqamiut is not the only area with exploration in 2011. Thus we are facing possible cumulative</p>	<p>Given the short duration of proposed operations and their remoteness from other areas of operation in West Greenland, any</p>	None



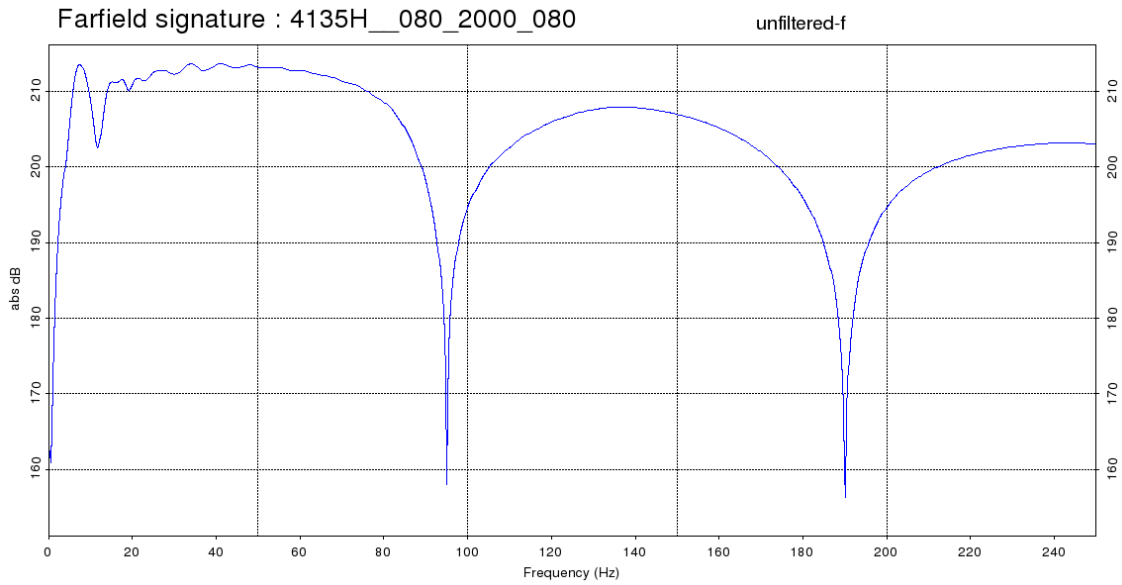
Ref	Greenland Institute of Natural Resources:	Capricorn/RPS Response	Amendment to EIA where applicable
	effects which can complicate the assessment of displacement impacts.	potential cumulative impact of displacement will be negligible.	
G15	The current knowledge is not sufficient to assess the effects of a 3D survey in the area.	Noted for future work.	None
G16	Figure 5.7: This seems like a relevant figure but it is not possible to read the axes.	Described in the title.	None
G17	<p>Table 6.4: This table contain a number of inaccuracies:</p> <p>Humpbacks are hunted (regulated).</p> <p>It is in general unknown when the baleen whales leave West Greenland. Fin whales and some humpback whales are definitely in the area at least until end December, possibly longer but data is lacking.</p> <p>Presence of bottlenose whales, sperm whales, white beaked dolphins and pilot whales is unknown.</p>	This information is sourced from NERI Report ((NERI, 2007a).	None
G18	Section 7.1. Just above section 7.1.1: This is a very peculiar division of animals.	Noted for correction.	Corrected
G19	Table 7.1. It is not possible to mitigate the displacement and masking of baleen whales to a lower impact by using guidelines and observers! (guidelines are meant to mitigate the risk of physical damage)	Agreed. EIA states: <i>"Masking of baleen whale communication and behavioural changes within 100 kilometres of the airgun arrays are unavoidable however."</i>	Amended
G110	In general the information on species distribution and hunting is	Noted for future work.	None

Ref	Greenland Institute of Natural Resources:	Capricorn/RPS Response	Amendment to EIA where applicable
	incomplete and outdated. Just an example: Also humpback whales, fin whales and porpoises are hunted in the southern municipality, Kujalleq.		
GI11	As pointed out in the application, sighting conditions are usually poor in the area especially in June-August. In periods with limited sighting conditions from precipitation, waves, fog or low light at night, the marine mammal observers will not be able to observe the area around the ship before ram up and during operations. It is not specified in the application if ram up and operations will be executed despite low visibility.	Capricorn intends to fully comply with JNCC and NERI Guidelines.	None

## Summary of Consultation Response – NNPLAN

Ref	NNPAN (Department for Interior matters, Nature and Environment)	Capricorn/RPS Response	Amendment to EIA where applicable
NN1	<p>NNPAN emphasises that marine mammals and other living species should not be unnecessarily disturbed by all types of mineral resources activities. In that connection NNPAN requests that extra attention is paid to the surrounding environment and nature during the seismic surveys. Generally NNPAN would like to see that the routes for seismic acquisition are planned so unnecessarily disturbance to wild life is avoided.</p>	<p>Capricorn will ensure compliance with mitigation measures outlined in the EIA to avoid and minimise any potential impacts on the environment.</p>	None
NN2	<p>Chapter 8 Section 8.1 has not been finalised</p>	<p>Page formatting, noted for correction.</p>	Corrected
NN3	<p>Standards and control:  NNPAN considers it positive that NERI and JNCC guidelines are used. It is of particular importance that soft start is used and that an MMO is present during the seismic acquisition to pay attention to marine mammals in the survey area, and has clear guidelines on what is to be done if mammals are observed.</p>	<p>Noted. Thank you.</p>	None
NN4	<p>International agreements and conventions:  NNPAN stresses that the company shall adhere to the MARPOL 73/78 standards and manage waste and discharge water environmentally correct. NNPAN expects furthermore, that all international rules and regulations</p>	<p>Noted. Capricorn is committed to comply with all relevant regulatory requirements.</p>	None

Ref	NNPAN (Department for Interior matters, Nature and Environment)	Capricorn/RPS Response	Amendment to EIA where applicable
	on the marine environment are adhered to, including law no. 4 of 3 November 1994 on protection of the marine environment.		



## Summary of Consultation Response – ICC

Ref.	Comment	Response	Amendment to EIA where applicable
ICC1	<p>Inuit Circumpolar Council (ICC) has reviewed the submitted Impact Assessment (EIA) in the license block No. 2008/13 and 2008/47, South Greenland, and has the following comments to 3D seismic data-gathering, requested by Capricorn Greenland Exploration Ltd. 1.</p>	<p>Thanks you for your comments.</p>	<p>None</p>
ICC2	<p>First and foremost, the ICC emphasize that a proper consultation period of at least 6 weeks should be an absolute minimum in future consultation cases, regardless of the type of case it is about. Ideally it would be more suitable to 8 weeks due to the possibility of thorough investigation, communication with other parties and for other activities in the organization. While government has a duty to involve citizens and other stakeholders in such a way that their free, prior and informed consent can be granted. Therefore it is necessary that citizens and stakeholders receive relevant information in timely care, so they are able to provide a full and constructive consultation. If the application procedures between the companies and BMP does not allow for this in practice, it may indicate that procedures be changed soon as possible in order to fulfill this duty.</p> <p>Therefore, the ICC is</p>	<p>This is a matter for the Government of Greenland.</p>	<p>None</p>

Ref.	Comment	Response	Amendment to EIA where applicable
	regrettable that the consultation period has been so short that the Greenland Institute of Natural Resources (GINR) have not been able to prepare a full consultation and that the current knowledge is so poor that they cannot make a proper assessment of the impacts on the environment .		
ICC3	GINR also refers to several possible conditions and effects that have not been studied thoroughly enough before seismic surveys are planned to be launched. This is the ICC's eyes are not consistent with the use of the precautionary principle, and therefore recommends the ICC in principle to the seismic project should be put on hold until the necessary data has been obtained.	Specific responses regarding GINR comments appear in GINR section.	None
ICC4	ICC also emphasizes that local residents near the affected areas should be a direct public consultation, not only through consultation with the affected municipality or other agencies only indirectly presumed to speak on their behalf.	This is a matter for the Government of Greenland	None
ICC5	Specific comments PEIA: Section 2.2.1: No mention home rule since 1979, but not the Gov. of Greenland since 2009. In the case of Greenland, it says "Self-Government" and not "Self Rule" in English.	This acknowledged but does not adversely affect the assessment of impact.	The EIA amended to: "Since the establishment of the home rule in 1979, Greenland..."
ICC6	Figure 5.7: One cannot read the y-axis definition.	The y-axis reads 'Normalised Amplitude (dB)'. The diagram has been enlarged in the text.	Enlarged Figure 5.7.

Ref.	Comment	Response	Amendment to EIA where applicable
ICC7	Figure 6.3: Narsaq is not on the map, although the city is mentioned in the report repeatedly. The map should be replaced with the one where all towns are shown.	Noted, Narsaq added to the map	Figure adjusted
ICC8	Table 6.3: Both anglers and commercial fishermen catch redfish. Therefore in the series "Exploitation" both stand for c and s commercial for Subsistence.	Noted for correction	Text adjusted
ICC9	Table 6.5: The table is a category called "IUCN red-list status", but a quick check on the IUCN website shows that "Common Eider" not categorized as Vulnerable (VU), but as Least Concern (LC) since 2009. Download Outer category of reality to the Greenland Red List 2007, when "common Eider" just categorized as VU? If it does, should the category be renamed. If it does, all species categories are checked, so they are consistent with IUCN's latest Red List.	Common Eader is listed correctly: LC status according to the IUCN Red List and VU status according to the Greenland Red List.	None
ICC10	Section 6.3.2 versus section 6.3.3: In the first section says that the Inuit represent 89% of the population, and in the next section says only 80%. Please correct the figures, so they are consistent and closest to reality.	The population information is not presented in Sections 6.3.2 and 6.3.3 following EIA revision in June.	None
ICC11	Section 6.3.3: The word "umlag" must be submitted "umiaq".	This was updated during the EIA revision in June.	None
ICC12	Section 6.3.5: The word "Self Rule" must Greenlandic context read "Self-Government".	The comment is acknowledged. This section is not part of the report following EIA revision in June.	None

<b>Ref.</b>	<b>Comment</b>	<b>Response</b>	<b>Amendment to EIA where applicable</b>
ICC13	Section 6.4.2: The word "Home Rule" must read "Self-Government". To catch any overlooked errors should document is checked for consistent and correct use of Self and Home.	The comment is acknowledged. This section is not part of the report following EIA revision in June.	None
ICC14	Section 6.4.3: The entire section on the northwest passage tampering reality. Northwest Passage is still not a safe route, and is not used frequently, and therefore it is an exaggeration to call it a "key shipping route." The report should rather focus on RAL's shipping routes than possible future scenarios.	Noted for future work.	None
ICC15	Section 6.4.4: The route between Baltimore and Kangerlussuaq was closed in 2008, and there is currently no other flights between Greenland and the U.S.	Comment is acknowledged and addressed. This constitutes section 6.3.4 in the revised EIA.	Reference has been removed
ICC16	Section 6.5.1: Since 2008, Greenland has been granted a quota of 2 Greenland whales annually, according to Statistics Greenland. Already in Greenland Red List from 2007 was found that there were many more Greenland whales than had been anticipated. The stock is assessed to withstand the catch of 2 animals per year.	Section 6.5.1 is not a part of the EIA following its revision in June.	None



Ref.	Comment	Response	Amendment to EIA where applicable
ICC17	Section 6.5.1: Several sections of this section is directly copied from Greenland's Red List 2007 without stating it directly. This is not consistent with good scientific practice report. Sources and quotations must be clearly identifiable to the reader.	Section 6.5.1 is not a part of the EIA following its revision in June.	None
ICC18	Table 6.8: The table should be a summary of Greenland's Red List from 2007, but a quick check shows an error already during the first series of "Caribou", where it is categorized as Extinct (EX), Vulnerable (VU) and Near Threatened (NT) from different areas. But the Red List are also reindeer as Least Concern (LC) for stocks in West Greenland. To catch any overlooked errors should be checked through the entire table and make sure that all categorizations are.	This information is not a part of the report following EIA revision in June.	None
ICC19	Section 7.1: The definitions are jumbled together in this division of animals. Whales are "Cetacean" and seals are "pinnipeder". Avoid double confections.	This was updated during EIA revision in June.	None
ICC20	Section 7.1.1 and Section 7.1.4: GINR has informed that according to studies by Madsen, Johnson et al. (2006) have field measurements of "air guns" low "target Frequencies" shown that higher frequencies can be produced as a by product. Therefore it is likely that toothed whales, which uses high-frequency sounds can also be adversely affected by these 3D seismic	Noted for future work.	None

Ref.	Comment	Response	Amendment to EIA where applicable
	surveys. This considers the ICC to be very important to investigate further. These sections even mentions that there is no region-specific noise modelling data exist for the cold Arctic waters, layered, and the sound pressure may prove to be much higher in the convergence zones. ICC therefore believe that the company should initiate studies on this as soon as possible so it can be included in future noise modelling to determine which frequencies are actually produced and how it may affect cetaceans.		
ICC21	Table 7.1: In the paragraph before the table is the "soft start" as a mitigating factor for marine mammals, but the table is not mentioned.	This information is not a part of the report following EIA revision in June.	None
ICC22	Section 8.1 and Table 8.1: It seems like there is missing a large part of the section, and there is no table at all! This is a serious deficiency, and the ICC requires that the missing material distributed to the consulting parties as soon as possible and that the consultation period, if necessary, subjected to hearing the parties may need time to consider this important section.	Section 8 is complete and the table is included at the end of section 8.5.	None
ICC23	Refuelling: Throughout the report there are contradictory and vague statements regarding refuelling ships. On page 27 it says that everything depends on study program are respectively likely and unlikely ships to refuel and that "In Any Case Refuelling krav skal dictated by operational considerations and prevailing	If an when the refuelling is required, 3D seismic vessel will be refuelled at sea using a dedicated bunker vessel from Denmark. It is currently planned to refuel at the SGL location on completion of the Saqqamiut 3D seismic operations and before the vessels's transit to Pitu.	Inconsistencies in the EIA have been addressed.

Ref.	Comment	Response	Amendment to EIA where applicable
	<p>weather conditioners. Nuuk og / eller Narsaq går likely være Distressed two support the foreslåede operations. ". It understands the ICC as in the case of ships to refuel, it can, depending on practical grounds occur in Nuuk and / or in Narsaq port. But this vote does not comply with the following two sections. On page 75 it says that "In contrary, large MGO spill near the port of Narsaq port (if Refuelling sker) Will Affect highly sensitive and protected coastal area, herunder Kitsissut Avalliit Ramsar Site (Figure 7.4) and the Associated Impacts blir High . Equipotential Refuelling ved Nuuk port is outside the scope of this assessment. ". The ICC understands that in the event of an unexpected oil spill from one of the ships, it will have a very high negative impact on the fragile environment around Narsaq. And on page 77 in Table 7.2 says that extenuating circumstances involving "Strict Refuelling procedure, være Carried out away from highly sensitive resources. Avoid Refuelling to Narsaq Port.." It understands the ICC as to refuelling at Narsaq port must be avoided. ICC will also keep on refuelling at Narsaq port should be completely avoided when taking the vulnerable coastline into consideration, and therefore wants the ICC to this attitude is reflected consistently throughout the document.</p>		

Ref.	Comment	Response	Amendment to EIA where applicable
ICC24	For BMP information session on 16 June 2011 ICC got the impression that the BMP had not been able to publish the previous responses as they had not obtained permission from consulting parties and that BMP's desire was to publish responses in future. However, the ICC has currently not received any consultation, which asked for permission for publication. Therefore, the ICC wants to advance to state that this consultation would be published on the BMP website in the hope that that is the case for other responses received.	This is a matter for the Government of Greenland.	None
ICC25	ICC thanks for continuing to be consulting parties, and look forward to continued cooperation.	Thank you for your comment.	None

## Summary of Consultation Response – GA

Ref.	Comment	Response	Amendment to EIA where applicable
GA1	Grenlands Employers have the first June 2011 pro mail received information about Application for acquisition of 3D seismic in Sydgreenland.	Thank you for your participation and responses.	None
GA2	Greenland Employers must generally urge that, in connection with the granting of permission to seismic studies required that exploration companies are obliged to cooperate and exchange data with educational and research institutions for information of general relevance, such habitat studies.	Capricorn has followed all requirements of guidance of the Government of Greenland.	None
GA3	Besides ovenncevnte have Gr0nlands Arbejdsgiverforening no remarks to EIA for the applied collection	No further comments	None

## Summary of Consultation Response – Kujalleq

Ref.	Comment	Response	Amendment to EIA where applicable
KUJ1	<p>Consultation on application by Capricorn Greenland Exploration for 3D seismic data in South Greenland. Municipality Kujalleq received BMP's request for an opinion concerning the application from Capricorn Greenland Exploration, dated May 2011. It must first be notified that due to the very short consultation period is proposed only been treated in the Mining Committee, an advisory committee for the political system, and is therefore not considered political.</p>	Thank you for your response	None
KUJ2	<p>Here's Mining Committee's consultation response: Kujalleq municipality has no objection to the seismic surveys</p>	No comment	None

## Summary of Consultation Response – Ministry of Fisheries

Ref.	Comment	Response	Amendment to EIA where applicable
MOF1	Department of Fisheries, Hunting and Agriculture (APNN) has received hearings material, in the form of a PEIA, re. the planned 3D seismic shooting at license block Saqqamiut in South Greenland. The survey is done by Capricorn Greenland, and has an estimated duration of 6-7 weeks per annum in the period from June to August.	Thank you for participation and provision of comments	None
MOF2	PEIA contains a number of examples that are used obsolete sources and erroneous names. An example of this is on Table 6.4 p.49, where the status of protection and hunting is not updated, and that is used wrong names for redlist status. Furthermore, there are examples of the faulty references. This applies example. Table 6.5, p.51, where there mentioned any source. The above mentioned are just some examples that are damaging the trustworthiness of this report.	This was updated during the EIA revision in June.	None
MOF3	Furthermore, FJA supports the hearing answer from Greenland Institute of Natural Resources, sent on 7 June 2011.	See responses to GINR comments.	None

## Summary of Consultation Response – SIK

Ref.	Comment	Response	Amendment to EIA where applicable
SIK1	BMP have pro I. June 2011 sent a hearing approving the acquisition of 3D seismic in Sydgmnlnd licensed block No. 2008/13 and 2008/47 for the period June-August 2011.	No response required.	None
SIK2	SIK regret that the hearing material only sent in English. This is beneath contempt	Capricorn has provided translation of EIAs in Greenlandic	None
SIK3	SIK stands however baffled that just 3D seismic assessments going 'on outside the approved license block SAQQAMIUT and in the context ask BMP what practice is for activities outside license area? Ground graduated license blocks are that oil companies should be able to bid on license blocks.	This question is directed at the Government of Greenland	None
SIK4	What happens when the oil companies are expanding their exploitation area outside the allowable license block?	This question is directed at the Government of Greenland	None
SIK5	If seismic surveys carried out outside an approved license area has oil company then received dispensation to conduct investigations outside SAQQAMIUT block?	This question is directed at the Government of Greenland	None
SIK6	SIK understand that 3D seismic surveys is a preliminary assessment of the impact on the environment	No response required	None
SIK7	With respect to the use of support vessels SIK like to see that Greenlandic vessels wherever possible used in the exploration phase. SIK would therefore urge Capricorn	There are few realistic opportunities for provision of manpower or vessels locally with respect to supporting the seismic operation. Crews experienced in the support of multi streamer seismic operations are necessary to	None



Ref.	Comment	Response	Amendment to EIA where applicable
	Greenland to minimize the use of Icelandic and Faroese vessels when such vessels are present in the Greenland. This will blend well into the urgency to take advantage of Greenland's services.	<p>ensure the safety and integrity of the operation. In addition vessels need to be adequately insured to the levels and are required to undergo safety audits in accordance with IMCA /CMID guidelines and have in place a working SMS.</p> <p>However, Capricorn is happy to recommend local services, and vessels which meet the requirements for provision of support services, to the seismic contractor for consideration</p>	
SIK8	<p>Concluding remarks SIK acknowledges that in relation to the massive unemployment in South Greenland at the moment that the initiated project on oil exploration is highly relevant initiatives, among other things can help to submit jobs and activity in the long-term. SIK is therefore positive about the project, with the caveat that license block borders must be respected. Any subsequent changes must be made by the same regulations as for licensing round.</p>	<p>Thank you for your comments. Capricorn has followed all guidance and requirement of the Government of Greenland</p>	None

## Summary of Consultation Response – Kanukoka

Ref.	Comment	Response	Amendment to EIA where applicable
KAN1	KANUKOKA thank you for the hearing material related to Capricorn Greenland Exploration 1 Ltd.'s activities in South Greenland and have the following, general comments.	Thank you for your comments	None
KAN2	KANUKOKA remarks that the short hearing deadline makes it difficult to assess and gather information from citizens and specialists on the hearing material and will, therefore, recommend that the hearing deadline on future hearings be set to 8 weeks.	This is a matter for the Government of Greenland	None required
KAN3	KANUKOKA has noted that there is no in-depth study of marine mammal migration in the area and that the planned seismic activities, therefore, may coincide in time with marine mammal migration in the area. KANUKOKA will therefore stress the importance of having at least one marine mammal observer (MMO) on duty at all time during the seismic acquisition.	Capricorn will follow the guidelines provided by BMP and these required provision of two MMSOs .	None required