WESTERN GRAY WHALE ADVISORY PANEL
21st meeting

WGWAP-21
17-19 November 2020
Virtual

REPORT OF THE WESTERN GRAY WHALE ADVISORY PANEL AT ITS 21ST MEETING

CONVENED BY THE INTERNATIONAL UNION FOR CONSERVATION OF NATURE

CONTENTS

ACRONYMS

AO	Additional Opportunity
AUAR	Automated Underwater Acoustic Recorder
BBI	Business and Biodiversity Initiative (Russia)
CMP	Conservation Management Plan
CMS	Camera Monitoring System
Company	Sakhalin Energy Investment Company Ltd.
ENL	Exxon Neftegas Limited
FAB	Feeding Area Boundary
FID	Final Investment Decision
GPNS	Gazprom Neft-Sakhalin, LLC
IFAW	International Fund for Animal Welfare
IFC	International Finance Corporation
ISB	In-Situ Burning
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
Minprirody	Ministry of Natural Resources and Environment of the Russian Federation
MMO	Marine Mammal Observer
MMC	Marine Mammal Council (Russia)
MMP	Monitoring and Mitigation Plan/Programme
MMPP	Marine Mammal Protection Plan
MoC	Memorandum of Cooperation
NGO	Non-Governmental Organization
NSCMB	National Scientific Centre of Marine Biology (formerly A.V. Zhirmunsky Institute of Marine Biology)
NTF	Noise Task Force
OBN	Ocean Bottom Node
OWG	Offset Working Group
Photo-ID	Photo Identification
POI	Pacific Oceanological Institute
PS6	IFC Performance Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources (2012)
RGWP	Russia Gray Whale Project
SRT	Source Reduction Test
UAV	Unmanned Aerial Vehicle
UME	Unusual Mortality Event
WGWAP	Western Gray Whale Advisory Panel

EXECUTIVE SUMMARY

The 21st meeting of the Western Gray Whale Advisory Panel (WGWAP-21) was held via video teleconferencing 17-19 November 2020. In opening the meeting, the Panel chair (Reeves) welcomed representatives of NGOs, Russian Government agencies and institutions, and the Lenders' representatives, expressed regret that Panel member Greg Donovan was unable to participate and acknowledged the steady support from Anete Berzina-Rodrigo, Giulia Carbone Khodabakhsh and others at IUCN.

The 19th meeting of the Noise Task Force (NTF), originally scheduled to occur immediately prior to WGWAP-21, was postponed until Spring 2021 to allow more time for Sakhalin Energy to prepare, specifically in regard to planning for the Company's next large-scale seismic survey. A number of noise-related topics were discussed at the present Panel meeting, including: (a) a summary of work conducted by the NTF in the past year, (b) ongoing concerns about the adequacy of analytical techniques used by Sakhalin Energy to evaluate the effects of noise disturbance on gray whales, (c) tentative plans for 4D seismic acquisition in 2022 and (d) planning for the next NTF meeting. The topic of cumulative effects of noise on gray whales summering off Sakhalin will be on the agenda for that meeting.

The scope of the Exxon Neftegas Limited (ENL) and Sakhalin Energy Programme for Gray Whale Monitoring off the North-East Coast of Sakhalin Island (hereunder, the Joint Programme) in 2019 and 2020 was again limited primarily to photo-identification (photo-ID) and distribution surveys (once again it did not include benthos or behaviour monitoring) but some level of acoustic monitoring was re-established in 2020. Gazprom Neft Shelf, LLC continued to contribute to the Joint Programme data collection in 2019, with a focus on photo-identification effort in the Offshore gray whale feeding area. The Panel again expressed its perspective that the conclusions drawn by the Joint Programme with regard to whale distribution and abundance are not well-supported by the data. The Panel **recommended** that a proper multi-year analysis of all data on abundance and distribution be conducted taking into account survey area, timing and effort, characteristics of the observation platform, observer capacity, and environmental conditions.

Results of 2019 and 2020 field studies conducted by the Russia Gray Whale Project (RGWP, formerly the Russia-US Programme) were presented by Burdin. Of particular interest was the high number of mothers and calves (n=20 calves) observed in 2019 and, in turn, a return to more typical numbers by 2020 (n=8 calves). The Panel noted that specific information on survey effort was needed (e.g., survey tracks), in addition to the summary of surveys conducted and of groups of whales encountered, to better evaluate trends in distribution or habitat use across years.

The final draft of Sakhalin Energy's Guide to Oil Spill Response in Cold and Ice Conditions (Oil in Ice) was received shortly before the present meeting, and it was provided to WGWAP Associate Scientist Brian Dicks for critical review. Dicks concluded that although the document is a comprehensive review of available response options in winter conditions, based largely on experience outside Russia, it lacks practical detail on specific actions the Company would take in the event of a major spill in or near gray whale feeding habitat.

The current version of Sakhalin Energy's Marine Mammal Protection Plan (MMPP) was made available to the meeting for review by the Panel. The Panel welcomed the re-establishment of some acoustic monitoring in 2020 (outside the Joint Programme).

Sakhalin Energy provided an overview document on the use of drones for marine mammal research including a summary of observed behavioural responses. In light of this review, the Company stated its intention to continue using drones over gray whales at a minimum altitude of 10 m to collect imagery for photo-identification. While the Panel is broadly supportive of the use of drones for scientific purposes, it emphasised that a higher minimum altitude (20 m) should be used and drone operations should be limited to scientific purposes (no 'casual viewing' allowed). Also, in regard to the use of drones, the Panel **recommended** that Sakhalin Energy collect appropriate aerial images of gray whales for quantitative body condition assessment.

Sakhalin Energy's standard marine mammal ship-strike avoidance measures were applied in accordance with the MMPP in 2019. Gray whales were recorded on 18 occasions and course changes were made to avoid them on seven occasions when whales were within 1000 m of the vessel. The Panel reiterated its concern about how sighting angles to gray whales relative to the vessel track line are measured and reported. Course changes appear to be made when whales are sighted abeam of or behind the vessel, and this makes the data on sighting angles and course changes impossible to interpret. Consequently, it was not possible to refine the assessment of ship strike risk contained in the WGWAP-20 report. The risk of strike by the crew change vessels had been estimated to be reduced only moderately by the presence of MMOs, but was assessed to be acceptably low due to the apparently low density of gray whales on the vessels' routes. The Panel continues to consider that updating and refining the estimates of whale density is desirable, as is the installation of effective collision-detection technology on the crew change vessels.

A self-assessment of Sakhalin Energy's compliance with International Finance Corporation Performance Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources (2012) concluded that the Company's efforts to avoid and mitigate the impacts of its activities had reduced the 'residual impact' on gray whales to a non-significant level, and therefore a typical offset is not needed. However, because the Sakhalin-2 project is situated in 'critical habitat', the Company is obliged to achieve a 'net gain' for biodiversity and it proposes to do this by supporting 'additional opportunities' to conserve critical habitat. Although it was generally agreed that industry activities at Sakhalin had not led to acute lethal impacts on gray whales, there was no consensus on whether there had been non-lethal chronic impacts. Changes in whale population dynamics or behaviour could be so nuanced that they are hard to define and difficult to measure. An ad-hoc working group of Panel members, Lender representatives and Company representatives was expected to continue working inter-sessionally on the problem of determining what could be defined as an offset. A provisional framework for evaluating candidate offsets to impacts on Sakhalin gray whales was presented and it will be discussed in detail by the working group.

In 2020 western gray whales were confirmed as a national conservation priority through the updated Russian Red Data Book and their inclusion on the *List of rare and endangered wildlife taxa that require priority measures for restoration and reintroduction* of the Ministry of Natural Resources and Environment of the Russian Federation (Minprirody). The Marine Mammal Council recently collaborated with Minprirody, IUCN and WGWAP to produce a draft Programme and Strategy for the Conservation of western gray whales in the Russian Federation for the period 2021-2030. IUCN will continue to support Minprirody's efforts and those of other national and international stakeholders as they develop and implement the first Russian national conservation strategy for this whale population.

One of those international stakeholders, the International Whaling Commission (IWC), has a particularly long and ongoing interest in gray whale conservation. The commission's Scientific

Committee recently completed a 5-year range-wide assessment to model and test gray whale stock structure hypotheses. Importantly, the IWC is expected to play a central role in implementing WGWAP's longstanding recommendation that a 'joint catalogue' of photo-identified western gray whales (together with associated data) be established.

The 2020-2021 WGWAP workplan consists of continuing to provide routine review and advice on Sakhalin Energy's activities and plans (most importantly the Company's next large-scale seismic survey) as well as producing a number of 'legacy'-type products intended to capture what has been learned about western gray whales and their conservation over the past 15+ years.

1 INTRODUCTION

1.1 Welcome from IUCN

Boris Erg, Director of the IUCN Regional Office for Eastern Europe and Central Asia, welcomed participants on behalf of IUCN. He noted that the WGWAP programme was at a critical end-stage as the engagement between IUCN and Sakhalin Energy will conclude by the end of 2021. The Panel's two-year workplan prepared in 2019 was designed to provide for an orderly closure whilst ensuring that regular functions are maintained through 2021 and the legacy of WGWAP is ensured. Erg emphasised that IUCN is fully committed to remaining involved in the conservation of western gray whales and maintaining regular contact with its partners in Russia.

1.2 Chair's welcoming remarks

The Chair, Randall Reeves, thanked Erg for the warm welcome and encouraging words. He admitted to having been sceptical about the possibility of a 2020 field season given the restrictions under the Covid-19 pandemic. However, he was pleased that, in the end, both the Exxon Neftegas Limited (ENL) and Sakhalin Energy Programme for Gray Whale Monitoring off the North-East Coast of Sakhalin Island (hereunder, the Joint Programme) and the Russia Gray Whale Project (RGWP) managed to conduct their work, albeit on a somewhat truncated scale. This made it possible for the Panel to review at this meeting the preliminary 2020 monitoring results as well as inter-sessional work (between WGWAP-20 and WGWAP-21). The Noise Task Force (NTF) had carried out its 18th meeting (NTF-18) virtually on 7-9 April 2020.[1] The usual November NTF meeting (normally held immediately before the annual full-Panel meeting) was postponed until Spring 2021 to give more time for Sakhalin Energy's planning to take shape for its next large-scale seismic survey before the NTF develops its advice concerning the Company's Monitoring and Mitigation Plan (MMP).

Once again, Reeves, on behalf of the entire Panel, acknowledged Anete Berzina-Rodrigo and Giulia Carbone Khodabakhsh, both of IUCN, for their tireless support (assisted by Ella Diarra, also of IUCN). He noted that organising this meeting required the IUCN team to exceed its own high standards of effort and attention to detail. Also, he gratefully acknowledged the always-excellent work of Simon Delany, the meeting rapporteur, who, as usual, recorded and polished the minutes and provided them to participants promptly after the meeting. Finally, and again as usual, Reeves acknowledged and thanked the Russian-English interpreters, Alexander Danilov and Grigory Shkalikov, for their expertise, diligence and constant good humour, which they bring to every meeting, including inter-sessional teleconferences.

1.3 Participants

The list of participants is given as Annex 1.

All but one (Greg Donovan) of the ten current Panel members were present. In addition, Alexander Burdin was present as an Associate Scientist to report on the Russia Gray Whale Project's work at Sakhalin and Kamchatka in 2020.

[1]Final reports of all task force meetings are available on the WGWAP website https://www.iucn.org/western-gray-whale-advisory-panel/panel/task-forces

In addition to Sakhalin Energy's participants, the Panel again welcomed the representatives of NGOs, Russian Government agencies and institutions, and the Lenders' representatives (Jon Hancox, Bruce Mate and Adam Fitchet), all of whom regularly attend and contribute significantly to WGWAP meetings as Observers. The Panel was again pleased to welcome representatives of Gazprom Neft Shelf, LLC as Observers. As stressed many times in the past, this engagement with stakeholders is a vital part of the WGWAP process. Once again, the Panel regretted the lack of meaningful participation (despite considerable effort by IUCN to enable and facilitate it) by other companies operating on the Sakhalin Shelf, notably Exxon Neftegas Limited (ENL) and Rosneft.

1.4 Agenda

The agenda is given as Annex 2. It is important to note that the agenda for this virtual meeting (via video teleconferencing) was considerably modified from the normal format of our agendas for face-to-face meetings. Details are given in the annex.

1.5 Documents

The list of documents is given as Annex 3.

1.6 Report drafting procedures and timeline

As always, the Panel's report is meant to reflect information presented at and before the meeting, discussions at the meeting, and the Panel's findings, conclusions, recommendations and other forms of advice developed post-meeting from internal discussions, conducted mainly by e-mail. On this occasion, as indicated in Annex 2, IUCN attempted to facilitate a structured series of exchanges between the Panel and Sakhalin Energy, with Panel questions and comments on 'pre-read' documents transmitted to the Company a few days prior to the meeting. The intent was to at least partially compensate for the shortage of time and the difficulty of conducting discussions via videoconference across large time-zone differences among participants. This approach was successful to a limited degree as in several instances, questions were answered or issues were addressed without requiring discussion during the live sessions. It should also be noted that a number of items which normally would have been included in the agenda were instead handled by email correspondence (see Annex 2, footnotes for Days 1 and 2). We emphasise that the structure of this report diverges to an even greater extent than in previous years from what appears on the agenda as given in Annex 2.

The Panel met privately (via videoconference) on the day after the meeting to plan its drafting schedule and discuss recommendations. A complete draft of the report was transmitted to Sakhalin Energy for fact-checking on 25 January 2021 and the final report was made publicly available on 3 April 2021. The Panel once again stresses that its reports are not simply minutes of the November annual meeting but rather a concatenation of its deliberations and consultations over the course of the preceding year.

2 NOISE ISSUES

2.1 Summary of NTF-18 (April 2020) meeting plus inter-sessional work

The purpose of this meeting was to develop advice and recommendations on noise issues for consideration by WGWAP. Specific objectives were to:

- Review progress on seismic survey-related issues identified during the WGWAP-20 and NTF-17 meetings, including consideration of data and analyses from past surveys, scoping means to assess MMP effectiveness in 2018 and inform future MMPs, as well as confirming next steps
- Consider outstanding non-seismic noise-related issues, including 'open' Panel recommendations and vetting the Company's plan for resuming annual acoustic monitoring to meet its Health, Safety, Environmental and Social Action Plan, Marine Mammal Protection Plan (MMPP) and International Finance Corporation Performance Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources (2012, IFC PS6) commitments.
- Develop a post-meeting workplan for (i) issues to be addressed before the next seismic survey, (ii) analyses of data from previous seismic surveys to evaluate potential impacts, (iii) further consideration of non-seismic noise-related issues and (iv) updating the status of 'open' Panel recommendations.

Progress was made on all of those topics, although some disagreement remained concerning the analytical techniques used to evaluate whether and how Sakhalin Energy's 2018 seismic survey affected gray whale abundance and distribution. The following two areas for future work were identified and discussed at the meeting: firstly, an analysis led by Cooke of possible differences between various components of the gray whale population with respect to their presence at Piltun over the season; secondly, an analysis by Cooke, Racca and others of the need to redefine the feeding area boundary (FAB).

2.2 Results of Sakhalin Energy's acoustic monitoring in 2020

2.2.1 Presentation

Sakhalin Energy provided the following summary of documents WGWAP-21/16 and 17.

Instrument calibration and field tests of automated underwater acoustic recorders (AUARs) were implemented in April. Two AUARs were deployed in July, one at acoustic monitoring point Molikpaq and the other at PAB-20. The instruments were retrieved in mid-September. AUAR deployment and retrieval operations were accompanied by hydrological measurements which were taken at 20 stations. AUARs were in operation for 73 days. All stations recorded data successfully during the entire deployment period and the data are currently being processed.

Sakhalin Energy plans to provide a close-out report with the acoustic monitoring results for the NTF-19 meeting (Spring 2021). Based on the results, further discussion with the Panel regarding acoustic monitoring is anticipated.

2.2.2 Discussion and Panel conclusions

The Panel acknowledged that the Company had taken its advice regarding the need for acoustic monitoring during non-seismic periods and re-established acoustic monitoring in 2020. Acoustic monitoring during non-seismic years had ended abruptly in 2017, and the Panel welcomes its return, even though on a considerably reduced spatial scale relative to years prior to 2017. The Company deployed AUARs on the 20 m isobath at two sites, PAB-20 and Molikpaq, where acoustic data have been collected for many years. Preparation, deployment and retrieval of the AUARs was described in documents WGWAP-21/16 and 17, and the operations appear to have been carried out with the rigour typical of the Pacific Oceanological Institute (POI).

The Panel pointed out that while it is indeed beneficial to have recording at these well-studied sites, given the reduced spatial coverage and the existence of only two stations, pinpointing noise sources could prove challenging. The Company indicated that it continues to keep meticulous logs of activity, so it should be possible to either track any increased noise levels to their activities or to confirm that any such increase was not due to the Company's activities. Though no data from the stations were presented at this meeting, the Company confirmed that both AUARs acquired data successfully throughout the deployment; review of the data will be on the agenda for the NTF-19 meeting.

With respect to data processing and presentation, the Panel reminded the Company of its previous requests intended to improve how the acoustic data are displayed and thereby maximize efficiency of the Panel's review; the display of frequency ranges in areas where most industrial noise occurs can become compressed and difficult to interpret in some presentations. Racca pointed out that requests from the Panel had already been implemented in some of the reports to the Ministry of Natural Resources and Environment of the Russian Federation (Minprirody) over the years, for example, in the presentation style of sonograms and spectrograms. He offered to assist the Company with addressing the Panel's requests concerning how the acoustic programme results are to be presented. Racca foresaw no difficulty with maintaining the standards of the Joint Programme as the Sakhalin Energy results are presented. The Panel appreciates Racca's offer and hopes the institutional memory can be applied with minimal effort. The 2020 data are controlled completely by Sakhalin Energy (i.e. not part of the Joint Programme) so their release cannot be held up by other operators, which means it should be possible to consider them at the NTF-19 meeting, if not before then.

2.3 Scope of Work for acoustic monitoring in 2021

The Panel inquired about plans for acoustic monitoring in 2021, as its recommendation was to conduct such monitoring in all non-seismic periods/years. Sakhalin Energy indicated that it is waiting for final results from 2020 and further discussions with the Panel and NTF before finalizing plans for 2021.

2.4 Update on Sakhalin Energy's plans for future seismic surveys and expected role of WGWAP in contributing to MMP development

Kirchner presented the base plan for Sakhalin Energy's next 4D seismic acquisition in the area, consisting of a 4D streamer survey covering the Piltun and Astokh assets (document WGWAP-21/18). The survey is scheduled for the normal summer season 2022. In outline, it will be the same as in 2018, except that the ocean bottom node (OBN) surveys covering the platform gaps

(areas around offshore platforms that cannot be surveyed with traditional streamer airgun surveys due to safety restrictions) will not be repeated. Without the OBN portion, the total signal output will be reduced by more than 50% compared to the 2018 survey. The Company presented an overview of cetacean-related standby time during the 2018 survey, as part of a discussion about how best to streamline operations and minimize whale exposure. The Panel asked if the 106 hours of cetacean-related standby included the time to circle back to complete lines interrupted by cetacean sightings. Kirchner reported that according to the time diary of the streamer vessel, line changes are included in the 106 hours 'chargeable' standby related to cetaceans. Another large part of the 106 hours was poor visibility (fog) and denial of MMO approval to continue shooting, which made additional line turns necessary. Kirchner emphasized that the plan as presented in document WGWAP-21/18 was still only a plan and that it had not received full endorsement within the Company, but he expected it to go forward.

The next task for the Company and the Panel, primarily via the NTF, is to examine closely the 2018 MMP in light of the experience with its implementation in 2018 and determine the extent to which it can serve as a basis for the Company's MMP in its next seismic survey. As the next survey is scheduled to occur after the Panel has officially ended its work, the Panel's advice must be concluded within the next 9-12 months. Productive discussions about this situation have already taken place and will continue in the run-up to and during the NTF-19 meeting. The Company has indicated that it welcomes the Panel's input and collaboration on several 'high level' issues before the end of 2021. Both the Company and the Panel agree that the 2018 MMP should be a base case on which to build, but also that significant updating will be needed.

The Panel stressed that one of the most important updates will be to ensure that acoustic monitoring, including obtaining at least some real-time data on sound levels, is included very early in the survey planning process and, ideally, embedded within the operational plans for the survey so that it cannot be canceled as it was in 2018. The Panel initially recommended that acoustic monitoring (as described in the original 2018 MMP) be included in the seismic survey contract ('industrial environmental control') this time around. However, after the meeting Kirchner and Samatov advised the Panel that instead, the Company intends to include an acoustic component into the monitoring programme described in the Environment Impact Assessment for the upcoming survey as a way of signaling to regulators the importance attached to it by the Company. The Panel was disappointed to learn that, according to the Company, there is no way to exclude the possibility that acoustic monitoring will again be precluded in the upcoming seismic survey. The Panel **recommends** that Sakhalin Energy make every reasonable effort to include real-time acoustic monitoring in the operational program submitted to authorities for approval.

Other areas that will be addressed in revising the MMP and that require input from the NTF and Panel include:

- The key principle of previous MMPs that the survey should start and be completed as early in the season as possible:
    - When sea-ice retreat is later than usual, this can result in shorter operational windows due to delayed mobilization and extend operations to later in the season
- Costs and benefits to different population segments (e.g. mother-calf pairs, pregnant females), nutritional condition (e.g. early-season whales are recovering from winter-spring fasting and migration) and individual vs population benefits associated with:
    - Early vs. late start for seismic survey

    - A-line shooting restrictions, e.g. when poor sighting conditions (fog) are prolonged
- Use of alternative whale detection techniques/technologies (e.g. Camera Monitoring System/CMS, radar, sonar) and their implications for mitigating injury vs disturbance, particularly during periods of darkness and low visibility (NB: the CMS is able to function at night but apparently not well in fog, regardless of time of day).

Work to amend the MMP will be carried out in the spring and summer of 2021, with advice from the NTF-19 meeting, with high priority assigned early in that time window to issues that must be included in the tendering process for the seismic survey contractor. For example, post-bid commercial evaluation and the final investment decision (FID) are scheduled to occur in August 2021; the bids will be evaluated by the end of the second quarter of 2021 and contracts are to be awarded in August, coinciding with FID. In addition to using the 2018 MMP as a starting point, the NTF will review and consider the reports from the central commander (Neil Niru Dorrian) and the marine mammal observers (MMOs) for the 2018 survey. Both of these reports contain insights and experience that will help inform the updated MMP.

Kirchner presented an overview of the source reduction tests (SRTs) from 2018. There were no substantive updates with regard to the data or the direct applicability of such source reductions to surveys in the immediate future. The SRTs had shortcomings and the plan is to conduct a more viable SRT during the next seismic survey in the form of a swath test. Conducting the tests in the same locations as the previous SRTs will be difficult, because streamers cannot be deployed as close to the platforms as the OBNs used in the previous tests. Since it has proven impossible to draw definitive conclusions from the 2018 SRTs, and an objective of the next survey is to obtain a signal from minor reservoirs, Kirchner was not confident that the signal will be strong enough if the source is reduced. The current plan, therefore, is to not reduce the source during the next seismic survey, but to conduct a swath SRT.

2.5 Other Sakhalin Energy noise-generating activities 2020-2022

Sakhalin Energy submitted document WGWAP-21/19, titled "Sakhalin Energy Offshore Activities 2020-2024," for consideration by the Panel, and other than two minor questions, it was agreed that this subject would be further considered by correspondence. The Panel thanked the Company for submitting the information contained in WGWAP-21/19, which is a rather extensive overview of activities planned for 2021 and beyond.

The Panel is concerned about several of the noise-generating activities described in WGWAP-21/19 that the Company plans to carry out in relation to annual survey, inspection and maintenance of its subsea assets and maintenance, primarily the: (i) acquisition of 2D Ultra-high Resolution Multichannel Seismic Data, (ii) Multibeam Echo Sounder, (iii) Side Scan Sonar, (iv) Sub-bottom Profiler and (v) Acoustic Doppler Current Profilers. For (ii) and (iii), the Company provided technical specifications for the instruments to be used, and while the acoustic frequencies for many of the configurations of these instruments are quite high and likely well outside the hearing range of gray whales, the precise configurations to be used were not specified. Also, importantly, such instruments are known to produce side-lobes and broadband transients. For example, the Panel is concerned as to whether the active signals from any of the sonar signals show evidence of frequency spreading, as documented for similar systems by Deng *et al.* (2014). This paper described overlap in the frequency of sonar signals with the auditory profiles of whales despite that frequency being nominally well above the whales' hearing range.

Specifically, the sonar was reported to operate at 200 kHz, but there was noticeable energy at 90 kHz. Therefore, it would be worth investigating whether the sonars used by the Company emit signals additional to those expected, at frequencies within the hearing range of whales. The recent paper by Frankel and Stein (2020) that documented responses of gray whales to signals >20 kHz contributes to this concern. The Panel **recommends** that the output of the systems to be used be carefully measured so that the full characteristics of the signal can be better understood.

2.6 Updates on other companies operating on the Sakhalin Shelf

A relatively detailed presentation on this topic had been made by IUCN at the last WGWAP meeting (WGWAP-20 report, item 6.6). For the present meeting, Berzina-Rodrigo and her team were asked to focus solely on offshore energy projects centred in or near the gray whale feeding areas rather than everywhere on the Sakhalin Shelf. This more targeted compilation of information from publicly available sources (document WGWAP-21/20), together with a similarly targeted new map (adapted from Map 2 in the WGWAP-20 report), is included here as Appendix 1. The Panel appreciates the work that goes into producing such compilations, which are useful when considering the broader context in which Sakhalin Energy operates and attempting to assess cumulative effects on the whales. Due to time constraints, there was no discussion of the presentation at this meeting. However, developments and activities by other operators, particularly the planned expansion of Sakhalin-1 (operated by ENL) that is likely to increase the noise footprint in the region, were highlighted by Nowacek and Knizhnikov (WWF Russia) during subsequent sessions.

Oleg Gaidukov, Deputy General Director for Industrial Safety of LLC "Gazprom Neft Shelf," thanked IUCN on behalf of his company for the invitation to participate. He explained that as a result of restructuring, his company has taken over operations of the Ayashky licence block from LLC "Gazprom Neft-Sakhalin," the representatives of which have attended previous WGWAP meetings. He confirmed that Gazprom Neft Shelf will continue joint efforts with Sakhalin Energy and ENL to implement the Joint Programme. Gazprom Neft-Sakhalin, LLC (GPNS) has been engaged with the Joint Programme since 2017, with a focus on the offshore feeding area which partly overlaps with the Ayashky licence area of Gazprom Neft's assets. GPNS collected data in the offshore feeding area in 2018-2019 as a part of environmental monitoring under the Joint Programme. The data, when combined with the information obtained from ENL and Sakhalin Energy in the near-shore (Piltun) feeding area, were provided to government agencies and stakeholders. Sakhalin Energy's presentation of 2019 results to the current meeting included the data collected during field efforts in 2019 and agreed by the three companies participating in the fieldwork. Gaidukov emphasized that Gazprom Neft would not abandon its commitment to research on Sakhalin gray whales. When asked about plans for a potential future seismic survey of the Triton field, Gaidukov stated that this possibility was still being reviewed.

He was also asked about the sonar system used to detect whales during GPNS's previous seismic survey as part of its mitigation programme. The Panel was particularly interested to know whether there had been good monitoring of the true output frequency of the sonar. Gaidukov offered to share this information with the Panel off-line after the meeting. Vedenev suggested that the methodology for measuring the frequency of sonar in the field should be discussed at the next NTF meeting. As noted under item 2.5, the recent paper by Frankel and Stein (2020) indicates that gray whale hearing is sensitive to a wider range of frequencies than previously thought.

2.7 Cumulative effects of noise

The cumulative effects of noise on gray whales summering off Sakhalin has been a topic of discussion since the inception of this Panel and even before then by the IUCN Independent Scientific Review Panel. Knizhnikov pointed out that the issue of cumulative effects was not on the agenda of the current meeting and he and others consider it important that continued attention be given to this issue. Cumulative effects are on the draft agenda for the NTF-19 meeting which has been postponed until early 2021. Discussion there should benefit from ongoing work by several Panel members aimed at further developing the framework originally presented by New and Cooke at the Cumulative Effects Task Force meeting in April 2019[2]and presented in refined form in document WGWAP-20/28 (also see WGWAP-20 report, item 6.8).

Knizhnikov expressed a specific concern that the Sakhalin I project was expanding and ENL would soon submit plans for developing an energy facility in the Khabarovsk region (see also 2.4 above and Appendix 1). Although the location for this facility is relatively distant from areas used by gray whales, the development would lead to an overall increase in offshore activity and, therefore, add to the human-generated noise footprint throughout the region. The expanding presence of development activities off northern Sakhalin highlights the importance of accounting for all operations when considering the cumulative effects of noise on Sakhalin gray whales. With that in mind, the absence of ENL and other operators at the current meeting was seen by Knizhnikov (and many other participants including the Panel and IUCN) as a major disappointment. The lack of cooperation, coordination and even basic sharing of information on activity schedules among the industry operators in the region hinders any serious effort to assess and manage cumulative effects on the gray whales and their habitat.

3 RESULTS OF JOINT PROGRAMME IN 2019 AND PRELIMINARY RESULTS IN 2020

3.1 2019 fieldwork results on distribution

3.1.1 Presentation

Sakhalin Energy provided the following summary of document WGWAP-21/7.

Onshore surveys in Piltun feeding area were carried out from July to September. In total 8 full synchronized surveys were conducted. The number of whales registered per survey varied from 8 to 17 (maximum on 23 September), in average - 11.4 individuals. Most of the whales were observed in near-shore waters at the mouth of Piltun Lagoon, within 3 km of shore at depths of 10-15 m.

Five full surveys were conducted in the Offshore (Morskoy) feeding area from July to September. Gray whales were concentrated throughout the season in the eastern portion of this area in water depths of 35-40 or 65-70 m. Over the last two years their distribution shifted approximately 20 km to the north compared to prior years. The maximum number of gray whales (151) was recorded on 15 September. The one-time total ('simultaneous') number of gray whales recorded in the both Piltun and Morskoy areas was 160 individuals.

[2] https://www.iucn.org/sites/dev/files/cetf_1_report_final.pdf

3.1.2 Discussion and Panel conclusions

Research and monitoring programs need to be designed so that abundance changes can be detected reliably. To accomplish this aim, an accounting for operational conditions as well as spatial and temporal survey effort is necessary for proper analysis of the data. In discussion of document WGWAP-21/7, the Panel acknowledged the inclusion of some of its previous suggestions for data analysis, particularly with respect to information on survey effort and standardization. Nevertheless, the Panel does not consider the final conclusions of the document (p. 48) that "…the abundance and distribution of gray whales characterizes the current status of their Sakhalin feeding group as entirely stable, at their population peak, and with further growth trend," to be supported by the data. The Panel has the following concerns: (1) while the Company has reported the number of whales observed and their location, this does not constitute a proper estimate of abundance or distribution, (2) the non-standardized survey results were assessed qualitatively and cannot be used to assess population trends, (3) the conclusion of a stable population, or one that is at its peak, is contradictory to 'further growth trend', as this implies that the population has not yet reached peak abundance and (4) the distribution and numbers of whales in the Nearshore and Offshore feeding areas have not been 'stable' in the past 5+ years: there have been fewer whales, with a more southerly distribution near shore and high numbers of whales in the offshore feeding area.

The Panel **recommends** that a proper multi-year analysis of all data on abundance and distribution be conducted. This analysis should take account of survey area, timing and effort, characteristics of the observation platform, observer capacity, and environmental conditions. Only after such an analysis has been completed can the Company claim to have reached data-supported conclusions, rather than making only qualitative descriptions, regarding trends in distribution and abundance. The Panel reiterates its longstanding offer to help with this analysis.

As has been the case since the outset of the WGWAP process, perspectives of the Panel and Company differ regarding what constitutes a thorough and statistically robust analysis of existing survey data. Although the company's reports consistently meet regulatory requirements of the Russian Federation, more rigorous analysis and reporting and greater effort to implement the Panel's advice would give the Company improved scientific credibility.

3.2 2019 fieldwork results and 2020 preliminary fieldwork results on photo-identification

3.2.1 Presentation

Sakhalin Energy provided the following summary of document WGWAP-21/8:

In 2019 photo-ID work in the Piltun feeding area was carried out by six vehicle teams on shore (3 on South spit and 3 on North spit) from June until September. Two of the teams (one on South and one on North spit) continued working until the end of October. Two vessel-based photo-ID teams worked from the vessels Katun and Siem Sapphire in July-October. The offshore work was implemented from small boats and directly from aboard the main vessels.

In total, 193 individual gray whales were identified off northeastern Sakhalin in 2019, including 24 (2 non-calves and 22 calves) that were new to the Joint Programme catalogue. Of the 22 calves, 19 were recorded as members of mother-calf pairs and 3 were observed without their mothers and had apparently begun feeding independently (based on observations by unmanned

aerial vehicles, UAVs). The first sighting of a mother-calf pair was on 28 June; last sighting, on 7 September.

Ninety-two individuals were observed in the Piltun feeding area and 147 in the Morskoy area. Of those numbers, 46 individuals were photo-identified in both areas during the season. The trend towards more active use of the Morskoy area appeared to be continuing. The body condition of most whales improved during the feeding season. The cumulative number of individuals photo-identified during the 2019 season was the largest recorded since monitoring by the Joint Programme began. A total of 321 individual gray whales are now included in the Sakhalin photo-ID catalogue (2002-2019).

3.2.2 Discussion and Panel conclusions

The annual reports of the photo-ID programme, of which document WGWAP-21/8 is the most recent, provide timely documentation of the latest season's results, and they have been very useful for the Panel's work. However, the reports do not contain analyses that support the rather sweeping assertions often made about the conservation status of the population. The Panel considers that such assertions should be justified by scientifically rigorous analyses that could be included, for example, in the peer-reviewed papers being produced by Joint Programme scientists.

The Panel reiterated its perspective that while the Company reports seemingly meet regulatory requirements, the potential of the datasets collected by the Joint Programme are under-used and, as a result, lead to conclusions that are often unsupported and speculative. Alcock agreed that there would always be a philosophical difference between the goals of conservation scientists and those of an oil company. In the latter case, one of many Company targets is to meet the regulatory requirements under which it operates and therefore, it was unsurprising to Alcock that the degree of effort and rigour in the Company reports does not meet all the scientific standards encouraged and expected by the Panel.

Once again, the importance of benthic sampling was highlighted as having been a major loss to the time-series of Joint Programme data, especially in light of how the absence of such data precludes an ecological interpretation that might explain the declining presence of whales in the nearshore feeding area. The Company continued to maintain that it should not be held responsible for collecting data on benthos outside of its area of potential impact on that benthos.

3.3 Preliminary Results of Joint Programme Fieldwork in 2020

Sakhalin Energy provided the following summary of preliminary results of Joint Programme fieldwork in 2020 (see Document WGWAP-21/10).

The scope included onshore and offshore distribution surveys and vessel-based and shore-based photo-ID surveys. Six fully 'synchronized' surveys were conducted from shore in the Piltun feeding area (August-September) and two surveys in the Morskoy feeding (June-September 2020). Shore-based photo-ID work was conducted by two shore-based vehicle teams (on North and South spit) using cameras and drones (August-September). A total of 352 'missions' were completed, with 289 whales sighted (including repeated sightings of the same individuals). The vessel-based photo-ID team worked from Sakhalin Energy supply vessels and conducted a total of 20 'missions', four in the Piltun area and 16 in the Morskoy area. A total of 8884 photographs of 351 whales (including repeats) were obtained.

3.4 Scope of Work for Joint Programme in 2021

Sakhalin Energy reported that the Joint Programme would continue monitoring gray whales in the two Sakhalin feeding areas in 2021, following essentially the same procedures and protocols as in 2020 (document WGWAP-21/11). The Panel noted that the scope did not include the resumption of benthos or acoustic monitoring, two activities that the Panel has long considered essential. Alcock cautioned that due to budget and pandemic-related constraints, it could prove difficult to maintain 2020 levels of effort in 2021.

4 RESULTS OF RUSSIA GRAY WHALE PROJECT IN 2019 AND PRELIMINARY RESULTS IN 2020

Document WGWAP-21/12 summarized results of 2019 and 2020 field studies conducted by the Russia Gray Whale Project (RGWP) – formerly the Russia-US Programme. This work began as a pilot project in 1995 and has been ongoing annually since 1997, funded in large part by the International Fund for Animal Welfare (IFAW) through 2019, and represents a consecutive (1997-2020) 23-year time-series for north-eastern Sakhalin waters that has served as a foundation for western gray whale population assessments.

Several questions regarding WGWAP-21/12 were provided in advance by the Panel. Of particular interest was the high number of mothers and calves (n=20 calves) observed in 2019 and, in turn, a return to more typical numbers by 2020 (n=8 calves). While an explanation for the high numbers of calves in 2019 is undetermined, all of the mothers identified had been sighted previously off Sakhalin (i.e. they were already in the photo-ID catalogue). Many of 2019 mothers had been seen with calves in previous years but about half of them were thought to be 'first time' or 'new' mothers. In 2020, all 8 of the mothers identified off Sakhalin had sighting histories and were already in the photo-ID catalogue.

In discussion of the 2015-2020 sighting location plots collected during photo-ID surveys that appear to show a southerly shift in the distribution of whales, the Panel noted that specific information on survey effort was needed (e.g. survey tracks), in addition to the summary of the number of surveys conducted and of group encounters provided in document WGWAP-21/12, to better evaluate trends in distribution or habitat use across years.

In 2020 Burdin and his team collected some gray whale data in Olga Bay off south-eastern Kamchatka. On 12 July and 13 August, 21 and 18 whales were observed, respectively. Ten of these whales, including two mother-calf pairs, had: (a) been sighted at Sakhalin in earlier years and (b) demonstrated within-season movements from Kamchatka to Sakhalin. One of the pairs was photo-documented off Kamchatka on 12 July and off Sakhalin on 4 August, having travelled about 800 nmi in approximately 23 days.

With regard to planning for 2021, Burdin indicated his desire to continue the work of the RGWP but acknowledged that funding was more uncertain than ever before. The 2020 field season was completed primarily with financial support from personal donations. That being said, a tentative plan for a 2021 season would include continued photo-identification and sampling off Sakhalin and south-eastern Kamchatka to support ongoing research related to population assessment, genetic structure and dietary/trophic relationships via fatty and stable isotope analyses.

In conclusion, the Panel once again acknowledged the extraordinary dedication and commitment of Burdin and his RGWP team. The results of their summer surveys at Sakhalin have contributed to the IWC's regional and range-wide assessments and have helped scientists and conservationists to track the return of gray whales to the Russian Far East, where they had been either absent or ignored for many decades. Burdin stated that a full report of 2020 field operations and results would be provided to the meeting of the IWC Scientific Committee in spring 2021. He further thanked the WGWAP and IWC for their unwavering encouragement and support of his team's efforts to continue collecting data.

5 ANNUAL ASSESSMENT OF BIOLOGICAL AND DEMOGRAPHIC CHARACTERISTICS OF WESTERN GRAY WHALES

Cooke summarised the results of the updated population assessment, using data collected up to and including the 2019 season (document WGWAP-21/13). The data used were as follows:

- 1994-2019: Photo-ID data and some sex determinations from the Russia Gray Whale Project (document WGWAP 21/12)
- 2003-2019: Photo-ID data from the Joint Programme Sakhalin photo-ID project, run by the National Scientific Centre of Marine Biology (formerly A.V. Zhirmunsky Institute of Marine Biology (NSCMB,Vladivostok) (document WGWAP 21/8)
- 1999-2019: Mexico/Sakhalin photo-ID cross-matching results (54 matches, comprising 36 individual whales) (Urbán *et al.* 2019
- 2010-12: Three whales tracked from Sakhalin to the Eastern North Pacific (Mate *et al.* 2015).

The RGWP and NSCMB Sakhalin catalogues have only been cross-matched for whales seen in 2011 or earlier. Therefore, the assessments were conducted in two ways: (i) using combined data through 2011, and only GWP data from 2012 onwards; (ii) using combined data through 2011, and only NSCMB data from 2012 onwards.

The population model was mainly the same as in previous years. It is individual-based, with adult females being divided into three reproductive classes: pregnant, lactating and resting. The main change relative to previous years was the division of calf mortality into early mortality (prior to the arrival of mothers off Sakhalin) and late or post-weaning mortality. Previous versions of the model had subsumed early calf mortality into calf production.

The main reason to break out early mortality explicitly was for the purpose of cumulative effects assessment, for which mortality in the various seasons and parts of the range needs to be modelled. Observational evidence for significant early calf mortality includes: (i) calves accounted for about 1/3 of gray whales stranded dead on the US west coast during 2007-16 and over half during the northward migration in May (NOAA Fisheries 2017); (ii) calves accounted for over two-thirds of dead strandings in the Mexican gray whale lagoons during 2012-17 (Martínez-Aguilar et al., 2020). Based on what is known about the gray whale reproductive cycle, it is assumed that, even if a calf dies early, the mother cannot have a new calf in the immediately following year.

Two stock-structure hypotheses were considered:

(i) a single breeding stock in the eastern North Pacific
(ii) two breeding stocks, one in the eastern North Pacific and one in the western.

The two-stock hypothesis provided a significantly better fit to the data. While the tagging data favour the 1-stock hypothesis (3 out of 3 whales tagged at Sakhalin migrated east), the photo-ID cross-matching data between Sakhalin and Mexico tend to favour the 2-stock hypothesis because fewer matches of known individuals are found than would be expected under the 1-stock hypothesis. The best-fitting model using both types of data yields an estimated proportion of western breeding stock animals in the Sakhalin population of about 50%, with a 90% confidence range of 33-66%. Additional evidence for the 2-stock model are the observations of Sakhalin whales in Japanese waters in winter and spring (Weller et al. 2016) but those observations were not used in this analysis.

Figure 1 shows a sample from the Bayesian posterior distribution of median population trajectories for the Sakhalin population for (i) all animals aged 1 yr and older; (ii) females of reproductive age; and (iii) calves (excluding any which died before arrival at Sakhalin), for each of the two datasets (as defined above), for the best-fitting model. The population trajectories are very similar regardless of whether RGWP or NSCMB data are used from 2012 onwards. In all cases there has been fairly steady growth in the population over the last 25 years, but with some fluctuations in the rate of increase. Calf production was high in 2019 (the last year of data used) but the model predicts a lower number in 2020, because individual mothers cannot bear calves in successive years.

Early calf mortality is estimated to be in the range 26-42% and late calf mortality is estimated to be in the range 19-37%, with little difference between the two data sets. There is a strong indication of inter-annual variability in the late calf mortality rate, but less so for the early calf mortality rate. There is no indication that the Unusual Mortality Event (UME) observed in the eastern North Pacific in 1999-2000 affected Sakhalin whales, but it is too early to determine whether the 2019-2000 UME has or has not affected Sakhalin whales.

There is, as yet, no evidence that the population is affected by its reduced usage of the Piltun habitat in recent years. However, the Panel notes that experience with the eastern gray whale population is that even a long period of steady growth can be suddenly interrupted by a major mortality event.

In discussion, attention was drawn to two recent papers, one by Perryman *et al*. (2021) showing a correlation between arctic ice cover and calf production in eastern gray whales and the other by Gailey *et al*. (2020) showing a correlation between ice cover on the feeding ground and apparent post-weaning survival of Sakhalin gray whale calves. It was suggested that calf production or survival rates as estimated in the population model for Sakhalin gray whales are correlated with environmental drivers.

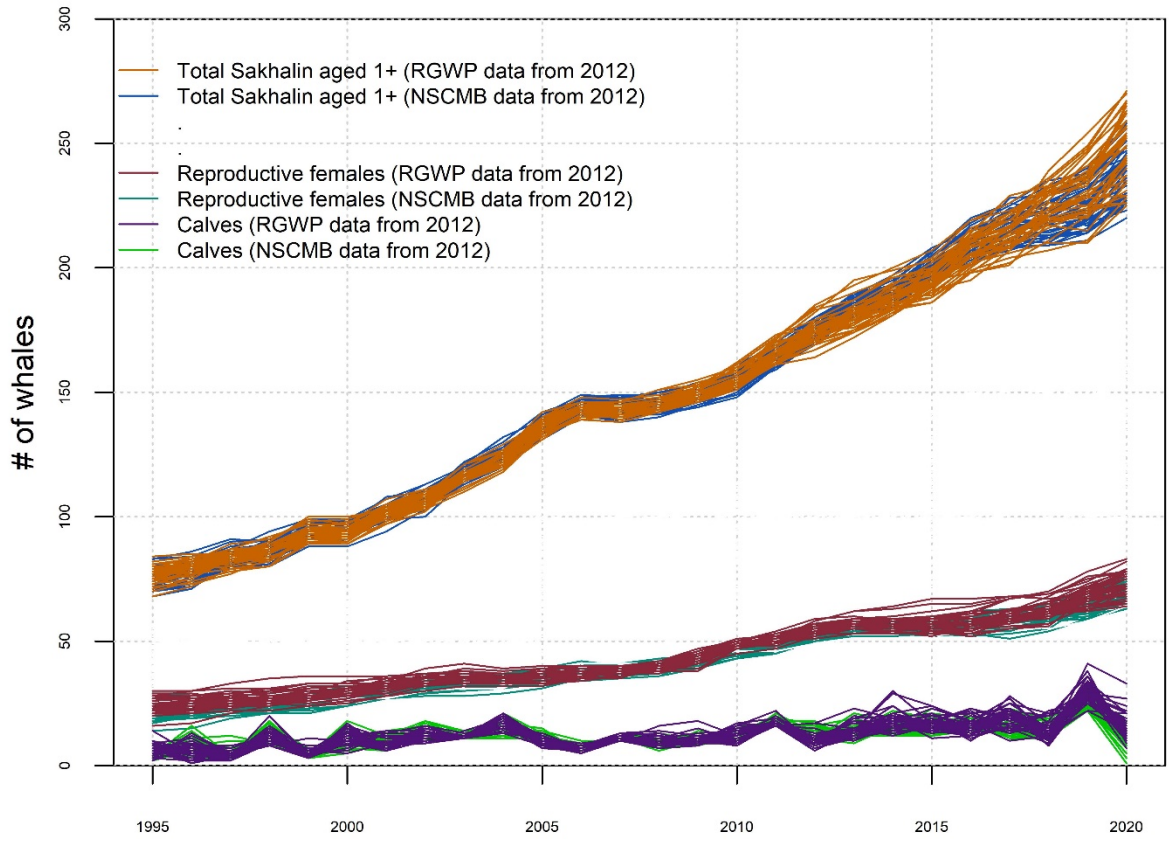

Fig. 1. Sakhalin gray whales: sample of Bayesian posterior distribution of population trajectories.

Berzina-Rodrigo and Carbone Khodabakhsh confirmed that they were in discussion with data holders regarding possibly updating the cross-matching between the Sakhalin photo-ID catalogues to include the seasons 2012-2019. The Panel notes that this would be desirable from a scientific point of view, but that it is not essential given the close agreement in the assessment trajectories using the two data sets). Therefore, the exercise should only be undertaken if an agreement can be reached that does not compromise the scientific independence of analyses of the cross-matched data.

6 OIL SPILL RESPONSE PLANNING

At the Panel's last meeting, it was noted that Sakhalin Energy's Guide to Oil Spill Response in Cold and Ice Conditions (Oil in Ice) was still in preparation and the Company confirmed that it would not be available for Panel review until at least the end of 2019. Therefore part 4 of recommendation WGWAP-18/15 – that the Panel be given a chance to review this document – remained classified as 'Open – no action yet taken'. The final draft of the guide was received shortly before the meeting, and it was forwarded to WGWAP Associate Scientist Brian Dicks for critical review.

Dicks's review was received shortly after the meeting and is summarised below.

In broad terms the document is a comprehensive review of currently available response options in winter conditions, based largely on reviews of the subject from Canada, Russia, Norway and the USA, as well as the International Maritime Organization's "Guide to Oil Spills Response in Ice and Snow Conditions".

While the guide presents comprehensive information about the properties of Sakhalin Energy's crude oil, it thoroughly reviews local Sakhalin winter weather and ice conditions and it spells out the possibilities and limitations for practical response in winter, Dicks commented that it is not tailored to what the Company can actually achieve in response to a winter spill in the whale areas of interest to the Panel. The guide clearly states that no practical response is likely to be feasible under significant ice cover (e.g. in February and March) and severe weather, a point often made by the Panel in the past. Whilst this is far from ideal, it is at least realistic. The sections on response on land and rivers include details from exercises conducted on Sakhalin and are broadly consistent with Dicks's comments on an earlier version of the manual.

Unfortunately, the guide lacks practical details of what specific actions the Company would take in response to a major spill in the Piltun-Astokh and Lunskoye areas and in the gray whale feeding areas. Whilst it can be reasonably supposed that Sakhalin Energy would follow the document's guidance on oil recovery in ice leads and on in-situ burning (ISB), no practical details are provided concerning the ice-related response equipment that the Company holds, the exercises that have been conducted in sea ice to test response capabilities or the Company's decision-making processes for choosing suitable techniques and equipment. The Panel understands from previous site visits by Dicks that Sakhalin Energy holds some appropriate brush and oil-mop skimmers and that these can be deployed from ice-capable response vessels on site. However, the only equipment stockpile listed in the guide is a 17-page summary of vessels and equipment held at Korsakov by the Federal Budgetary Institution "Marine Rescue Service" (Morspassluzhba) of the Federal Agency of Maritime and River Transport of the Ministry of Transport of the Russian Federation. The summary contains no listing for ISB equipment.

A crucial part of winter spill response is the decision-making process which allows responders to take account of conditions at the time and guide them towards the most effective and safest response options. Appendix B of the guide is supposed to cover both subjects, but the documents received by IUCN from Sakhalin Energy (both Russian and English versions) provide only the cover pages and no text. References are made to two existing Sakhalin Energy documents which are supposed to provide such information. They are: *Procedure for decision making on the application of burning of marine oil spills in ice conditions at the Piltun-Astokhskoye and Lunskoye fields* (0000-S-90-04-O-0014-00-E, Appendix 17) and *Procedure for decision making on dispersants application for oil spills* (0000-S-90-04-O-0014-00-E, Appendix 16). Neither IUCN nor Dicks has obtained these documents in the course of previous review work.

The Panel therefore **recommends** that the Company provide either the above two documents or the full version of Appendix B for Panel review. It would also be helpful if the Company would provide (i) specific details on the response equipment that it holds for winter use offshore, particularly for ISB and (ii) an update on any winter offshore response exercises that have been held recently or are planned for 2021.

7 SAKHALIN ENERGY'S MARINE MAMMAL PROTECTION PLAN (MMPP)

The current version of Sakhalin Energy's MMPP was made available to the meeting as document WGWAP-21/14. Three items remained unresolved and these are summarised in document WGWAP-21/15.

7.1 Annual acoustic monitoring

Starodymov reported that in 2020, noise monitoring was carried out with AUARs on stations PAB-20 and Molikpaq. The data were being processed and would be provided to the Panel after the final report was received from POI. Preliminary raw data suggest that noise levels decreased in 2020, probably due mainly to the deployment of new, quieter service vessels, but specific conclusions about noise levels remain to be confirmed.

The Panel appreciates that the Company conducted acoustic monitoring in 2020 (outside the Joint Programme) and thereby implemented recommendation WGWAP-20/02. However, the Panel remains concerned about the statement on page 29 of the MMPP stating categorically that the Company's noise-generating activities have had no effect on gray whale abundance and distribution. The Panel does not agree with this statement and stands by its previous conclusion as explained in the WGWAP-20 report (item 2.1), which states:

> Sakhalin Energy has made several arguments to justify the discontinuation of such sampling, including citing in the Company's Marine Mammal Protection Plan (MMPP 2019, document WGWAP-20/05) the conclusions of documents by M.V. Lomonosov Moscow State University (ENL and Sakhalin Energy 2013, document WGWAP-16/10) and Kriksunov et al. (2016) that reported finding "no correlation … between the intensity of the companies' activities, including noisy operations, and gray whale abundance and distribution." The Panel does not accept that the results presented in that paper demonstrate 'no correlation'. This claim was made on the basis of mapped combinations of whale occurrence, estimated benthic prey biomass, and noise intensity, but these data were collected at different temporal and spatial scales and crudely averaged, so it was not possible to perform accurate statistical analyses to assess the relationship(s) between noise and gray whale occurrence.

7.2 Minimum height of drones

7.2.1 Presentation

Sakhalin Energy provided the following summary of the Company's literature survey on the use of drones to study and monitor baleen whales (document WGWAP-21/32):

The altitude of drone flights and the behavioural responses of whales and other marine mammals are discussed based on a review of the scientific literature and the Company's own field observations of gray whales during drone flights.

The scientific literature indicates varied reactions to drones for different marine mammal taxa. Pinnipeds tend to show a pronounced behavioural response while toothed whales are less sensitive to drone overflights. In most studies that have used drones to study baleen whales, indications are that the animals rarely, if ever, react to the presence of a drone. Mostly, no behavioural responses were observed when drones were operated near baleen whales at an altitude of 10 m.

For photo-ID work within the framework of the Joint Programme, the current model of choice is the DJI Phantom 4 Pro. The use of drones in research produces qualitative data and reduces the potential for disturbance of gray whales when compared with boat-based observation. The Joint Programme's field experience of using drones from 2017-2020 had led the Company to conclude that the whales show no behavioural response to (and therefore are not disturbed by) the presence of drones being operated at predominant working heights of >10 m. The Company plans to continue using drones to monitor gray whales from altitudes not lower than 10 m, as this provides an optimal combination of safety to the animal and quality of the photographic and video materials.

7.2.2 Discussion and Panel conclusions

The Company stated its intention to continue drone operations over gray whales at a minimum altitude of 10 m to collect imagery for photo-identification. The Panel is supportive of the Company's use of drones as a tool to study gray whales, but emphasized that (i) a higher minimum altitude should be employed (e.g. 20 m) whenever possible to prevent disturbance, (ii) drone operations over the whales should be limited to scientific purposes only (no 'casual viewing' should be allowed) and (iii) drones should be used to collect aerial images of whales for quantitative assessment of body condition.

The Panel appreciates the Company's literature review on assessments of disturbance from drones on baleen whales. While the references reviewed and cited in the review all indicate a lack of behavioural response when drones are flown at >10 m above the whale, these findings do not conclude that drone operation at low altitudes, such as 10 m, is beneficial from a scientific perspective. While no behavioural disturbance during low-altitude overflights by drones may be apparent, there is evidence that some mammals have significant physiological responses to drone overflights. For example, Ditmer et al. (2015) demonstrated a spike in the heart rate of black bears (*Ursus americanus*) when a drone was operated overhead, even though no overt behavioural change was observed. Due to the novelty of drone use in studies of wildlife, much uncertainty remains about impacts on animal behaviour and physiology. Therefore, it is important to be precautionary and whenever possible employ conservative methods to avoid impacts. Following are a few examples of drones being used to collect data for various purposes at heights of 20 m or greater (except for efforts to collect whale exhalation samples):

- "Photographs were triggered remotely by the pilot on shore. When photographing a whale, the UAV was flown at altitudes between 20 and 50 m (Christiansen et al. 2018)."
- "The UAV was initially flown at an altitude of 30–50 m, to obtain close-up photographs of the whale's body shape (Christiansen et al. 2016a)."
- "… the drone hovered above the whale, at a minimum altitude of 25 m (Soledade Lemos et al. 2020)."
- "In each location, multirotor UAVs were flown from either land (Australia and Argentina) and/or boats (North Atlantic, New Zealand and Argentina) above a surfacing whale at altitudes between 17.8 and 55.1 m (mean = 31.3 m, SD = 8.01; Argentina = 17.8−37.0 m; Australia = 27.9−46.6 m; New Zealand = 17.9−51.3 m; North Atlantic = 26.8−55.1 m) (Christiansen et al. 2020)."
- "From [images collected at] altitudes of 50–56 m, the average measurement bias was just 0.03 m (range = 0.8 m), representing <0.002% (range <5%) of the total length of the boat… (Durban et al. 2016)."

- "We were successful at positioning the hexacopter directly above groups of killer whales [*Orcinus orca*], and obtained a total of 18920 still images from an altitude of 35–40 m (Durban et al. 2015)."

Given the high resolution of drone cameras, as well as the zoom capacity of some models, the Panel believes that the Joint Programme's field teams can obtain high-resolution imagery for photo-ID and photogrammetry and, judging by the research mentioned above, accomplish this from altitudes of 20 m or higher without flying drones at low altitudes (< 20 m).

Quantitative assessment of body condition of baleen whales using drone imagery is a powerful technique to evaluate 'population health' over time (i.e. between years) and across populations (e.g. western vs eastern gray whales). Field (Burnett et al. 2019) and analytical measurement methods are now standardized and accessible through free and easy-to-use software (e.g. *MorphoMetriX* and *CollatriX*). The Panel **recommends** that in addition to photo-ID studies, Sakhalin Energy collect appropriate aerial images of gray whales (i.e. images taken of whales in a flat and straight body position while at the surface from a nadir angle [straight above the whale]) for quantitative body condition assessment. Analyses of such images would greatly improve the Company's current approach to assessment of body condition that currently relies on qualitative evaluations. These analyses would enhance understanding of the variability in population health over time of the Sakhalin gray whale population itself, as well as relative to other gray whale populations.

The Panel notes that in-water noise levels produced by a multi-rotor UAV may be affected by many factors, including its propulsion system, electric motors, propellers, flight controller setup, frame, weight and speed, how well the system has been balanced and calibrated, and ambient conditions such as wind speed (Christiansen et al. (2016b). Therefore, we suggest that the Joint Programme take advantage of the opportunities presented at Sakhalin to design and carry out controlled field studies not only of gray whale behavioral responses to drone overflights but also of noise penetration at various depths and under various conditions by the models being used. Specifications for a noise-penetration study can be discussed at the NTF-19 meeting.

7.3 Timing of peak gray whale presence at Piltun ('peak season')

The Panel recognizes that the costs and benefits associated with early- vs. late-season start-up of activities with the potential to disturb or displace whales are likely to differ according to population segment (e.g. mother-calf pairs, pregnant females) and nutritional condition (e.g. whales just arriving to recover from winter-spring fasting and migration). Also, any such cost-benefit analysis may hinge on whether the greatest weight (or value) is assigned to individual whales or to the population as a whole. In the past, the Panel has recommended that activities such as seismic surveys be scheduled as early in the season as possible on the expectation that relatively low early-season whale densities would mean that fewer whales are exposed to harmful sound levels. However, it is possible that the most vulnerable as well as valuable whales (e.g. mother-calf pairs, pregnant females) arrive early to take full advantage of the feeding season. Gailey et al. (2019) documented the importance of access to feeding habitat by exploring the effects of ice coverage on calf recruitment. In that study, access to feeding habitat was the dependent variable and displacement due to ice can be considered analogous to displacement due to industrial activity. The decision about optimal timing of noise-generating activities to minimize risk to the whales is relevant to all aspects of the Company's activities, and indeed this

is acknowledged in Sakhalin Energy's MMPP. The Panel anticipated that detailed discussion, and hopefully resolution, of this topic would take place during the Spring 2021 NTF meeting.

8 SAKHALIN ENERGY'S MARINE MAMMAL OBSERVER (MMO) PROGRAM

8.1 Presentation

Sakhalin Energy provided the following summary of document WGWAP-21/22.

Standard collision (i.e. ship strike) mitigation measures were applied in accordance with the MMPP. In 2019, five MMOs were onboard the two crew change vessels operating between Kaigan port and the Company's offshore oil and gas platforms. During trips, observations were mostly performed under weather conditions favourable for observation. Most of the vessel tracks adhered to the crew transfer corridors. Movements out of corridors were related to either specific monitoring of gray whales, emergency response training or the need to avoid third-party vessels. No cases of exceeding speed limits were observed during the observation period.

The total number of hours of observation in 2019 was 547 hours. Five species of cetaceans and four species of pinnipeds were registered (192 sightings, 1024 animals), including 18 gray whale sightings (19 animals). Although no cases of near-misses (of striking a marine mammal) were recorded, there were 33 cases in which measures were taken to avoid striking gray whales and other marine mammals – 32 course changes and 1 vessel deceleration).

For the 2020 navigation season, two MMOs were onboard the two crew change vessels and two MMOs were onboard Sakhalin Energy supply vessels to assist the vessel-based photo-ID team. Preliminary results of MMO observations on crew change vessels indicate that four cetacean species and four pinniped species (118 sightings, 893 animals) were registered. Also, there were two sightings of gray whales.

8.2 Discussion and Panel conclusions

The Panel commended the Company and its observers for their dedication to the programme and appreciated the responses received concerning pre-submitted questions.

Marine mammals were observed 192 times (representing nine species) during crew change vessel trips (by Polar Baikal and Polar Piltun) in 2019. Of these, gray whales were seen on 18 occasions. Vessel course changes were made 32 times for marine mammals observed on or near vessel track lines. Course changes were made for gray whales on seven occasions when gray whales were within 1000 m of the vessel's path, in accordance with Sakhalin Energy's vessel strike avoidance protocol.

There were no reports of vessels exceeding speed limits. Vessels deviated from prescribed navigation corridors for the purposes of, for example, emergency training or avoiding vessel-to-vessel collisions, during 5% of the total hours of observation.

Regarding preliminary results for 2020, the number of trips, the number of hours of observation, and consequently the number of gray whale sightings in 2020 were all far fewer than in the previous year. Observation hours in 2020 were about half those conducted in 2019, and only two gray whale sightings were recorded. Alcock indicated that the number of trips was reduced due to the pandemic. Instead of the customary 4-week crew shifts, the Company had adopted 8-week rotation periods, and in some cases 12-week shifts. As a result, far fewer crew change trips were made relative to a normal year. Vinogradov added that precautions related to the pandemic had forced major modifications to the routine, including to activities of the MMOs, who were embedded with the crews and vessel operators due to quarantines.

The Panel asked about the number of observers on each vessel at any given time. Previously there had been up to five or six observers in the Programme with two observers aboard each vessel during transits. Crew change vessels travel at high speeds – up to 35 knots. The Panel expressed concern that the quality of monitoring might decline with a single observer working on a high-speed vessel for a prolonged period.

In response to a question concerning the efficiency of detecting whales when only one observer was aboard the vessel, Vinogradov stated that it was possible to assign only one observer to each crew change vessel. The roundtrips (port to platform and return) generally took between two and six hours (the average duration was four hours). Trip duration included time spent at platforms when crew members disembarked and boarded vessels. Vinogradov indicated that up until 2017 it was customary to deploy only one MMO per crew change vessel. In 2017 and 2018, two MMOs per vessel were used (on an experimental basis for two years) because of the increased vessel speeds. However, the number of marine mammal sightings had not changed significantly, and the Company believed it was justified to revert to one observer per vessel in 2019, a practice that continued in 2020. Alcock pointed out that the watchman on the bridge also assisted MMOs in searching for marine mammals. However, the Panel noted that watchmen, while likely vigilant, typically are not trained for marine mammal observation.

Cooke recalled the issue raised in the WGWAP-20 report (item 4.3) about how angles of gray whale sightings relative to the vessel track line are measured and reported, and noted that the 2019 results showed the same problem, making the data on sighting angles to gray whales and course changes hard to interpret. The 2019 MMO Close-Out Report (document WGWAP-21/22) indicated that seven of the 18 gray whale sightings and four of the seven course changes were reported as having been made when the animals were abeam of the vessel. This matter is of significance because reported sighting angles and positions are used in estimates of vessel-strike risk. Consequently, it was not possible to refine the assessment of vessel-strike risk contained in the WGWAP-20 report at this time. The Company indicated that it had revised its instructions to crews for the 2020 and following seasons.

In the Panel's view, the Company should not conclude from the experience in 2017 and 2018 that two observers are no more effective than one. The proportion of whales near the trackline that are detected will tend to decrease with increasing speed. The Panel's previous analysis of the ship strike risk (WGWAP 17 report, Appendix 1; updated in WGWAP-20 report, item 4.3.2) concluded that the presence of MMOs would reduce the risk to a moderate extent. The estimated probability of detecting a whale on the trackline at 35 knots was about 0.33 for two MMOs. Using the same model, the corresponding detection probability for a single MMO would be about 0.20.

The Panel had concluded at WGWAP-17 and WGWAP-20 that, although the effectiveness of MMOs in avoiding strikes of whales was not high, the density of whales on the vessel routes appeared to be sufficiently low that strikes would be acceptably rare, even at the higher speed. That advice was subject to two caveats, that: (i) the estimate of whale density on the routes and hence the vessel strike risk is refined and (ii) collision detection technology is installed on the vessels. As detailed in the WGWAP-20 report, there are questions surrounding both the MMO sighting data (that in principle could be used for whale density estimation) and the efficacy of the method chosen to detect collisions.

The Panel continues to consider that updating and refining of the estimates of whale density on the crew change vessel routes is desirable, as is the installation of effective collision detection technology on the vessels, but no new formal recommendation is made, given the lack of useful results from previous recommendations concerning this issue.

9 SAKHALIN ENERGY'S PROGRESS AND PLANS FOR IMPLEMENTATION OF IFC PERFORMANCE STANDARD 6

This session began with a presentation by Alcock on Sakhalin Energy's 'high-level assessment' of how IFC PS6 applies to the Sakhalin gray whale population. The assessment covered compliance with the requirements which, for projects in critical habitat, include achieving a net gain for biodiversity; the assessment also resulted in recommendations for filling gaps. It comprised a desktop review of existing documentation and the extraction of information which the Company believes demonstrates compliance. According to the review, substantial investment in impact avoidance of impacts on gray whales has reduced residual impacts to a level of 'non-significance'. Therefore, typical offsets are not applicable for Sakhalin Energy's activities, but net gains may be achieved through support of 'additional opportunities' to conserve critical habitat.

Out of the 37 requirements, the review and assessment revealed two gaps that Sakhalin Energy considered to be of 'moderate' significance: (i) demonstration that the mitigation hierarchy has been applied to gray whales and (ii) demonstration that net gains have been achieved. The overall conclusion reached by Sakhalin Energy was that the Company had complied with the main requirements of PS6 and no material gaps could be identified.

Sakhalin Energy's self-assessment concluded that (i) the Company had invested heavily in impact avoidance (>300M USD) and mitigation (> 45M USD) since the design phase (2002); (ii) as a consequence, the residual impacts on gray whales have been reduced to a 'not significant' and 'not measurable' level, which is consistent with the conclusions of the Company's Environmental Impacts Assessments and monitoring programme reports; and (iii) therefore, typical offsets (i.e. off-site averted loss and off-site restoration) are not applicable to the activities of Sakhalin Energy with respect to gray whales. However, Alcock indicated that since the project is located in critical habitat, the Company may obtain net gains by supporting additional opportunities (AOs) to conserve the critical habitat. Its initial assessment of gray whale conservation projects implemented during the last 15 years led the Company to conclude that many of these may qualify as AOs. Therefore, Sakhalin Energy considers it likely that net gains have been already achieved. Document WGWAP-21/23 included an initial assessment of existing company projects that may qualify as AOs to achieve net gains.

Carbone Khodabakhsh clarified that the Company's assessment had not yet been discussed and considered by the Offset Working Group (OWG), an ad hoc subset of Panel members and Lender representatives chaired by Carbone Khodabakhsh which was formed at WGWAP-20 (November 2019) to work inter-sessionally on the problem of determining what could be defined as an offset. Hancox noted that the structure given to the mitigation hierarchy in document WGWAP-21/23 was a positive development. However, he suggested that although there was general agreement that industry activities at Sakhalin had not led to acute lethal impacts on gray whales, there was no consensus on the question of whether there had been non-lethal chronic impacts. He stressed that when considering 'no measurable impact', the changes in whale population dynamics or behaviour may be too small that they are very difficult to measure, or be conceptually hard to define. Furthermore, as the Sakhalin Energy operates in critical habitat, the risk of residual impacts remains, despite mitigation measures. Therefore, an offset or offsets may still be needed.

Cooke presented a preliminary framework for evaluating candidate offsets (i.e. sources of adverse impacts on Sakhalin gray whales). This proposed framework will be discussed by the OWG in January 2021. It builds on the approach proposed in document WGWAP-20/28 for addressing cumulative impacts. Each candidate for an offset is evaluated with respect to three aspects: (i) severity of the threat or impact (severity level); (ii) quantifiability of the threat or impact (precision level); and (iii) practicability of mitigation. A High severity threat should always be addressed; a Medium severity threat should be included in a cumulative impact assessment, and may need to be addressed if the total cumulative impact is too high; while a Low severity impact does not need to be addressed at this time. A High precision level means the threat is well quantified; a Medium precision level means that action can proceed provisionally based on the best estimate of the scale of the impact; a Low precision level means that the size of the impact is so speculative that its mitigation could not count as an offset. The practicability of mitigation is High if there is identifiable action that the operator in question could take to accomplish it (i.e. the mitigation). The practicability is Medium if the operator could usefully assist in mitigation projects that involve additional actors such as authorities, NGOs or other operators. The practicability is Low if the operator is no better placed than any other actor to address the impact. To be a candidate for offsetting, an impact should score at least Medium on all three criteria.

The impacts that were evaluated were: fishing; ship strikes; acoustic disturbance; and the recent reduction in suitability of the Piltun feeding ground for mothers with calves. Quantification of the impacts proved to be quite difficult, and none achieved better than a Medium score on precision. The mitigation practicality was considered Low for all impacts outside the Sakhalin area. The most promising candidates for offsetting were fishing and ship strikes in the Sakhalin area, and possibly also habitat issues if directed research can count as an offset.

Given the limits of time at this meeting, it was agreed that the matter would be discussed first by the OWG, and a revised proposal would be brought to the WGWAP-22 meeting. The OWG would work on the assumption that offsets are required, but Hancox stressed that the determination of whether the Company needs an offset or not is primarily a matter to be decided between the Lenders and Sakhalin Energy.

10 FUTURE CONSERVATION OF WESTERN GRAY WHALES IN RUSSIA

In 2020 western gray whales were confirmed as a national conservation priority through (1) the updated Russian Red Data Book, which calls for immediate implementation of comprehensive conservation measures including the development and implementation of a species conservation strategy, a species recovery program and an action plan and (2) the subsequent inclusion of this population on Minprirody's *List of rare and endangered wildlife taxa that require priority measures for restoration and reintroduction* (hereunder, the List of Priority Species).

IUCN intends to maintain its commitment to the conservation of western gray whales, including providing continued support for Minprirody's efforts and those of other national (e.g. Russian Federation) and international (e.g. IWC) stakeholders as they seek to develop and implement the first Russian national conservation strategy for this whale population.

10.1 Development of a Russian Federation strategy and roadmap for western gray whale conservation in 2021-2030 within the framework of the Russian national project 'Ecology'

Olga Krever, Deputy Director of the Information and Analytical Centre for Protected Areas Support (Roszapovedcentre) of Minprirody, gave a presentation on the Federal Biodiversity Conservation and Ecotourism Development Project under the national Ecology project and on how western gray whales are to be included. In 2019, Minprirody issued an order establishing a working group (hereafter, the Minprirody Working Group on Priority Species) to address the conservation of rare and endangered species and advance the implementation of priority measures for restoration and, when necessary, reintroduction. This working group consists of Bureau and Expert Sections for each of the rare and endangered wildlife taxa that are included on the List of Priority Species and therefore the focus of national conservation priority activities through 2024 (and potentially a second phase through 2030). The initial List of Priority Species issued by Minprirody in August 2019 consisted of 11 animal species. In June 2020 the list was updated to include two Okhotsk Sea cetacean populations, gray whales and bowhead whales.

Also in 2019, as part of the federal project, Minprirody established a working group on business and biodiversity (also referred to as the Business and Biodiversity Initiative, BBI), which includes representatives from 23 companies and a number of key public organizations. The objectives of the BBI include environmental education of business companies and strengthening interaction with them to address biodiversity conservation issues more effectively (see also the WGWAP-19 report, item 8.2, and the WGWAP-20 report, item 6.4). The BBI provides scientific, methodological and analytical support to companies as they prepare their corporate biodiversity conservation programmes. For example, Minprirody has approved recommendations on the structure and content of biodiversity conservation programs for commercial organizations. In the future, it is envisaged that the BBI will implement measures for the restoration and reintroduction of rare species under agreements with commercial and non-commercial organizations. A number of these agreements have already been concluded for at least one priority species, the polar bear.

The plans of the Minprirody Working Group and the BBI related to gray whales and bowhead whales through 2024 include the following priorities:

- Establishment of an Expert Section on Cetaceans within the framework of the Federal project (a Minprirody Order is expected before the end of December 2020)

- Preparation of draft strategies for the conservation of the gray whale and bowhead whale populations in the Sea of Okhotsk and subsequent approval by Minprirody (the drafts already exist, prepared by the Marine Mammal Council, MMC)
- Based on the strategies, the Expert Section on Cetaceans will prepare the roadmaps for implementing the activities envisaged, with the follow-up approval of the Bureau of the Working Group on Priority Species
- Conclusion of agreements regarding collaboration with commercial and non-commercial companies within the BBI framework in order to ensure that the strategies and associated roadmaps are implemented
- Incorporation of the activities outlined in the roadmaps into the biodiversity conservation strategies of commercial companies, state and nonprofit organizations, and development of such strategies if necessary.

The necessary partnerships are already in place, and the chances appear good that the funding needed to implement the western gray whale conservation roadmap will become available under these corporate programs. The Ministry is already planning an extension of the project until 2030.

10.2 Marine Mammal Council (MMC)

Vladimir Burkanov, Chair of the MMC, explained it is a regional public organisation that has, for the past 25 years, sought to unify marine mammal scientists within Russia and internationally, conduct research, provide scientific advice to governmental bodies, organize conferences and generally support the study and conservation of marine mammals.

With regard to gray whale conservation, the MMC has recently collaborated with Minprirody, IUCN and WGWAP to produce a draft Programme and Strategy for the Conservation of western gray whales in the Russian Federation for the period 2021-2030. The MMC is willing and prepared to provide expert support to Minprirody.

Burkanov stressed that one of the challenges to western gray whale conservation in Russia, which can only be addressed by Minprirody, is the shortage of qualified specialists in some aspects of gray whale research. The stated view of the MMC leadership is that the participation of selected foreign colleagues in the activities of the Expert Section on Cetaceans would increase its effectiveness and benefit the conservation of this endangered whale population. After 2021, when WGWAP is no longer available, new collaborations among scientists, state authorities and industry as well as new sources of funding will be needed, and this will require the support of Minprirody, NGOs such as WWF Russia, and other entities with experience in facilitating such collaborations.

10.3 Discussion

The Panel commended Minprirody and the MMC for having the vision and willingness to take responsibility for advancing the conservation of western gray whales within Russia. The BBI connects Minprirody and the MMC to the commercial sector, and socially responsible companies are expected to contribute to the identification and establishment of priority areas for conservation as well as help find ways to reduce or at least mitigate the negative impacts of their activities. The BBI also intends to play a major role in raising public awareness of the many conservation challenges in Russia.

The Programme and Strategy for the Conservation of western gray whales in the Russian Federation must be completed and approved in 2021, and the roadmap should begin being implemented as soon as the strategy has been approved, i.e. by 2022. The federal project "Conservation of Biological Diversity and Ecological Tourism Development" is expected to extend from 2024 to 2030 (hence the western gray whale strategy and roadmap are also expected to apply until at least 2030).

Another relevant consideration is that the Memorandum of Cooperation (MoC) Concerning Conservation Measures for the Western Gray Whale Conservation exists among the Range States to encourage and enable countries to work together and take responsibility for protecting the whales at various life-cycle stages. The vision presented at this meeting by Minprirody and the MMC are consistent with the MoC and might serve as a model of what the other signatories should be trying to achieve.

11 INTERNATIONAL WHALING COMMISSION AND WESTERN GRAY WHALES

Iain Staniland, the new IWC Lead for Science, provided an overview of the role and continued interest of the IWC in gray whale conservation, highlighting progress made to date on: (i) the 5-year range-wide assessment to model and test stock structure scenarios, (ii) the MoC that has been signed so far by the Russian Federation, USA, Japan, Mexico and the Republic of Korea, (iii) the 2010 draft western gray whale Conservation Management Plan (CMP) with an aim to update and complete it in 2021 and (iv) further range-wide engagement via a stakeholder workshop.

The long-term monitoring programmes being conducted annually off Sakhalin were recognized by Staniland as critical to monitoring gray whales in the area and to staying regularly appraised of their status. Disappointment was expressed, however, about the cessation of behavioural studies, acoustic monitoring and benthic sampling, all deemed as vital components of population monitoring to better understand the acute and chronic impacts of human activities.

Staniland emphasized the long-standing recommendation and importance of ensuring that a 'joint catalogue' of western gray whales (together with associated data) is established and functioning under the auspices of the IWC, as envisioned by WGWAP and other bodies. Once realized, this photographic (and hopefully genetic) database will be a valuable scientific contribution and enduring legacy of IUCN, the Joint Programme companies and IWC.

Looking to the future, Staniland mentioned that the IWC intends to remain at the forefront of evaluating, analysing and applying data on gray whales for both scientific and conservation purposes, including those related to aboriginal subsistence whaling, ship strikes, bycatch (entanglement in fishing gear) as well as disturbance and injury caused by a variety of human activities. The Russian delegations to the Commission and its committees make important contributions to the work outlined above. Their continued involvement will be welcomed, as will the Minprirody and MMC initiative discussed under item 10 (above). There has always been, and continues to be, a great deal of overlap between the interests of WGWAP and IWC and it is hoped that their collaboration will be maintained, particularly as related to implementation of the MoC, CMP, stakeholder workshop and joint photo-id catalogue and database.

12 WGWAP RECOMMENDATIONS

Document WGWAP-21/29 is a spreadsheet of 41 recommendations that were either open or added at the time of the previous Panel meeting (WGWAP-20) and their current status[3]. Of these 41 recommendations, 33 are outstanding in one sense or another, meaning that IUCN expects the parties to WGWAP to address them over the coming months (the other 8 are classified as Closed – implemented/resolved satisfactorily). The vast majority (30) of these 33 outstanding recommendations were made at WGWAP-18, 19 or 20. Only 1 was made at WGWAP-13, 1 at WGWAP-16 and 1 at WGWAP-17. All 3 of these relatively 'old' recommendations have been 'closed', 1 having been superseded by a subsequent recommendation and the other 2 both judged to be 'closed', as they were no longer relevant when they became moot. Therefore, only 30 of the recommendations shown in the spreadsheet are arguably still under review.

Sakhalin Energy, the lenders and the Panel all have an interest in seeing as many of these recommendations implemented and 'closed' as possible before the end of 2021. The status of the 33 recommendations in question ranges from Open – no action yet taken, Open – in progress, Closed – with reservations, Closed – superseded, Closed – no longer relevant but had not been implemented/resolved satisfactorily at the time it became moot, Closed – moot, to Closed – implemented/resolved satisfactorily but needs to be tracked regularly.

Throughout the coming year the Panel, with support from IUCN and in consultation with Sakhalin Energy, will endeavour to ensure that the Recommendations database has been thoroughly updated and curated and that all outstanding recommendations have been carefully considered for closure in one form or another.

13 PLANS FOR FINAL INDEPENDENT EVALUATION OF WGWAP 2004-2021

Silvia Guizzardi (IUCN) provided an overview of plans for the final 'independent impact evaluation' of WGWAP 2004-2021, which is meant to cover the entire lifespan of IUCN's engagement in gray whale conservation from 2004 to the present, in contrast to the previous evaluations[4] that focussed on the most recent 3-4 years. According to IUCN, this final evaluation is expected to achieve the following:

- Provide a comprehensive assessment of contributions by the WGWAP process to the conservation of western gray whales based on scientific evidence, with a focus on causality and sustainability.
- Consolidate best practices and lessons learned, thereby offering guidance and recommendations to Sakhalin Energy, other energy companies, national and local authorities and others on how knowledge generated through the WGWAP process can be preserved and disseminated to support conservation efforts long after the Panel has come to an end. Such guidance and recommendations should also inform existing or future similar processes involving cooperation between conservation actors and governments,

[3] All recommendations and their up-to-date status are publicly available online at https://www.iucn.org/western-gray-whale-advisory-panel/recommendations
[4] See https://www.iucn.org/western-gray-whale-advisory-panel/panel/evaluations

investors and industries whose activities have the potential for significant environmental and conservation risks.

Meeting participants were assured that there would be ample opportunity for the Panel and others to provide input to the evaluation although the design of the process had not yet been finalized. Guizzardi indicated that there would likely be formal interviews of key stakeholders, an online questionnaire and a final validation workshop. An evaluation matrix to include key questions for the main actors will be shared with the Company, the Panel, and the relevant IUCN staff before being finalised.

According to Guizzardi, the main audiences for the final evaluation are meant to be agencies, organizations and individuals involved in the study and conservation of western gray whales, other IUCN panels and all the industry actors operating on the Sakhalin shelf.

To ensure credibility and independence, the evaluation will be conducted by an experienced external (i.e. non-IUCN) evaluator (or team of evaluators) that should be on board by January 2021. The evaluation report is expected to be completed by July 2021 and it will inform IUCN's final communications effort to frame and promote the legacy of the Panel during the remainder of the year.

14 PANEL LEGACY AND 2020-2021 WORKPLAN

14.1 Legacy

Document WGWAP-21/27, entitled "Papers and Reports Related to the Work of IUCN Independent Scientific and Technical Advisory Panels on Western Gray Whales," is an initial draft made available to participants with the expectation that they would provide feedback in the form of suggested additions, deletions and revisions either during or after the meeting. The document covers the period from 2004 to 2021 and includes a variety of types of 'legacy' products, the majority of which are currently (or soon will be) accessible on the WGWAP website[5] – workshop and meeting reports, guidelines documents describing best practice, public statements from the Panel, distribution maps, published journal articles and the searchable database of Panel recommendations.

A number of participants (observers in particular) commended IUCN and the Panel for producing such a well-organized, well-curated website that has become a valuable resource for many users. There was concern that the website might no longer be available after WGWAP ceases to exist at the end of 2021. However, Berzina-Rodrigo and Carbone Khodabakhsh gave assurances that the website, including the Recommendations database, would remain functional and accessible post-2021. How this will happen remains to be determined. One potentially useful addition to the website (which could be made immediately or as soon as feasible) would be to include a tab headed 'Relevant Links' (or something similar) that provides a path to publicly available, but not always easy to find, reports and other documents (e.g. Marine Mammal Protection Plan, seismic survey Monitoring and Mitigation Plans) produced by Sakhalin Energy. Also, it was suggested that although the WGWAP website contains a wealth of information that would

[5] Workshop and meeting reports, guidelines documents describing best practice, public statements from the Panel, distribution maps, published journal articles and the all-important searchable database of Panel recommendations.

otherwise not be openly available, or would at least remain very difficult to find, IUCN could do even more in this regard. The WGWAP secretariat could check which documents that were considered confidential when initially presented to the Panel in earlier years but have since become unrestricted and could therefore be added to the archive of openly accessible material on the website.

In a discussion of the various ways and contexts in which the WGWAP body of work has been used, Alexandre Campos (Shell International) stated that he used the website as a unique repository of information, both general and detailed, on industry 'best practice'. He further noted that others in the offshore oil and gas sector likely used it for this purpose as well. Jon Hancox (observer from Ramboll, on behalf of the Sakhalin Energy lenders) indicated that he considered the website 'essential' to his work but noted that he was uncertain how well-known and publicised it is throughout the industry. Patrick Ramage (observer from IFAW) agreed that the website serves as a very useful clearinghouse, point of reference and shop window both for those engaged directly in the WGWAP process and for those unfamiliar with the Panel's work.

Several Panel members noted that they use the WGWAP process and documentation in their academic work. Nowacek encourages his graduate students at Duke University to consult WGWAP documents and he expressed the view that the material, as a whole, could serve as the basis for an interesting PhD project. Many of New's students at Washington State University are interested in the science-policy interface, and she frequently cites the WGWAP process as an example of the complexities, compromises and cross-cultural cooperation required for science, government and industry to resolve differences. Finally, Torres stated that she often cites WGWAP in the classroom to illustrate a transparent, interdisciplinary approach to conservation management. She finds that the website contains excellent teaching material.

Carbone Khodabakhsh stressed that transparency and independence were key elements of the IUCN's Procedures for establishing IUCN scientific and technical advisory panels[6], which are currently being updated, and this is reflected in the WGWAP Terms of Reference[7]. Through its engagement with IUCN and the Panel, Sakhalin Energy stands out in the offshore oil and gas industry because of the degree to which its activities, policies and practices are regularly subjected to scrutiny by independent experts and NGOs within an open process. WGWAP enables the Company to engage constructively with multiple stakeholders under clear terms and conditions meant to lead to practical, scientifically robust advice on how to prevent, or at least mitigate, the impacts of its activities on Sakhalin gray whales.

14.2 Workplan

WGWAP will continue to provide routine review and advice on Sakhalin Energy's ongoing activities and plans (including the Company's efforts to establish compliance with IFC PS 6 – see item 9) until the end of the IUCN-Sakhalin Energy agreement (March 2022). The 2-year (2020-2021) WGWAP workplan presented last November at the WGWAP-20 meeting is included in document WGWAP-21/28. In addition to its continued interaction with Sakhalin Energy and its contractors, the plan focuses on developing and delivering a number of products intended to capture what has been learned about western gray whales and their conservation over the past 15+ years and to help ensure that conservation efforts continue into the future. Most notably, it is expected that Panel members, in collaboration with other experts, will complete and

[6] https://www.iucn.org/sites/dev/files/import/downloads/iucn_istap_procedures_2014.pdf
[7] https://www.iucn.org/sites/dev/files/content/documents/tor_wgwap_2017-2021.pdf

publish a series of journal articles in the primary literature, and IUCN will take the lead in producing brochures on best practices, the final WGWAP independent evaluation (see item 13) and the compendium of papers and reports described under item 14.1.

The workplan is intentionally designed to support the objectives of the Minprirody Working Group on Priority Species and the Minprirody Working Group on Business and Biodiversity, in line with the associated priorities of the national project 'Ecology' for 2019-2024 (see item 10). Specifically, if a decision is made within the Russian government to establish an expert section on marine mammals that would contribute to the development and implementation of a Russian Federation Conservation Strategy and Roadmap for Western Gray Whales in 2021-2030, IUCN and the Panel are prepared to lend their support.

The meeting schedule for 2021 tentatively includes the following:

- Early 2021 – a series of virtual sessions of the Offsets Working Group
- Spring 2021 – NTF-19 which will likely consist of a series of virtual sessions
- Throughout 2021 – ad hoc technical sessions (virtual) for selected Panel members and Company representatives focussed on specific 'open' recommendations and issues that have yet to be resolved (as a lead-up to the final WGWAP meeting)
- Late 2021 – final meeting of the Panel (WGWAP-22) in Moscow if feasible and safe.

Other events of relevance include several that were postponed from 2020 to 2021 due to the pandemic: IWC Scientific Committee annual meeting, currently scheduled for 27 April to 9 May 2021; IWC biennial meeting, currently scheduled for 3-10 September 2021; IUCN World Conservation Congress in Marseilles, France currently also scheduled for 3-10 September 2021; 11th international conference 'Marine Mammals of the Holarctic' planned for 1-5 March 2021. Additional events may arise that would benefit from contributions by Panel members, IUCN or Sakhalin Energy but these will be identified and considered in due course.

15 CLOSING REMARKS

Burdin offered special thanks to IFAW (citing Ramage and Masha Vorontsova individually) for supporting the fieldwork at Sakhalin by him and his collaborators over the past 25 years. He also thanked present and former Panel members and the IUCN Secretariat for their help and support over the past 15 years. He expressed hope that the WGWAP legacy will be recognized and above all that gray whales will continue their recovery in the Russian Far East and elsewhere in their historical range in Asia.

The meeting closed on a positive note, with Reeves, Alcock and Maginnis, speaking on behalf of the Panel, Sakhalin Energy and IUCN, respectively, all acknowledging that WGWAP had provided a valuable platform for frank, constructive, transparent exchanges of expertise and opinion, leading, not always but often, to workable solutions to difficult problems. They were optimistic that the coming year of transition would result in a strong and enduring WGWAP legacy on which Russian scientists and conservationists can build.

One note of concern was that our colleagues Andrey Samatov and Alexander Rutenko were unable to join the meeting because of illness. Reeves passed on the good wishes of the Panel to

Samatov and Rutenko, who were ill, and asked that Alcock let them know the Panel was thinking of them.

The Panel was advised shortly after the meeting that Dr Rutenko, a valued friend and colleague, had died. The Panel expressed condolences as well as admiration for Dr Rutenko's scientific legacy.

16 REFERENCES

Burnett, J. D., Lemos, L., Barlow, D., Wing, M. G., Chandler, T., & Torres, L. G. (2019). Estimating morphometric attributes of baleen whales with photogrammetry from small UASs: A case study with blue and gray whales. Marine Mammal Science, 35(1), 108-139. doi:10.1111/mms.12527.

Christiansen, F., Dawson, S. M., Durban, J. W., Fearnbach, H., Miller, C. A., Bejder, L., Uhart, M., Sironi, M., Corkeron, P., Rayment, W., Leunissen, E., Haria, E., Ward, R, Warick, H.A., Kerr, I., Lynn, M.S., Pettis, H.M. & Moore, M. J. (2020). Population comparison of right whale body condition reveals poor state of the North Atlantic right whale. Marine Ecology Progress Series, 640, 1-16.

Christiansen, F., Dujon, A. M., Sprogis, K. R., Arnould, J. P. Y., & Bejder, L. (2016a). Noninvasive unmanned aerial vehicle provides estimates of the energetic cost of reproduction in humpback whales. Ecosphere, 7(10), e01468-n/a. doi:10.1002/ecs2.1468.

Christiansen, F., Rojano-Doñate, L., Madsen, P.T. and Bejder, L. (2016). Noise levels of multi-rotor unmanned aerial vehicles with implications for potential underwater impacts on marine mammals. Frontiers in Marine Science 3: Article 277.

Christiansen, F., Vivier, F., Charlton, C., Ward, R., Amerson, A., Burnell, S., & Bejder, L. (2018). Maternal body size and condition determine calf growth rates in southern right whales. Marine Ecology Progress Series, 592, 267-281.

Deng, Z.D., Southall, B.L., Carlson, T.J., Xu, J., Martinez, J.J., Weiland, M.A. & Ingraham, J.M. (2014). 200 kHz Commercial Sonar Systems Generate Lower Frequency Side Lobes Audible to Some Marine Mammals. PLoS ONE 9(4): e95315. doi:10.1371/journal.pone.0095315.

Ditmer, M. A., Vincent, J. B., Werden, L. K., Tanner, J. C., Laske, T. G., Iaizzo, P. A., Garshelis, D.L. & Fieberg, J. R. (2015). Bears Show a Physiological but Limited Behavioral Response to Unmanned Aerial Vehicles. Current Biology, 25(17), 2278-2283. doi:https://doi.org/10.1016/j.cub.2015.07.024.

Durban, J.W., Fearnbach, H., Barrett-Lennard, L., Perryman, W., & Leroi, D. (2015). Photogrammetry of killer whales using a small hexacopter launched at sea. Journal of Unmanned Vehicle Systems, 3(3), 131-135.

Durban, J. W., Moore, M. J., Chiang, G., Hickmott, L. S., Bocconcelli, A., Howes, G., Bahamonde, P.A, Perryman, W.L. & LeRoi, D.J. (2016). Photogrammetry of blue whales with an unmanned hexacopter. Marine Mammal Science, 32(4), 1510-1515. doi:10.1111/mms.12328.

Frankel, A.S. and Stein, P.J (2020). Gray whales hear and respond to signals from a 21–25 kHz active sonar. Marine Mammal Science 36:1111–1125. https://doi.org/10.1111/mms.12700

Gailey, G., Sychenko, O., Tyurneva, O., Yakovlev, Yu., Vertyankin, V., van der Wolf, P., Drozdov, K. & Zhmaev, I. (2020). Effects of sea ice on growth rates of an endangered population of gray whales. Nature Scientific Reports 10:1553. doi:10.1038/s41598-020-58435-3.

Martínez-Aguilar, S., Casanovas-Gamba, P., Farriols-García, M., González-Cisneros, A., Heaven, J.D., Castillo-Romero, F., Zaragoza-Aguilar, G.A., Rivera-Rodríguez, J., Mariano-Meléndez, E., López-Paz, N., Huerta-Patiño, R., Swartz, S.L., Viloria-Gómora, L. & Urbán, R., J. (2020). Gray whale stranding records in Mexico during the 2020 winter breeding season. IWC Scientific Committee document SC/68B/CMP09. iwc.int.

Mate, B. R., Ilyashenko, V. Y., Bradford, A. L., Vertyankin, V. V., Tsidulko, G. A., Rozhnov, V. V. & Irvine, L. M. (2015). Critically endangered western gray whales migrate to the eastern North Pacific. Biology Letters 11: 20150071.

NOAA Fisheries, Protected Resources Division (2017). Introduction to the West Coast Marine Mammal Stranding Network & 10 Year Data Summary. www.fisheries.noaa.gov/webdam/download/99262516.

Perryman, W.L., Joyce, T., Weller, D.W. & Durban, J.W. (2021). Environmental factors influencing eastern North Pacific gray whale calf production 1994-2016. Marine Mammal Science 37(2):in press. doi: 10.1111/mms.12755.

Soledade Lemos, L., Burnett, J. D., Chandler, T. E., Sumich, J. L., & Torres, L. G. (2020). Intra- and inter-annual variation in gray whale body condition on a foraging ground. Ecosphere, 11(4), e03094. doi:10.1002/ecs2.3094

Urbán, R. J., Weller, D., Martínez, A. S., Tyurneva, O., Bradford, A., Burdin, A., Lang, A., Swartz, S., Sychenko, O., Viloria-Gómora, L. & Yakovlev, Y. (2019). New information on the gray whale migratory movements between the western and eastern North Pacific. IWC Scientific Committee doc. SC/68a/CMP/11. portal.iwc.int/e/sc68a/documents.

Weller, D.W., Takanawa, N., Ohizumi, H., Funahashi, N., Sychenko, O.A., Burdin, A.M., Lang,A.R. & Brownell, R.L., Jr. (2016). Gray whale migration in the western North Pacific: further support for a Russia-Japan connection. Paper SC/66b/BRG16 presented to the IWC Scientific Committee, June 2016.

17 SUMMARY OF RECOMMENDATIONS FROM THE 21ST MEETING OF THE WGWAP

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party / Parties	Target Completion Date	Response from responsible party / parties
2 NOISE ISSUES					
WGWAP-21/01	2.4	The Panel stressed that one of the most important updates [of Sakhalin Energy's Monitoring and Mitigation Plan for its future seismic surveys] will be to ensure that acoustic monitoring, including obtaining at least some real-time data on sound levels, is included very early in the survey planning process and, ideally, embedded within the operational plans for the survey so that it cannot be cancelled as it was in 2018…The Panel **recommends** that Sakhalin Energy make every reasonable effort to include real-time acoustic monitoring in the operational program [of its future seismic surveys) submitted to authorities for approval.	Sakhalin Energy	Commitment by NTF-19 meeting (Spring 2021) to implement this recommendation	
WGWAP-21/02	2.5	The Panel is concerned about several of the noise-generating activities [that Sakhalin Energy plans to carry out in relation to annual survey and inspection of subsea assets and maintenance], primarily the: (i) acquisition of 2D Ultra-high Resolution Multichannel Seismic Data, (ii) Multibeam Echo Sounder, (iii) Side Scan Sonar, (iv) Sub-bottom Profiler and (v) Acoustic Doppler Current Profilers…The Panel **recommends** that the output of the systems to be used be carefully measured so that the full characteristics of the signal can be better understood.	Sakhalin Energy	Prior to NTF-19 meeting, Spring 2021	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party / Parties	Target Completion Date	Response from responsible party / parties
3 RESULTS OF JOINT PROGRAMME IN 2019 AND PRELIMINARY RESULTS IN 2020					
WGWAP-21/03	3.1.2	The Panel **recommends** that a proper multi-year analysis of all data on abundance and distribution be conducted. This analysis should take account of survey area, timing and effort, characteristics of the observation platform, observer capacity, and environmental conditions. Only after such an analysis has been completed can the Company claim to have reached data-supported conclusions, rather than making only qualitative descriptions, regarding trends in distribution and abundance. The Panel reiterates its longstanding offer to help with this analysis.	Sakhalin Energy	Prior to WGWAP-22	
6 OIL SPILL RESPONSE PLANNING					
WGWAP-21/04	6	The Panel therefore **recommends** that the Company provide either the … two documents [*Procedure for decision making on the application of burning of marine oil spills in ice conditions at the Piltun-Astokhskoye and Lunskoye fields* (0000-S-90-04-O-0014-00-E, Appendix 17) and *Procedure for decision making on dispersants application for oil spills* (0000-S-90-04-O-0014-00-E, Appendix 16)] or the full version of Appendix B [of Sakhalin Energy's Guide to Oil Spill Response in Cold and Ice Conditions (Oil in Ice)] for Panel review. It would also be helpful if the Company would provide (i) specific details on the response equipment that it holds for winter	Sakhalin Energy	As soon as possible in early 2021	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party / Parties	Target Completion Date	Response from responsible party / parties
		use offshore, particularly for ISB [in-situ burning] and (ii) an update on any winter offshore response exercises that have been held recently or are planned for 2021.			
7 SAKHALIN ENERGY'S MARINE MAMMAL PROTECTION PLAN (MMPP)					
WGWAP-21/05	7.2.2	Quantitative assessment of body condition of baleen whales using drone imagery is a powerful technique to evaluate 'population health' over time (i.e. between years) and across populations (e.g. western vs eastern gray whales). Field (Burnett et al. 2019) and analytical measurement methods are now standardized and accessible through free and easy-to-use software… The Panel **recommends** that Sakhalin Energy collect appropriate aerial images of gray whales … for quantitative body condition assessment.	Sakhalin Energy	Prior to WGWAP-22	

APPENDIX 1

OVERVIEW OF OIL AND GAS PROJECTS AND LICENSE BLOCKS/FIELDS IN OR NEAR WESTERN GRAY WHALE FEEDING AREAS OFF NORTH-EASTERN SAKHALIN

Summary of publicly available information prepared by IUCN (updated)

Note: The information sources used to prepare this summary include company websites, annual and sustainability reports, tender information, the list of projects subject to State Environmental Expert Review (SEER, Russia), media releases, news articles, as well as NGOs. The schematic map below (Fig.1) is based on publicly available information and is intended for illustrative purposes only (not to scale). The designation and depiction of areas on this map should not be interpreted as any opinion on the part of IUCN or WGWAP concerning the legal status, authorities or operators, or delimitation of boundaries. Coordinates, boundaries etc. on the map are not exact and therefore should not be used as such. Compiled by Anete Berzina-Rodrigo and Zanda Krukle.

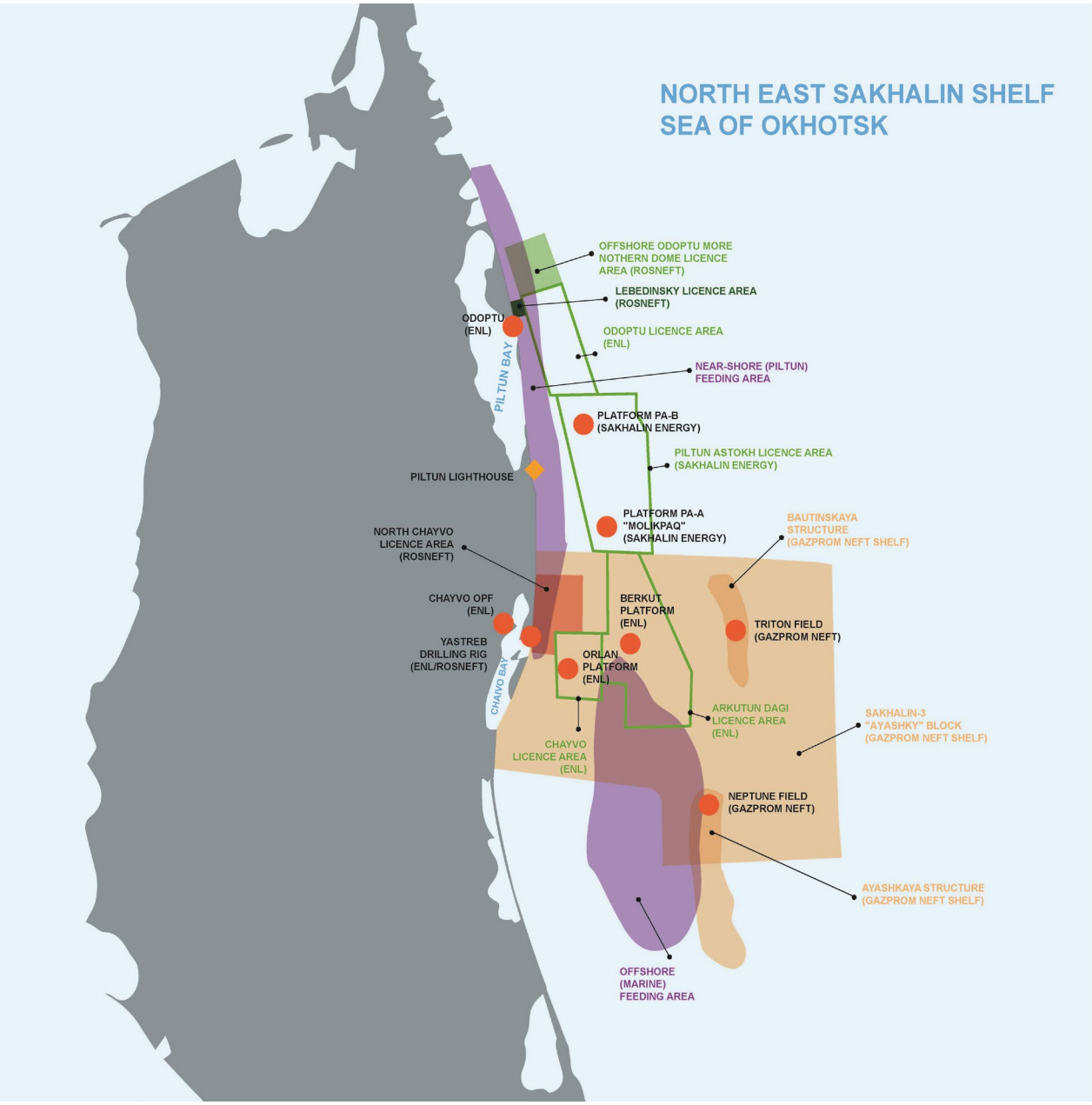

Fig. 1 Schematic map showing the approximate locations and boundaries of oil and gas development areas, platforms and other facilities in or near the gray whale feeding areas off north-eastern Sakhalin.

Sakhalin Energy Investment Company Ltd.

Participants
Production Sharing Agreement (PSA) with Russian party, represented by:

- the State (Russian Federation Government)
- the Sakhalin Oblast Administration

Shareholders:

- Gazprom (50%+1 share)
- Royal Dutch Shell plc (27,5% - 1 share)
- Mitsui (12.5%)
- Mitsubishi (10%)

Website: https://www.sakhalinenergy.ru/

Sakhalin-2 project, Piltun-Astokh

Phase
Production

Assets / infrastructure
2 offshore oil and gas platforms:

- Piltun-Astokhskoye-A (PA-A / Molikpaq)
- Piltun-Astokhskoye-B (PA-B)

Trans-Sakhalin pipeline system

Activities 2020
See the WGWAP-21 meeting report above and associated documents

Planned activities 2021+
See the WGWAP-21 meeting report above and associated documents

Note: Another block, Lunskoye, is located to the south, away from western gray whale feeding areas.

Exxon Neftegas Limited
(a subsidiary of ExxonMobil)

Participants
PSA with Russian party, represented by

- the State (Russian Federation Government)
- the Sakhalin Oblast Administration

Shareholders:

- U.S.-based ExxonMobil 30%
- Russian State-owned company Rosneft acting via its affiliates RN-Astra (8.5%) and Sakhalinmorneftegas-Shelf (11.5%);
- Japanese consortium SODECO 30%;
- Indian state-owned oil company ONGC Videsh Ltd. 20%

Website: https://www.sakhalin-1.com/

Sakhalin-1 project, Arkutun-Dagi block

Phase
Production since 2015

Assets / infrastructure

- Field developed using Berkut, Russia's biggest oil and gas drilling platform.[8]
- Production from the block is transferred to the existing Chayvo onshore processing facility (OPF) via an approximately 25km-long well-stream flowline. [9]
- To date, 32 wells have been drilled from the platform.[10]

Activities 2020

- Production
- Engineering study for construction at Central and South Dagi fields ongoing.[11]
- EIA process for 3D (4D) seismic survey ongoing. [12]
- EIA process for construction of 6 wells is ongoing. [13]

Planned activities 2021+

- 3D seismic survey is currently planned for 2021 in order to obtain data for 4D studies (4D surveys involve performing 3D surveys over several years). The company's EIA materials indicate that, depending on a number of factors, including economic and epidemiological conditions, the seismic survey may require postponement to the period of 2022-2024.[14]

[8] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities
[9] https://www.sakhalin-1.com/-/media/Sakhalin/Files/Environment-and-safety/Public-consultations-and-assessments/RUS/AD-Blanket-Proekt_PC-Materials_General-Info-st1.pdf; https://www.offshore-technology.com/projects/arkutun-dagi-oil-gas-field/; https://www.oedigital.com/news/453631-exxonmobil-starts-up-arkutun-dagi;
[10] https://www.sakhalin-1.com/-/media/Sakhalin/Files/Environment-and-safety/Public-consultations-and-assessments/RUS/AD-Blanket-Proekt_PC-Materials_General-Info-st1.pdf
[11] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[12] Ibid
[13] Ibid
[14] Ibid

-
- Plans to develop Central and South Dagi fields, which is expected to increase production by 20%.[15]
- Drilling of new wells (10 sidetracks from 10 existing production wells) planned in 2021-2030. [16]
- 6 wells to be drilled in 2020-2022.[17]
- Plans to develop drilling and technological waste disposal site in 2020-2021.[18]

Sakhalin-1 project, Chayvo block

Phase
Production since 2005

Assets / infrastructure

- Oil and gas extracted from onshore site (using Yastreb drilling rig) and offshore Orlan platform using wells with lengthy boreholes[19].
- In 2017, the operator drilled the world's longest well from the Orlan platform. The length of the well, including a horizontal completion, is 15 km.[20]
- In total, there are currently 31 wells, including 1 waste injection well and 30 production wells (24 oil production and 6 gas injection wells).[21]
- Pipeline for transporting oil to the De-Kastri oil export terminal in the Khabarovsk Territory[22]
- Oil and gas produced from the Sakhalin-1 fields is transported to the Chayvo Onshore Processing Facility (OPF), which stabilizes oil for shipment to the international market and gas for supply to the Russian domestic market or reinjection to the field to maintain reservoir pressure.[23] The Chayvo OPF was reconstructed in 2018.[24]

Activities 2020

- EIA process for 3D (4D) seismic survey ongoing.[25]
- Front-end engineering and design are underway to construct a Far East LNG plant at the Pacific port of De Kastrii with Japanese partners.[26]
- EIA process for drilling a group of wells at Chayvo and geophysical offshore surveys for the LNG plant ongoing, as is a Strategic Environmental Assessment (SEA) process for further development of the field.[27]
- The Sakhalin-1 partners reached agreement with RN-Sakhalinmorneftegaz (a Rosneft subsidiary) to allow use of Sakhalin-1 infrastructure in place of Rosneft's aging Okha – Komsomolsk-on-Amur oil transportation pipeline at neighbouring fields operated by this and other Rosneft subsidiaries (see below).[28]

[15] Ibid
[16] Ibid
[17] Ibid
[18] Ibid
[19] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities.
[20] https://www.rosneft.com/upload/site2/document_file/a_report_2017_eng.pdf#page=76
[21] https://www.sakhalin-1.com/ru-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[22] Ibid
[23] Ibid
[24] https://gge.ru/press-center/news/glavgosekspertiza-odobrila-proekt-rekonstruktsii-beregovogo-kompleksa-podgotovki-bkp-chayvo-proekt-s/
[25] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[26] https://neftegaz.ru/news/spg-szhizhennyy-prirodnyy-gaz/633487-zaklyuchen-kontrakt-na-predvaritelnoe-proektirovanie-spg-zavoda-dalnevostochnyy-spg/
[27] Ibid
[28] https://www.interfax.ru/business/728080

Planned activities 2021+

- Expansion of natural gas resource development at Chayvo field (Chayvo Phase 2), which will require drilling additional wells and expanding onshore and offshore facilities[29], is scheduled for 2021 – 2027.[30]
- The Far East LNG plant project will include expanding existing Sakhalin-1 Project facilities. The Chayvo OPF will be expanded by adding gas dehydration treatment and compression facilities. The Yatreb rig will drill a new set of wells to develop non-associated gas. A new gas pipeline will be constructed from Chayvo OPF to De-Katri in the existing pipeline corridor, and a new LNG plant will be built near the Sakhalin-1 De-Kastri oil export terminal in Khabarovsk Krai, leveraging logistical synergies and the marine infrastructure ENL has in place.[31]
- 3D seismic survey is currently planned for 2021 in order to obtain data for 4D studies (4D surveys involve performing 3D surveys over several years). The company's EIA materials indicate that, depending on a number of factors, including economic and epidemiological conditions, the seismic survey may require postponement to the period of 2022-2024.[32]
- A comprehensive offshore engineering survey programme (incl. seismic surveys) for design of the Far East facility complex to produce LNG is planned for 2020- 2022[33], as well as for development of the Chayvo field.[34]
- The Far East LNG plant's potential start of operation is 2027.[35]
- Drilling work for a group of wells is scheduled for 2020-2027.[36]
- Reconstruction and development of Sakhalin-1 facilities, incl. reconstruction of the Chayvo Drilling Site and the Onshore Processing Complex[37, 38]

Sakhalin-1 project, Odoptu block

Phase

Production since 2010

Assets / infrastructure

- Oil produced from an onshore site using super-extended reach horizontal wells (extending over 9 km under the Okhotsk Sea).[39]
- During Odoptu Stage 1, the Yastreb rig drilled a total of nine wells. Upon completion of the drilling operations at Odoptu, Yastreb was decommissioned and returned to Chayvo.[40]
- The full-scale operations in Piltun Bay began in 2016, but preliminary development activities for Odoptu Stage 2 began in advance.[41]

[29] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities
[30] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[31] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities
[32] Ibid
[33] Ibid
[34] Ibid
[35] https://interfax.az/view/778698; https://ria.ru/20190924/1559026525.html; https://todaykhv.ru/news/economics-and-business/22472/ and https://tass.ru/ekonomika/6919656
[36] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[37] Ibid
[38] Ibid
[39] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities and https://www.rosneft.com/upload/site2/document_file/a_report_2019_eng.pdf#page=38
[40] Ibid
[41] Ibid

- As part of Odoptu Stage 2, a production well was drilled from the new onshore rig Krechet in 2017 and the production began December 2017, which doubled the facility's capacity. [42]
- Possibly, another production well OP-26 was built in 2019.[43]

Activities 2020

- Production
- EIA for drilling of 18 wells from Odoptu-1 is ongoing.[44]
- Possibly, construction of 1 well ongoing (O-39).[45] It was also planned to drill a well (OSD-1) that will be used for the pumping of drilling and other technological waste.[46]
- The Sakhalin-1 partners reached agreement with RN-Sakhalinmorneftegaz (a Rosneft subsidiary) to allow use of Sakhalin-1 infrastructure in place of Rosneft's aging Okha – Komsomolsk-on-Amur oil transportation pipeline at neighbouring fields operated by this and other Rosneft subsidiaries (see below).[6]

Planned activities 2021+

- Reconstruction and development of Sakhalin-1 facilities.
- In the future, the Krechet will be used to drill 33 more wells at the Odoptu North and Odoptu South well sites. [47]
- Drilling of 18 wells from the drilling site Odoptu-1 (Yuzhnaya) is scheduled for 2020-2027.[48]

Sakhalin-1 project, Lebedinskoye field (within the Odoptu license area)

According to 2019 Rosneft Annual Report[49], and other public sources[50] the Sakhalin-1 project involves the development of Lebedinskoye field (within the Odoptu license area), in addition to Chayvo, Odoptu-Sea and Arkutun-Dagi. It is unclear whether this is a portion of the RN-Sakhalinmorneftegaz's Lebendinskoye field operated by ENL or a separate ENL Lebendinskoye field (adjacent to the RN-Sakhalinmorneftegaz's one). The two are listed separately in the 2019 Rosneft Annual Report. Although Lebendiskoye is not listed among the facilities of the Sakhalin-1 project on its website[51], there are references to the development of the Lebedinsky (and also Odoptu Sea) field deposits that are being conducted from Sakhalin-1 drilling sites within Odoptu license area.[52]

[42] Ibid
[43] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[44] Ibid, see also https://www.interfax-russia.ru/far-east/news/exxon-planiruet-postroit-18-skvazhin-na-sahaline-1-do-2028g
[45] Ibid
[46] Ibid
[47] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities and
[48] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[49] https://www.rosneft.com/upload/site2/document_file/a_report_2019_eng.pdf#page=38
[50] https://www.interfax.ru/business/720628
[51] https://www.sakhalin-1.com/en-RU/Company/Who-we-are/Phases-and-facilities
[52] See documents avaialble at https://www.sakhalin-1.com/ru-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment

RN-Sakhalinmorneftegaz LLC (a subsidiary of Rosneft)

Participants
Russian State-owned Rosneft 100%

Website: https://www.rosneft.com/

Lebedinskoye field

Phase
Pilot operation of the field began in 2015.

Assets / infrastructure

- Development of the Lebedinsky (and also Odoptu Sea) field deposits is conducted from Odoptu 2 (North) drilling site within ENL's Sakhalin-1 project.[53]
- 4 production wells pump oil from shore.[54]
- 2017 project was carried out to further delineate boundaries of the field; this expanded its area and resource base. [55]
- A pipeline between Lebedinskoye field and the neighbouring Odoptu-Sea field was constructed in 2017 and commissioned in 2018 to increase safety of operations.[56]

Activities 2020
No further information available in public domain

Planned activities 2021+
No further information available in public domain

Note: As mentioned above, according to 2019 Rosneft Annual Report[57] and other public sources[58] a portion of the Lebedinskoye field within the Odoptu license area is listed being a part of the Sakhalin-1 project (operated by ENL and including Rosneft subsidiaries as shareholders). Lebendiskoye is not mentioned on the Sakhalin-1 website. No further details are available in the public domain.

[53] See documents avaialble at https://www.sakhalin-1.com/ru-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[54] https://www.rosneft.com/upload/site2/document_file/a_report_2019_eng.pdf#page=38
[55] https://www.rosneft.com/upload/site2/document_file/a_report_2017_eng.pdf#page=76
[56] Ibid, https://www.rosneft.ru/business/Upstream/offshore/ and https://llcrnnakhodkanefteprodukt.rosneft.com/business/Upstream/Offshoreprojects/
[57] https://www.rosneft.com/upload/site2/document_file/a_report_2019_eng.pdf#page=38
[58] https://www.interfax.ru/business/720628

Offshore-Odoptu / Odoptu-Sea field (Northern dome)

Phase
Production since 1998 (Russia's first offshore field)

Assets / infrastructure

- Oil and gas produced from horizontal wells operated/drilled from shore.
- Development of the Odoptu Sea (and also Lebedinsky) field's deposits is currently conducted from the Odoptu 2 (North) drilling site (within the ENL's Sakhalin-1 project), however, according to the Technological Scheme of the Odoptu-sea field development, starting from 2021 the Company plans to continue developing fields from the drilling site Odoptu 1 (South) that was put into an operation in 2018.[59]
- Total of at least 49 extended-reach development wells with lengths 5-8 km.[60] As of January 2019 the wellstock consisted of 28 oil producing wells and 7 injection wells. [61] In 2019, 3 additional production wells were drilled and put into operation[62].
- Oil and gas collection and treatment facilities, a reservoir pressure maintenance system, pipelines for transporting oil, gas and water from field, and power-generating facilities.
- A pipeline between the neighbouring Lebedinskoye Field and Odoptu-Sea Field was constructed in 2017 and commissioned in 2018 to increase safety of operations.[63]

Activities 2020

- Due to aging of the Okha – Komsomolsk-on-Amur oil transportation pipeline and an oil spill, the operator reached an agreement with the Sakhalin-1 operator (ENL) to build a connection to the Sakhalin-1 oil transmission pipeline.[64] RN-Sakhalinmorneftegaz has temporarily suspended production at 16 facilities, including the Mukhto, Kolendo, Dagi, Nabil, Odoptu, Kadylanyi and other fields, possibly also Odoptu-Sea Field (Northern Dome) [65] , however, no further details are available in the public domain.

Planned activities 2021+

- The approximate date for resumption of construction of infrastructure to connect to the Sakhalin-1 pipeline is July 2022.[66]

[59] See documents available at https://www.sakhalin-1.com/ru-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment
[60] https://www.rosneft.ru/press/news/item/199693/ and http://www.sakhoil.ru/article_789_88.htm
[61] https://llcrnnakhodkanefteprodukt.rosneft.com/business/Upstream/Offshoreprojects/
[62] https://www.rosneft.ru/press/news/item/199693/
[63] https://www.rosneft.com/upload/site2/document_file/a_report_2019_eng.pdf#page=38
[64] https://www.interfax.ru/business/728080
[65] https://dprom.online/oilngas/dochka-rosnefti-ostanovit-dobychu-na-2-goda-iz-za-avarii/
[66] https://www.kommersant.ru/doc/4443672

RN-Shelf Far East JSC (a subsidiary of Rosneft)

Participants
Russian State-owned Rosneft 100%

Website: https://www.rosneft.com/

Northern tip of Chayvo field

Phase
Production since 2014

Assets / infrastructure

- Oil production from 5 wells with unique, complex design and extended reach (horizontal displacement)[67]
- Effectiveness of the project is achieved by using existing Sakhalin-1 project infrastructure,[68] e.g. Yastreb rig was used to drill wells from shore[69];
- Permanent oil collection and metering systems for construction of onshore production facilities.[70]

Activities 2020

- EIA process for 3D (4D) seismic survey ongoing (as a part of ENL's Sakhalin-1 planned seismic programme for its adjacent Chayvo and Arkutun Dagi fields, similar to practice in previous years).[71]
- From May 2020, oil production in this block was temporarily restricted to comply with the OPEC+ deal for 2 years.[72]
- Due to aging of the Okha – Komsomolsk-on-Amur oil transportation pipeline and an oil spill, the operator has reached an agreement with the Sakhalin-1 operator (ENL) to build a connection to the Sakhalin-1 oil transmission pipeline. [73] RN-Sakhalinmorneftegaz has temporarily suspended production at 16 facilities, including the Mukhto, Kolendo, Dagi, Nabil, Odoptu, Kadylanyi and other fields, which may include the northern tip of Chayvo field, however, unclear since no further information available in the public domain. [74]

[67] https://www.rosneft.com/upload/site2/document_file/a_report_2019_eng.pdf#page=38 and https://www.rosneft.com/upload/site2/document_file/a_report_2018_eng.pdf#page=17
[68] https://www.rosneft.com/press/news/item/153311/
[69] https://www.offshore-mag.com/drilling-completion/article/16783589/extendedreach-drilling-from-shore-to-access-more-chaivo- reserves
[70] https://www.rosneft.com/upload/site2/document_file/a_report_2017_eng.pdf#page=76
[71] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment, e.g. e.g. https://www.sakhalin-1.com/-/media/Sakhalin/Files/Environment-and-safety/Public-consultations-and-assessments/ENG/Seismic-2021_PC-Materials_Nontechnical-EPS-st2.pdf
[72] http://kremlin.ru/events/president/news/63904; see also https://www.reuters.com/article/us-oil-russia-forecast-idUSKBN26H0KY
[73] https://www.interfax.ru/business/728080
[74] https://dprom.online/oilngas/dochka-rosnefti-ostanovit-dobychu-na-2-goda-iz-za-avarii/

Planned activities 2021+

- 3D seismic survey (as a part of ENL's Sakhalin-1 planned seismic programme for its adjacent Chayvo and Arkutun Dagi fields, similar to practice in previous years) is currently planned for 2021 in order to obtain data for 4D studies (4D surveys involve performing 3D surveys over several years). The ENL's EIA materials indicate that, depending on a number of factors, including economic and epidemiological conditions, the seismic surveys may require postponement to the period of 2022-2024.[75]
- The approximate date for resumption of construction of infrastructure needed to connect to the Sakhalin-1 pipeline is July 2022.[26]

Gazprom Neft Shelf LLC (a subsidiary of Gazprom Neft)

Participants

- 100% Gazprom Neft
- Actively negotiating with several foreign companies about collaboration and participation in development of Neptune field, which was discovered in 2017
- Following a restructuring in 2020, took over the operations of the Ayashky block from another Gazprom Neft subsidiary, GazpromNeft-Sakhalin LLC.

Website:

- https://www.gazprom-neft.com/company/major-projects/sakhalin/
- https://sahalin.gazprom-neft.ru/

Sakhalin-3 project, Neptune and Triton fields of Ayashky block

Phase

Exploration

Assets / infrastructure

- Drilling platform Hai Yang Shi You 982.[76]
- Semisubmersible rig Hakuryu-5.[77]
- 1st well drilled in 2017 discovered Neptune field at Ayashkaya structure.[78]

[75] See the associated public consultation materials on the EIA available at https://www.sakhalin-1.com/en-RU/Environment-and-safety/Environment-and-safety/Public-consultations-and-environmental-impact-assessment, e.g. https://www.sakhalin-1.com/-/media/Sakhalin/Files/Environment-and-safety/Public-consultations-and-assessments/ENG/Seismic-2021_PC-Materials_Nontechnical-EPS-st2.pdf

[76] https://www.offshore-energy.biz/gazprom-neft-finds-new-oil-field-in-sea-of-ohotsk/

[77] https://www.oedigital.com/news/447145-gazprom-to-start-okhotsk-sea-drilling

[78] https://www.offshore-mag.com/drilling-completion/article/16803180/mitsubishi-to-work-with-gazprom-neft-on-offshore-sakhalin-developments; see also: https://rogtecmagazine.com/gazprom-neft-and-mitsui-will-assess-the-prospects-for-cooperation-in-the-development-of-sakhalin-shelf-deposits/

- 2nd well drilled in 2018 discovered Triton field at Bautinskaya structure. The decision to drill at Bautinsky formation was made on the basis of extensive geological research, analysis of 3D seismic data, and successful drilling at Ayashsky license block.[79]
- 3rd well drilled in 2019 at Neptune field.[80]

Activities 2020

- Seismic survey at Triton field and drilling several wells from floating rigs was planned for 2020, however, this work appears to have been postponed and no up-to-dated information is available in the public domain.[81]

Planned activities 2021+

- Possibly a seismic survey across Triton field and the drilling of several wells from floating rigs.[32]
- Assessment phase will continue until 2022-2023.[82]
- Oil production at the block planned to start in 2025-2027, but first oil may come sooner; commissioning may be delayed until 2029-2030.[83]

[79] https://ar2018.gazprom-neft.com/results/event-of-year/opening; see also https://www.gazprom-neft.com/press-center/news/gazprom-neft-discovers-a-second-field-on-the-sea-of-okhotsk/ ; https://www.gazprom-neft.ru/press-center/news/gazprom-neft-otkryla-vtoroe-mestorozhdenie-na-shelfe-okhotskogo-morya/ and https://neftegaz.ru/news/drill/196992-triton-syn-neptuna-gazprom-neft-otkryla-2-e-mestorozhdenie-na-shelfe-okhotskogo-morya/.

[80] https://magazine.neftegaz.ru/articles/geologorazvedka/512809-ayashskiy-uchastok-proekt-sakhalin-3-prirastaet-novym-mestorozhdeniyami/

[81] https://www.gazprom-neft.ru/press-center/news/gazprom_neft_vpervye_v_rossii_provela_masshtabnuyu_seysmorazvedku_s_ispolzovaniem_otechestvennykh_do/. See also: https://sakhalin.info/news/182770 and https://www.gazprom-neft.com/press-center/news/gazprom-neft-becomes-the-first-oil-company-in-russia-to-use-innovative-domestically-produced-deep-se/

[82] https://www.interfax.ru/interview/663791

[83] https://www.kommersant.ru/doc/3828009

ANNEX 1. LIST OF PARTICIPANTS

Panel Members Present

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Sakhalin Energy Investment Company Ltd.

Jane Alcock
Alexandre Campos, Shell International
Mikhail Fershalov (Day 2)
Andreas Kirchner (Day 2 & 3)
Roberto Racca, JASCO Applied Sciences
Sergey Starodymov
Olga Tyurneva (Day 1)
Sergey Vinogradov
Valery Vladimirov
Timpohey Zvezdov

IUCN

Anete Berzina-Rodrigo
Gerard Bos (Day 1)
Giulia Carbone Khodabakhsh
Simon Delany, Rapporteur
Ella Diarra
Minna Epps (Day 3)
Boris Erg
Silvia Guizzardi
Anthony Hobson (Day 1)
Leigh Ann Hurt
Stewart Maginnis
Gillian Martin Mehers, Facilitator, Bright Green Learning

Observers – Lenders

Adam Fitchet, Ramboll
Jonathan Hancox, Ramboll
Bruce Mate, Ramboll

Observers – NGOs

Alexey Knizhnikov, WWF Russia
Patrick Ramage, IFAW International

Observers – International Whaling Commission's Secretariat

Rebecca Lent
Iain Staniland

Observers – Russian Authorities

Olga Krever, Information and Analytical Centre for Protected Areas Support (Roszapovedcentre) of the Ministry of Natural Resources and Environment of the Russian Federation (Minprirody)
Natalia Kondrashina, Roszapovedcentre of Minprirody

Other Observers

Alexander Boltnev, Russian Research Institute of Fisheries and Oceanography (VNIRO)

Vladimir Burkanov, Marine Mammal Council

Oleg Gaydukov, Gazprom Neft Shelf (Day 2)

Dmitry Glazov, Marine Mammal Council (Day 1 &2)

Anastasia Kunica, M.V.Lomonosov Moscow State University (Day 1 & 2)

Anastasia Ivanova, Gazprom Neft Shelf (Day 2)

Vladimir Vertyankin, Kronotsky Zapovednik (Nature Reserve)

Alexey Vladimirov, Independent Consultant (industry practice)

Maria (Masha) Vorontsova, Independent Consultant (ocean conservation)

Interpreters

Alexander Danilov
Grigory Shkalikov

ANNEX 2. FINAL MEETING AGENDA

All times indicated below are Central European Time (CET / UTC + 1 hour)

DAY 1 – 17 NOVEMBER 2020 – FOCUSING ON WGW RESEARCH PROGRAMMES AND POPULATION ASSESSMENT				**Lead**	**Pre-submitted documents / presentations**	**Pre-submitted questions**
19:30	30 min	Technical check-in	The host will open the videoconference room and participants can check their audio/video and test interpretation			
BLOCK 1: INTRODUCTIONS						
20:00	2 min	Session 1.1 **Introductory items**	Demonstration of videoconference features	Martin Mehers		
20:02	3 min		1.1.1 Brief welcome from IUCN	Erg / IUCN		
20:05	5 min		1.1.2 Brief welcoming remarks by Chair	Reeves / WGWAP	WGWAP-21/1 WGWAP-21/2 WGWAP-21/3 WGWAP-20/4	
20:10	8 min		1.1.3 Chair's overall introduction of all participants (by groups) – on screen the technical host will ensure full name/affiliation visible for each participant	Reeves / WGWAP	Participant list	
BLOCK 2: PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2019-2021 & ANNUAL POPULATION ASSESSMENT						
20:18	40 min	Session 2.1 **ENL/Sakhalin Energy Joint Programme**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 2.1.1 Update on progress with analyses of Joint Programme data and preparation of peer-reviewed scientific publications using long-term data (including benthic and acoustic); 2.1.2 Summary of 2019 fieldwork results and 2020 preliminary results on distribution. 2.1.3 Summary of 2019 fieldwork results and 2020 preliminary results on photo-ID 2.1.4 Scope of work / plans for 2021	Sakhalin Energy	WGWAP-21/5-EN/RU WGWAP-21/6 WGWAP-21/7-EN/RU WGWAP-21/7-EN/RU-PPT WGWAP-21/8-EN/RU WGWAP-21/8-EN/RU-PPT WGWAP-21/9-EN/RU WGWAP-21/10-EN/RU WGWAP-21/11-EN/RU	Pre-submitted questions and comments from WGWAP

20:58	10 min	Break				
21:08	20 min	Session 2.2 **Russia Gray Whale Project (RGWP)**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 2.2.1 2020 fieldwork results on photo-ID 2.2.2 Scope of work / plans for 2021	Burdin / RGWP	WGWAP-21/12 (updated)	Pre-submitted questions and comments from WGWAP
21:28	30 min	Session 2.3 **Annual assessment of biological and demographic characteristics of western gray whales**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers)	Cooke / WGWAP	WGWAP-21/13	
21:58	10 min	**Wrap-up**	Wrap-up and questions/remarks on relevant items not covered by "live" discussions (see below)	Reeves All participants		
22:08		Adjourn				

Items to be dealt by email correspondence with a summary provided in the WGWAP-21 report (any documents / written updates and questions welcome ahead of meeting):

- Gray whale observations outside Sakhalin feeding areas, including in Kamchatka
- Update on joint Photo-ID catalogue under IWC auspices
- Updates (as available) on plans for WGW monitoring by other operators or parties in 2021 and beyond

DAY 2 – 18 NOVEMBER 2020 – FOCUSING ON NOISE/SEISMIC SURVEYS, OFFSETS AND OTHER SEIC ACTIVITIES				**Lead**	**Pre-submitted documents / presentations**	**Pre-submitted questions**
19:30	30 min	Technical check-in	The host will open the room and participants can check their audio/video and test interpretation			
BLOCK 3: ADDRESSING NOISE ISSUES						
20:00	10 min	Session 3.1 **Updated Marine Mammal Protection Plan 2020 and plans for resolution of outstanding issues**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 3.1.1 Resolution of annual acoustic monitoring issue (see 2020 version of MMPP, page 29, footnote, to be discussed in more detail under item 3.2); 3.1.2 Resolution of minimum height of drone issue related (see 2020 version of MMPP, page 29, footnote); 3.1.3 Resolution of peak-season issue for future MMPs (see 2020 version of MMPP, page 20, footnote)	Sakhalin Energy Ramboll	WGWAP-21/14-EN/RU WGWAP-21/15 WGWAP-21/31 WGWAP-21/32-EN/RU	Pre-submitted questions and comments from WGWAP
20:10	25 min	Session 3.2 **Sakhalin Energy's acoustic monitoring (in non-seismic years)**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 3.2.1 Results of Sakhalin Energy's acoustic monitoring in 2020 (outside Joint Programme): recorders deployed, dates, locations and initial analyses; 3.2.2 Scope of work for 2021+	Sakhalin Energy	WGWAP-21/16 WGWAP-21/17-EN/RU	Pre-submitted questions from WGWAP

20:35	25 min	Session 3.3 **Seismic surveys and other activities potentially generating noise**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 3.3.1 Update on Sakhalin Energy's plans for future seismic surveys and expected role of WGWAP in contributing to MMP development 3.3.2 Other Sakhalin Energy noise-generating activities 2020-2022 3.3.3 Space for live updates/statements on plans by other operators (complemented with written update from IUCN as may be necessary)	Sakhalin Energy Gazprom Neft Shelf	WGWAP-21/18 WGWAP-21/19 WGWAP-21/20 WGWAP-21/INF.1	Pre-submitted questions from WGWAP
21:00	10 min	Break				
21:10	20 min	Session 3.4 **Findings and recommendations of Noise Task Force on noise issues**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 3.4.1 Progress addressing noise issues 3.4.2 Planning final NTF meeting (NTF-19, Spring 2021) to include consolidating advice/ recommendations on critical elements for future (e.g. regular acoustic monitoring, MMPs for Sakhalin Energy's future seismic surveys).	Nowacek / WGWAP	WGWAP-21/21 NTF-17/REPORT NTF-18/REPORT	
BLOCK 4: SAKHALIN ENERGY'S MARINE MAMMAL OBSERVER PROGRAMME						
21:30	15 min	Session 4.1 **Marine Mammal Observer programme and ship strike avoidance measures (including speed limit implementation)**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 5.1.1 Summary of 2019 fieldwork results and 2020 preliminary results	Sakhalin Energy	WGWAP-21/22-EN/RU WGWAP-21/22-EN/RU-PPT	Pre-submitted questions from WGWAP

BLOCK 5: SAKHALIN ENERGY'S PROGRESS AND PLANS FOR IMPLEMENTATION OF IFC PERFORMANCE STANDARD 6						
21:45	35 min	Session 5.1 **Sakhalin Energy's Implementation of Mitigation Hierarchy (incl. offsets)**	Responses to pre-submitted questions, discussion and follow-up questions (incl. from Observers) on: 5.1.1 Update from Sakhalin Energy/Shell on implementation of mitigation hierarchy and measures included 5.1.2 Update on work of the WGW Offsets Working Group 5.1.3 Next steps and expectations	Shell / Sakhalin Energy Carbone Khodabakhsh / IUCN Cooke / WGWAP	WGWAP-21/23 WGWAP-21/24	
22:20	10 min	**Wrap-up**	Overall wrap-up and questions/remarks on relevant items not covered by "live" discussions (see below)	Reeves		
22:30		Adjourn				

Items to be dealt with by email correspondence with a summary provided in the WGWAP-21 report (any documents / written updates provided 3 weeks ahead of the meeting and questions welcome ahead of meeting):

- Oil spill response planning, including Ice Response Manual review (rec WGWAP-18/15D) and issues around in-situ burning equipment (rec WGWAP-20/06)
- Update on US Navy whale detections in China

DAY 3 – 19 NOVEMBER 2020 – FOCUSING ON WGW CONSERVATION EFFORTS, WGWAP CONTRIBUTION AND NEXT STEPS				**Lead**	**Pre-submitted documents / presentations**	**Pre-submitted questions**
19:30	30 min	Technical check-in	The host will open the room and participants can check their audio/video and test interpretation			
BLOCK 6: WESTERN GRAY WHALE CONSERVATION EFFORTS IN 2020 AND BEYOND						
20:00	3 min	Session 6.1 **Setting the scene**	Brief opening remarks	IUCN		
20:03	32 min	Session 6.2 **Russian Federation strategy**	Live presentation followed by questions and discussion: 6.2.1 Development of a Russian Federation strategy and roadmap for WGW conservation in 2021-2030 within the framework of the Russian national project "Ecology" 6.2.2 Questions and discussion focusing on plans/transition beyond 2021, including a system that delivers independent scientific advice on relevant issues	Krever / Roszapovedcentr of the Russian Federation Ministry of Natural Resources and Environment	WGWAP-21/25 (updated) WGWAP-21/33	
20:35	20 min	Session 6.3 **Stakeholder activities in Russia (incl. Sakhalin)**	Space to discuss any updates from NGOs and other stakeholders on their activities and plans	Marine Mammal Council (Russia)	WGWAP-21/34	
20:55	20 min	Session 6.4. **Range-wide efforts**	Live presentation followed by questions and discussion, including update on the IWC/IUCN WGW Conservation Management Plan revision and next steps	Staniland / International Whaling Commission (IWC)	WGWAP-21/35	
21:15	10 min	Break				

BLOCK 7: WGWAP CONTRIBUTION						
21:25	20 min	Session 7.1 **Review of WGWAP contribution to conservation efforts and scientific and management guidance and workplan 2020-2021**	Discussion and perspectives from all participants on the following: • How can you support the dissemination and uptake of the best-practice approaches and recommendations developed within the WGWAP process? • WGWAP has contributed to the overall conservation of WGWs in a number of ways, e.g. by conducting annual assessments of the demographic state of the population, which are used as a basis for recommendations and advice on conservation needs and research priorities, cooperating and sharing findings with the IWC Scientific Committee, and playing a role in the Range-state Memorandum of Cooperation Concerning Conservation Measures for Western Gray Whales. How can these functions be replaced after 2021?	Reeves Berzina / Carbone Khodabakhsh IUCN	WGWAP-21/26 WGWAP-21/27 WGWAP-21/28	
21:45	15 min	Session 7.2 **WGWAP recommendations process and lessons learnt**	Discussion and perspectives from all participants on the following: • How to ensure continued application and reference in future? • How to identify and deal with the recommendations that remain contentious or in some way unresolved? • How well the 'recommendations dimension' of the WGWAP process has worked, how it has evolved over the years, and what 'lessons', if any, have been learned from it? • Whether people know of, or could envisage a different/better process?	Reeves Berzina / IUCN	WGWAP-21/29 Recommendations database	
22:00	20 min	Session 7.3 **Plans for final independent evaluation of WGWAP 2004-2021**	Discussion of feedback and suggestions on scope and process of the final external evaluation (to start in 2021, including opportunities for input and expected outputs)	Guizzardi / IUCN Monitoring & Learning team	WGWAP-21/30	

BLOCK 8: ANY OTHER BUSINESS AND CLOSING						
22:20	5 min	Session 8.1 **Any other business**	Space for any other questions/remarks on relevant items not covered by "live" discussions			
22:25	5 min	Session 8.2 **Closing remarks**	Closing remarks	Maginnis / IUCN Reeves		
22:30		Adjourn				

ANNEX 3. LIST OF DOCUMENTS

List of documents, presentations and materials distributed in connection of the 21th meetings of the WGWAP (with links to download those designated as public)

SESSION	ITEM	DOCUMENT #	TITLE	TYPE	LANGUAGE	STATUS	SUBMITTED BY
GENERAL							
General		WGWAP-21/1	Agenda (including time schedule), v. 19 November 2020	Document	English	Public	IUCN
General		WGWAP-21/2	Повестка дня КГЗСК-20 (включая расписание), v. 19 November 2020	Document	Russian	Public	IUCN
General		WGWAP-21/3	List of documents distributed in connection with the 21st meeting of the WGWAP	Document	English	Public	IUCN
General		WGWAP-20/4	Список документов, распространяемых в соответствии с 21м заседанием КГЗСК	Document	Russian	Public	IUCN
Session 1.1.3	1.1.3	N/A	List of participants to the WGWAP-21 meeting	Document	English / Russian	Public	IUCN
BLOCK 2: PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2019-2021 & ANNUAL POPULATION ASSESSMENT							
Session 2.1 ENL/Sakhalin Energy Joint Programme	2.1	WGWAP-21/5-EN	Report on Gray Whale Monitoring Program Off Northeast Sakhalin Island in 2019 (incl. Appendix 1. Joint Program Publications)	Report	English	Public	Sakhalin Energy
	2.1	WGWAP-21/5-RU	Отчет по Программе мониторинга серых китов у северо-восточного побережья острова Сахалин в 2019 г. (вкл. Приложение I. Опубликованные работы по Совместной Программе)	Report	Russian	Public	Sakhalin Energy
	2.1.1	WGWAP-21/6	Joint Gray Whale Programme publications	Presentation	English	Public	Sakhalin Energy
	2.1.2	WGWAP-21/7-EN	DISTRIBUTION AND ABUNDANCE OF GRAY WHALES OFFSHORE NORTHEAST SAKHALIN IN JULY - SEPTEMBE OF 2019	Report	English	Public	Sakhalin Energy

	2.1.2	WGWAP-21/7-RU	РАСПРЕДЕЛЕНИЕ И ЧИСЛЕННОСТЬ СЕРЫХ КИТОВ В ШЕЛЬФОВЫХ ВОДАХ СЕВЕРО-ВОСТОЧНОГО САХАЛИНА В ИЮЛЕ-СЕНТЯБРЕ 2019 Г.	Report	Russian	Public	Sakhalin Energy
	2.1.2	WGWAP-21/7-EN-PPT (updated)	Monitoring results of gray whale distribution off the North East coast of Sakhalin island in 2019	Presentation	English	For internal use	Sakhalin Energy
	2.1.2	WGWAP-21/7-RU-PPT (updated)	Результаты мониторинга распределения серых китов у северо восточного побережья острова Сахалин в 2019 г.	Presentation	Russian	For internal use	Sakhalin Energy
	2.1.3	WGWAP-21/8-EN	PHOTO-IDENTIFICATION OF GRAY WHALES (ESCHRICHTIUS ROBUSTUS) OFF THE NORTHEAST COAST OF SAKHALIN ISLAND IN 2019	Report	English	Public	Sakhalin Energy
	2.1.3	WGWAP-21/8-RU	ОТЧЕТ ПО ПРОГРАММЕ МОНИТОРИНГА СЕРЫХ КИТОВ У СЕВЕРО-ВОСТОЧНОГО ПОБЕРЕЖЬЯ ОСТРОВА САХАЛИН В 2019 Г.	Report	Russian	Public	Sakhalin Energy
	2.1.3	WGWAP-21/8-EN-PPT	Gray whale photo-identification results as part of Monitoring Program in 2019	Presentation	English	For internal use	Sakhalin Energy
	2.1.3	WGWAP-21/8-RU-PPT	Результаты фото-идентификации серых китов в рамках Программы мониторинга в 2019 г.	Presentation	Russian	For internal use	Sakhalin Energy
	2.1.2, 2.1.3	WGWAP-21/9-EN	2020 PROGRAM FOR GRAY WHALE MONITORING OFF THE NORTH-EAST COAST OF SAKHALIN ISLAND 2020	Document	English	Public	Sakhalin Energy
	2.1.2, 2.1.3	WGWAP-21/9-RU	ПРОГРАММА МОНИТОРИНГА СЕРЫХ КИТОВ НА СЕВЕРО-ВОСТОЧНОМ ШЕЛЬФЕ В 2020 Г.	Document	Russian	Public	Sakhalin Energy
	2.1.2 & 2.1.3	WGWAP-21/10-EN	2020 Gray Whale Joint Monitoring Program Implementation	Presentation	English	For internal use	Sakhalin Energy
	2.1.2 & 2.1.3	WGWAP-21/10-RU	Выполнение совместной программы мониторинга серых китов в 2020 году	Presentation	Russian	For internal use	Sakhalin Energy
	2.1.4	WGWAP-21/11-EN	Gray Whale Joint Monitoring Program Scope of Work 2021	Presentation	English	For internal use	Sakhalin Energy
	2.1.4	WGWAP-21/11-RU	План работ по Совместной программе мониторинга серых китов в 2021 году	Presentation	Russian	For internal use	Sakhalin Energy

Session 2.2 Russia Gray Whale Project (RGWP)	2.2	WGWAP-21/12 (updated)	RUSSIA GRAY WHALE PROJECT RESEARCH OFF NE SAKHALIN AND EASTERN KAMCHATKA	Presentation	English	Public	Burdin / RGWP
Session 2.3 Annual assessment of biological and demographic characteristics of western gray whales	2.3	WGWAP-21/13 (updated)	Annual assessment of biological and demographic characteristics of western gray whales	Presentation	English	Public	Cooke / WGWAP
BLOCK 3: ADDRESSING NOISE ISSUES							
Session 3.1 Updated Marine Mammal Protection Plan 2020 and plans for resolution of outstanding issues	3.1	WGWAP-21/14-EN	MARINE MAMMAL PROTECTION PLAN (MMPP) OF SAKHALIN ENERGY 2020	Document	English	Public	Sakhalin Energy
	3.1	WGWAP-21/14-RU	ПЛАН ЗАЩИТЫ МОРСКИХ МЛЕКОПИТАЮЩИХ «САХАЛИН ЭНЕРДЖИ» 2020 Г.	Document	Russian	Public	Sakhalin Energy
	3.1	WGWAP-21/15	Issues that need resolution and WGWAP input in the Sakhalin Energy's MMPP: Summary note compiled by IUCN for WGWAP-21, October 2020	Document	English	Public	IUCN
	3.1.2	WGWAP-21/32-EN	Use of Drones for marine mammal research and behavioural responses: World's scientific literature review and field observations	Presentation	English	Public	Sakhalin Energy
	3.1.2	WGWAP-21/32-RU	Поведенческие реакции морских млекопитающих при использовании дронов для их исследования: Обзор мировой научной литературы и полевые наблюдения	Presentation	Russia	Public	Sakhalin Energy
	3.1.3	WGWAP-21/31	Summary of onshore sightings` information of arrival, residency and departure times of gray whales; data of first/last registration of cow-calf pairs (document NTF-18/3 presented at the NTF-18 meeting, April 2020)	Presentation	English	For internal use	Sakhalin Energy
Session 3.2 Sakhalin Energy's acoustic monitoring (in non-seismic years)	3.2	WGWAP-21/16	Scope of Work for Acoustic Monitoring of anthropogenic noise at the boundary of the Piltun Gray Whale Feeding Area generated by Sakhalin Energy's Offshore Facilities in 2020 (document NTF-18/5 presented at the NTF-18 meeting, April 2020)	Document	English	For internal use	Sakhalin Energy

	3.2	WGWAP-21/17-EN	Acoustic Monitoring of Sakhalin Energy's Offshore Facilities in 2020	Presentation	English	For internal use	Sakhalin Energy
	3.2	WGWAP-21/17-RU	Акустический мониторинг морских производственных объектов «Сахалин Энерджи» в 2020 году	Presentation	Russian	For internal use	Sakhalin Energy
Session 3.3 Seismic surveys and other activities potentially generating noise	3.3.1	WGWAP-21/18	Update on Sakhalin Energy's plans for future seismic surveys and expected role of WGWAP in contributing to Monitoring and Mitigation Plan (MMP) development	Presentation	English	Confidential	Sakhalin Energy
	3.3.2	WGWAP-21/19	Sakhalin Energy Offshore Activities 2020-2024	Presentation	English	Confidential	Sakhalin Energy
	3.3.3	WGWAP-21/20 (updated)	OVERVIEW OF OIL AND GAS PROJECTS AND LICENSE BLOCKS/FIELDS IN OR NEAR WESTERN GRAY WHALE FEEDING AREAS OFF NORTH-EASTERN SAKHALIN: Summary of publicly available information prepared by IUCN, v. November 2020 (updated)	Document	English	Public (included as Appendix 1 to this report)	IUCN
	3.3.3	WGWAP-21/20 (map updated)	Schematic map showing the approximate locations and boundaries of oil and gas development areas in or near the gray whale feeding areas off north-eastern Sakhalin and elsewhere on the eastern Sakhalin shelf - prepared by IUCN, based on publicly available information	Map	English / Russian	Public (included as Appendix 1 to this report)	IUCN
	3.3.3	WGWAP-21/20 (map updated)	Schematic map showing the approximate locations and boundaries of oil and gas development areas in or near the gray whale feeding areas off north-eastern Sakhalin and elsewhere on the eastern Sakhalin shelf - prepared by IUCN, based on publicly available information	Map	Russian	Public (included as Appendix 1 to this report)	IUCN
	3.3.3	WGWAP-21/INF.1	List of publications and information about upcoming peer reviewed articles related to Exxon Neftegas Limited seismic surveys in 2015 and 2019	Document	English	For internal use	ExxonMobil / Exxon Neftegas Limited
Session 3.4 Findings and recommendations of Noise Task Force on noise issues	3.4	WGWAP-21/21	Findings and recommendations of Noise Task Force work since fall 2019	Presentation	English	For internal use	Nowacek / WGWAP
	3.4	NTF-17/REPORT	Report of the 17th Noise Task Force meeting (NTF-17), November 2019	Report	English	Public	WGWAP

	3.4	NTF-18/REPORT	Report of the 18th Noise Task Force meeting (NTF-18), April 2020	Report	English	Public	WGWAP
BLOCK 4: SAKHALIN ENERGY'S MARINE MAMMAL OBSERVER PROGRAMME							
Session 4.1 Marine Mammal Observer programme and ship strike avoidance measures (including speed limit implementation)	4.1	WGWAP-21/22-EN	MARINE MAMMAL OBSERVER PROGRAMME 2019: CLOSE-OUT REPORT	Report	English	Public	Sakhalin Energy
	4.1	WGWAP-21/22-RU	ПРОГРАММА НАБЛЮДЕНИЯ ЗА МОРСКИМИ МЛЕКОПИТАЮЩИМИ В 2019 ГОДУ: ЗАКЛЮЧИТЕЛЬНЫЙ ОТЧЕТ	Report	Russian	Public	Sakhalin Energy
	4.1	WGWAP-21/22-EN-PPT	Marine Mammals Observation Programme 2019 and preliminary results of 2020 field season	Presentation	English	For internal use	Sakhalin Energy
	4.1	WGWAP-21/22-RU-PPT	Программа наблюдений за морскими млекопитающими в 2019 году и предварительные результаты полевого сезона 2020 года	Presentation	Russian	For internal use	Sakhalin Energy
BLOCK 5: SAKHALIN ENERGY'S PROGRESS AND PLANS FOR IMPLEMENTATION OF IFC PERFORMANCE STANDARD 6							
Session 5.1 Sakhalin Energy's Implementation of Mitigation Hierarchy (incl. offsets)	5.1.1	WGWAP-21/23 (updated)	Sakhalin II High-Level Assessment of IFC 6 Application for Gray Whales	Presentation	English	For internal use	Sakhalin Energy
	5.1.2	WGWAP-21/24	Framework for evaluating candidates for offsets (actions to offset impacts on Sakhalin Gray Whales)	Presentation	English	For internal use	Cooke / WGWAP

BLOCK 6: WESTERN GRAY WHALE CONSERVATION EFFORTS IN 2020 AND BEYOND							
Session 6.1 Setting the scene	6.1	WGWAP-21/25 (updated)	WESTERN GRAY WHALE CONSERVATION STATUS Overview note compiled by IUCN for WGWAP-21 meeting, v. updated 12 November 2020	Document	English	Public	IUCN

Session 6.2 Russian Federation strategy	6.2	WGWAP-21/33	Gray Whale Conservation in the framework of the Federal Project «Conservation of Biological Diversity and Ecological Tourism Development»	Presentation	English	For internal use	Roszapovedcenter / Ministry of Natural Resources and Environment of the Russian Federation
Session 6.3 Stakeholder activities in Russia (incl. Sakhalin)	6.3	WGWAP-21/34	Prospects for the participation of the Marine Mammal Council (a regional non-governmental organization) in the conservation of the Korean-Okhotsk gray whale population	Document	English / Russian	For internal use	Marine Mammal Council
Session 6.4. Range-wide efforts	6.4	WGWAP-21/35	Range-wide efforts	Presentation	English	For internal use	International Whaling Commission
BLOCK 7: WGWAP CONTRIBUTION							
Session 7.1 Review of WGWAP contribution to conservation efforts and scientific and management guidance and workplan 2020-2021	7.1	WGWAP-21/26	Review of WGWAP contribution to conservation efforts and scientific and management guidance and workplan 2020-2021	Presentation	English	For internal use	IUCN
	7.1	WGWAP-21/27	Papers and reports related to the work of IUCN independent scientific and technical advisory panels on western gray whales 2004-2021: a draft compendium compiled by IUCN to be completed and published by end of 2021 after review and supplementation by WGWAP members and stakeholders, v. 6 November 2020	Document	English	For internal use	IUCN
	7.1	WGWAP-21/28	WGWAP Workplan for the Closing Stage 2020-2021: Summary and progress update for the WGWAP-21 meeting, v. 3 November 2020	Document	English	For internal use (a "living" document regularly updated)	IUCN
Session 7.2 WGWAP recommendations process and lessons learnt	7.2	WGWAP-21/29	Table of WGWAP recommendations and responses with status as of 9 November 2020 (compared to post-WGWAP-20 in November 2020). Note all recommendations are available directly from the WGWAP Recommendations Database (incl. description of the database)	Document & Database	English	Public	IUCN
Session 7.3 Plans for final independent evaluation of WGWAP 2004-2021	7.3	WGWAP-21/30	Overview of plans and approach for a final WGWAP 2004-2021 Independent Impact Evaluation	Presentation	English	For internal use	IUCN