WESTERN GRAY WHALE ADVISORY PANEL **WGWAP-18**

18th meeting **15-17 November 2017**

Moscow, Russia

REPORT OF THE WESTERN GRAY WHALE ADVISORY PANEL AT ITS 18TH MEETING, 15-17 NOVEMBER 2017

CONVENED BY THE INTERNATIONAL UNION FOR CONSERVATION OF NATURE

Contents

ACRONYMS

AUAR	Automated Underwater Acoustic Recorder
CMP	Conservation Management Plan
CMS	Camera Monitoring System
Company	Sakhalin Energy Investment Company Ltd
EIA	Environmental Impact Assessment
ENL	Exxon Neftegas Limited
CC	Central Commander
GPS	Global Positioning System
HSE	Health, Safety and Environment
IBM	Institute of Marine Biology (currently National Marine Biology Center), RAS FEB
iESHIA	Environmental, Social and Health Impact Assessment
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
MBE	Multi-Beam Echosounder
MMO	Marine Mammal Observer
MMP	Monitoring and Mitigation Programme
MMPP	Marine Mammal Protection Plan
MNR	Russian Federation Ministry of Natural Resources and Ecology
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration (NOAA, US)
NTF	Noise Task Force
OBN	Ocean Bottom Node
OPF	Oil Processing Facility
OSR	Oil Spill Response
OVOS	Russian Federation Environmental Impact Assessment
PA	Piltun Area
Photo-ID	Photo Identification
POI	Pacific Oceanological Institute, RAS FEB
PML	Perimeter Monitoring Line
RAS FEB	Russian Academy of Science, Far-East Branch
RF	Russian Federation
RGWP	IFAW Russia Gray Whale Project
RPN	Rosprirodnadsor
SCF	SovComFlot Geo
SEER	State Environmental Expert Review
SEIC	Sakhalin Energy Investment Company Ltd
SPL	Sound Pressure Level
VNIRO	Russian Federal Research Institute of Fishery and Oceanography
WGW	Western Gray Whale
WGWAP	Western Gray Whale Advisory Panel

EXECUTIVE SUMMARY

The 18th meeting of the Western Gray Whale Advisory Panel (WGWAP-18) was held in Moscow, Russian Federation, from 15-17 November 2017, immediately preceded by the 13th meeting of the Noise Task Force (NTF-13) at a separate venue (Amsterdam, The Netherlands). The 12th meeting of the Noise Task Force (NTF-12) had taken place in March-April 2017 in Gland, Switzerland.

Sakhalin Energy reported on final monitoring results of the Joint Programme (acoustics, benthos and hydrology, gray whale distribution, photo-identification) in 2016 and provided brief preliminary summaries of the work conducted in 2017, which did not include monitoring of acoustics or the benthos. With regard to monitoring the benthos, the Panel expressed continuing concern about the major and persistent decline in amphipod biomass in the nearshore (Piltun) feeding area, a decline that began in 2013 and reached its lowest level in 2016. The Panel once again encouraged the companies to explore the nature and causes of this decline in much greater depth and detail, and that they consider all plausible explanatory hypotheses, some of which relate to changes in the demography or behaviour of the gray whales and others to biophysical events or processes in the regional marine ecosystem. The Panel also expressed concern about the apparent southward shift of whale distribution in the nearshore feeding area in recent years, noted by both Joint Programme and Russia Gray Whale Project (RGWP) scientists.

The Panel expressed a number of concerns regarding the revised Joint Programme, in particular the already officially approved decision by Sakhalin Energy and ENL to discontinue the acoustics and benthos/hydrology monitoring components. Among these concerns were that (a) they would make interpreting future changes in whale distribution or numbers more difficult and (b) there are potential problems associated with incorporating new technologies into the photo-ID (drone imagery) and distribution (infrared system) components that warrant further investigation. In view of these concerns and recognizing that plans for the 2019 Joint Programme must be submitted to the authorities by September 2018, i.e. before the next WGWAP meeting, the Panel **requested** that IUCN liaise with the Company and ensure that the Panel is able to provide input into the plans well before they are submitted, and before they are agreed between the two companies.

Cooke's annual population assessment incorporated data for Sakhalin from both the Joint Programme (2004-2016) and the RGWP (1995-2016) as well as opportunistic data collected off Kamchatka in 2004-2012. The combined non-calf population in Sakhalin and Kamchatka was estimated to be 271-311 whales in 2016, of which 175-192 were predominantly Sakhalin-feeding whales. The Sakhalin population has been increasing at 2-5% p.a. over the last 10 years. Cooke also used the results from tagging and photographic matching with Mexican catalogues to place an upper bound of about 100 on the number of Sakhalin whales that migrate to a putative western North Pacific wintering ground. With regard to the photo-ID and biopsy sampling effort, the Panel noted that the RGWP and Joint Programme catalogues have not been cross-matched since the 2011 season and **recommended** that the new whales sighted by each team during 2012-16 be cross-matched. The Panel **reiterated** the importance of long-term data series and the need for data collection protocols that are consistent and comparable. The Panel particularly commended the ongoing work of the RGWP and **recommended** that these studies continue. The Panel acknowledged and thanked IFAW for supporting the work and encouraged it to continue doing so.

Representatives of ENL presented information on that company's sealift operations at the mouth of Piltun Lagoon, which were completed without incident during 11 June – 5 July 2017. The non-governmental organizations that sponsored independent efforts to monitoring those operations also presented their findings.

The planning process for Sakhalin Energy's 2018 seismic survey has continued and the near-final Monitoring and Mitigation Plan (MMP) was agreed at the NTF-13 meeting. However, a few issues remain unresolved and it is expected that these will be addressed at the NTF-14 meeting in March 2018. These include the proposed incorporation of recently developed (and developing) technology into gray whale monitoring and mitigation such as infrared and high-resolution camera systems and drones). The need for a more appropriate control station for acoustic monitoring was also considered at the NTF meeting. The Panel **endorsed** the work of the NTF and the near-final MMP.

Sakhalin Energy has completed revision of its Marine Mammal Protection Plan, incorporating extensive advice and input received from the Panel on a draft version. Given the Company's wish to handle potentially high-risk activities on a case by case basis, the Panel will continue to provide advice on specific activities such as seismic surveys, vessel traffic and construction projects, i.e. in contexts where such advice is likely to be most effective.

Sakhalin Energy gave an update on progress with the Critical Habitat Assessment (CHA) and offsets strategy that are expected to be part of the Company's effort to comply with International Finance Corporation Performance Standards. Two marine Discrete Management Units have been identified for the CHA: an offshore NE Sakhalin one from shore to 100 m depth and an Inner Aniva Bay one in southern Sakhalin. The zone from 0-20m depth off NE Sakhalin is considered, in the context of the Sakhalin-2 project, to be an important part of the range of western gray whales. Biodiversity offsets should be designed and implemented to achieve measurable conservation outcomes that can reasonably be expected to result, in the case of critical habitat, in a net gain of biodiversity. To achieve this, a company must compensate for its residual impact through projects that generate conservation gains in biodiversity value similar to the biodiversity loss resulting from the company's activities and operations. Sakhalin Energy cited its work to increase knowledge, disseminate information, improve fishing practices, remove derelict gear and enhance local disentanglement capacity as among activities that might be considered in the offsets strategy. The Panel concluded that considerable further work was needed to estimate net gains reliably and to determine whether they have been achieved.

Sakhalin Energy and the Panel exchanged views on the Company's efforts to implement recommendations concerning measures to mitigate ship strike risks associated with the interim increase in speed limits for crew change vessels from 21 to 35 knots. The two parties agreed to continue the discussion intersessionally, with the aim of ensuring that a better procedure to detect and diagnose ship strikes is in place by the 2018 season.

Reviews of oil spill response (OSR) planning documents by Associate Scientist Brian Dicks led the Panel to **close** several previous recommendations, **request** certain new Company-generated documents and **recommend** that Sakhalin Energy and IUCN facilitate a site visit by a Panel representative in 2018 to carry out a first-hand evaluation of the Company's OSR readiness.

Some progress was reported on the problem of whale entanglement in fishing gear. A disentanglement and stranding response training program took place at Yuzhno in June 2017, co-sponsored by the IWC, IFAW, Sakhalin Energy, the Marine Mammal Council and the Provincetown Center for Coastal Studies in close collaboration with the Boomerang Club. Net removal efforts at Piltun were carried out by the RGWP and the Boomerang Club with support from IFAW and Sakhalin Energy. Finally, IUCN circulated the working paper on fishery-whale interactions, that had been prepared by WGWAP and presented at the IWC Scientific Committee in May 2017, to regulatory authorities and research institutes on Sakhalin. Further work on the paper by Associate Scientists Vladimir Burkanov and Lloyd Lowry and associates was expected to lead to submission for journal publication by the end of 2017.

1 INTRODUCTION

1.1 Organizational matters

1.1.1 Welcome from IUCN

Boris Erg, Director of the IUCN Regional Office for Eastern Europe and Central Asia, welcomed participants on behalf of IUCN. He considered the role of WGWAP in providing scientific advice to the private sector concerning conservation and in seeking to bridge gaps between government and civil society as an example of what IUCN stands for. He expressed gratitude to Sakhalin Energy for extending the partnership with IUCN to the present third five-year commitment (until the end of 2021). He also noted that this year's Panel meeting was timely, occurring as it did in the Russian 'Year of Ecology 2017', and that there is growing global interest in this kind of collaboration. He anticipated that the meeting would have open and constructive dialogue, resulting in recommendations based on sound science leading to strengthened conservation efforts and more effective conservation policies.

1.1.2 Co-chairs' welcoming remarks

Considerable work was undertaken over the past year (since WGWAP-17), particularly by the Noise Task Force (NTF), which conducted meetings of the full task force in Gland, Switzerland (NTF-12) in April 2017 (completed through a face-to-face meeting of an expert subset of the NTF in Raleigh-Durham, North Carolina, USA, in June 2017 and several teleconferences) and in Amsterdam, The Netherlands (NTF-13) immediately before this Panel meeting. These meetings and teleconferences all focused on development of the Mitigation and Monitoring Plan (MMP) for Sakhalin Energy's planned large-scale seismic survey in 2018 and were meant to ensure that various time-sensitive milestones set by the Company were reached in a timely manner.

The Co-chairs once again acknowledged the important role of Anete Berzina in organizing the meeting and supporting the Panel in many ways, and introduced her temporary replacement, Jerome Duramy. They conveyed best wishes from all participants to Anete during her maternity leave.

The Co-chairs also thanked Giulia Carbone and her team in the IUCN Global Business and Biodiversity Programme for doing such a thorough and careful job of organizing these meetings, supporting the Panel's work, and maintaining the WGWAP website. Simon Delany, the Rapporteur, did his usual professional job of recording the minutes, which were dutifully cleaned up and shared with the Panel within 24 hours each day.

And finally, the Co-chairs noted and acknowledged Stephanie Lock and her team at Sakhalin Energy for their constructive, collegial engagement with IUCN and the Panel over the past year.

1.1.3 *Participants*

The List of Participants is given as Annex 1.

All but one of the ten current Panel members were present. Unfortunately, Brandon Southall was unable to attend because of visa difficulties.

The Panel again welcomed the numerous representatives of non-governmental organizations (NGOs) and Russian Government agencies and institutions who attended, and contributed

significantly, to the meeting as Observers. This engagement with various stakeholders is a vital part of the WGWAP process.

Finally, the willingness of Exxon Neftegas Limited (ENL) representatives to attend one of the sessions and present information on that company's 2017 sealift operation and respond to questions was welcomed (see item 2.2.1).

1.1.4 *Adoption of agenda*

The Agenda, as adopted, is given as Annex 2.

1.1.5 *Documents*

The List of Documents is given as Annex 3.

1.1.6 *Report drafting procedures and timeline*

The usual practice of producing a final report of the Panel was to be followed. That is, after the meeting, the Panel produces its report based on documentation received in advance of this meeting as well as the presentations and discussions during the meeting, as recorded in Delany's notes. The aim was to send a complete draft of the report to Sakhalin Energy for fact-checking by mid-January, and to make the final report publicly available by sometime in February 2018. It was stressed that the Panel reports go beyond being simply minutes of the meeting; they include discussions, findings, conclusions, recommendations, and other forms of advice that result from interactions among Panel members, mainly by e-mail, post-meeting.

2 OUTCOMES OF PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2016 AND 2017 & ANNUAL POPULATION ASSESSMENT

2.1 Summary of 2016 results and 2017 preliminary fieldwork results

2.1.1 Acoustics

2.1.1.1 JOINT PROGRAMME RESULTS

The Panel was provided with a document (WGWAP-18/20) concerning the Joint Programme's acoustics and hydrological work in the 2016 season, although this document included only a few summary figures and data on the 2016 results. The document refers to a set of files that contains all of the acoustic data for 2016 in the formats previously agreed, but unfortunately these data were submitted to the Panel for its consideration only one day before the beginning of the WGWAP-18 meeting. Therefore, the Panel was unable to draw any conclusions about the noise levels in 2016. As a consequence, detailed consideration and discussion had to be postponed and the Panel's schedule and workplan in 2018 revised to reflect the delay. It is important to note that a similar sequence of events occurred during the lead-up to WGWAP-17, so formal consideration of the 2015 acoustics data had to be postponed until the NTF-12 meeting in March-April 2017.

During Sakhalin Energy's presentation on acoustic monitoring at this meeting, however, the Panel was informed about high levels of impulse noise measured in 2016 in the Odoptu sector of the Piltun feeding area at stations Odoptu-S-10 and Odoptu-S-20. This noise originated from onshore foundation pile-driving operations that apparently continued on a near-daily basis from 1 August to 25 September. The amplitude of these low-frequency acoustic pulses recorded at the 10m isobath (Odoptu-S-10) reached 6 Pa, which is equal to 135.5 dB re 1 μPa. That high level of very unusual underground impulse sound from pile-driving operations could have contributed (together with the decline in amphipod biomass; see item 2.1.2) the observed southward shift in whale distribution

(see item 2.1.3). The Panel expressed **concern** about such noise levels in the feeding area, **stressed** the need for additional analyses and consideration of the matter, and **agreed** that the upcoming meeting of the Noise Task Force (NTF-14, March 2018) would be the appropriate place for further discussion. Such events of elevated noise bring into focus the importance of continued annual acoustic monitoring of the area.

The Panel was also **concerned** to learn, during the Company's acoustics presentation, that no recordings had been made in 2017. The Panel had no idea before this time that the companies had not deployed any recorders in 2017, which came as an unwelcome surprise. Without acoustic monitoring, Sakhalin Energy is *inter alia* unable to apply the criteria specified in its own Marine Mammal Protection Program (MMPP) (see item 5.1.1) regarding prolonged periods of loud noise; it is not appropriate to establish criteria to be met but not be able to measure whether they have or have not been met.

The Panel was also informed that noise in the offshore feeding area was not monitored in 2017 by either the Joint Programme or Sakhalin Energy, due to 'unacceptable loss of gear' in previous years due to fishing operations. To compensate for the lack of measurements in the offshore area, the Company presented results of noise-level estimation based on measurements of transmission loss (TL) in that area in past years. The Company considered this to show that the noise levels were acceptable, but did not provide information on how the accuracy of the modelled levels was verified. The Panel **requests** that details of the calculations, with estimation accuracy and spectral characteristics of TL, be provided in future reports.

2.1.1.2 NOISE ISSUES BROUGHT FORWARD FROM PREVIOUS MEETINGS

During last year's review of the 2015 noise data, the Panel identified several periods of unusually loud noise. Sakhalin Energy investigated these periods, and a document was presented to the NTF-13 meeting. Of greatest concern was a continuous noise signature, primarily between 30-200 Hz, that was recorded at the PA-B-20 station at levels of ca. 120 dB for over 35 hours. The noise appears to have originated from the dynamic positioning (DP) operations of one of Sakhalin Energy's vessels, namely the *Mermaid Sapphire*, which was conducting multi-beam echosounder (MBE) surveys. Such prolonged levels of continuous noise at 120 dB or above along the 20m isobath (i.e. the edge of the Piltun feeding area) are in violation of Sakhalin Energy's own exposure criteria, as specified in the Company's MMPP. As a result of this and other periods of loud noise, the Panel **recommends** that any activity with the *potential* to violate the Company's MMPP with respect to noise exposure be presented and reviewed so that appropriate mitigation measures can be identified.

While acknowledging that there are differences among MBE systems, the Panel is concerned about the use of MBEs in general given the lack of knowledge or effort to understand their potential effects on whale behaviour. The Panel regards an event in Madagascar several years ago as an instructive example even though the context and the species involved were quite different from those at Sakhalin. In that instance, a high-power 12 kHz-type MBE was identified by Southall et al. (2013) as the most likely initial trigger for a lethal mass stranding of melon-headed whales (*Peponocephala electra*). At the Panel's request, Sakhalin Energy provided several specifications of the MBE system used by the *Mermaid Sapphire* in 2015, and all of the signals generated by such a system are at a frequency likely to be above the hearing range of gray whales (although the actual hearing range of gray whales is not known and these types of MBE systems can generate transient signals). The Panel **recommends** that in future it is informed of any noise-generating systems or tools that the Company plans to use as part of its operations, with as much detail as possible concerning output and operational plans. Whilst many MBE systems are likely of little concern with regard to gray whales, the expertise of the Panel could help the Company ensure that appropriate and adequate measures are taken should mitigation be necessary. In addition, the Panel may be able

to help the Company identify specific instances where MBE survey work could provide insights concerning gray whale responsiveness, assuming whale behaviour is closely monitored from observation stations.

The Company rejected the Panel's recommendation (WGWAP-17/01) to establish a new acoustic control site on the basis that the site still represents a 'quiet' (near-pristine) area relatively unaffected by industrial noise according to the Company's analysis of control site data (see the Company's response to recommendation WGWAP-17/02). However, the Panel considers that the analysis provided by the Company belies such a conclusion. Several time periods shown in the analysis produced in response to recommendation WGWAP-17/02 indicate elevated noise levels, and while the Company contends that these periods were 'mainly due to cyclones' (see Company response to recommendation WGWAP-17/01), the Panel remains unconvinced, particularly since the noise levels can be elevated for more than a week at a time, much longer than the duration of a cyclone. Drawing firm conclusions from the analysis presented by the Company is difficult, in part because of the time resolution of the data. When the Panel had requested weekly averages, it was unaware that there were so many gaps in the data. Therefore, to rectify the situation and to help clarify this issue, the Panel **recommends** that as a follow-up to recommendation WGWAP-17/02 (which is classified as Closed – implemented satisfactorily), it be given an opportunity to review data from the control site according to the following analytical scheme: hourly averages in the same frequency bins as those normally used in the analyses of acoustic data (2-15000 Hz and 2-1000 Hz) and percentile distributions at the same time resolution for 2-1000 Hz. Ideally, these data would be available for consideration at the NTF-14 meeting so that, if warranted, a recommendation for a new control station could be made in time for the 2018 field season.

Finally, the issue of automatically detecting specific sounds or sound patterns was raised again. POI and JASCO have been developing methods for automated detection of both anthropogenic noise and gray whale sounds. When reviewing acoustic data, there are limitations to what can be understood from sonograms and percentile distributions. Therefore, the Panel **requests** that selected informative sound recordings, based on the newly developed detection schemes, be made available for its review. Racca noted that JASCO has been developing an approach for presenting automatic detection of events that presently includes a short MP3 recording of selected sounds. The Panel welcomed Racca's offer to give a presentation on this at the next NTF meeting. With regard to gray whale sounds that might be recorded at Sakhalin, these could prove very useful in evaluating the whale sounds recorded by the U.S. Navy in the East China Sea (WGWAP-17 report[1], item 2.2).

2.1.2 Benthic and hydrology

2.1.2.1 COMPANY PRESENTATION

In 2016 the main objective of Joint Programme studies of the benthos was continued monitoring of the distribution, composition and biomass of presumed prey species in the nearshore (Piltun) and offshore gray whale feeding areas (document WGWAP-18/17). The benthic sampling programme has been a regular element of the Joint Programme since 2002.

The most significant finding from sampling in the nearshore feeding area in 2016 was the continued decline in total amphipod biomass (11.1 ± 2.6 g/m^2 in 2016 vs. 115.5 ± 19.6 g/m^2 in 2002). Analysis of long-term patterns (2002-2016) of amphipod abundance in this area revealed a sudden decrease in amphipod biomass beginning in 2013. The decline was attributed by the authors of

[1] https://www.iucn.org/sites/dev/files/wgwap-17_report_final_en_0.pdf

document WGWAP-18/17 to a flooding event of the Amur River in 2013 and to increased consumption by gray whales in recent years. Maximum amphipod abundance values were observed in the years 2002-2004 and minimum values in 2013-2016. A significant increase in Pacific sandlance (*Ammodytes hexapterus*) biomass over 2013-2014 values was observed in 2015 and 2016, with greatest concentrations in the central and southern parts of the Piltun area.

As in previous years, high densities of *Ampelisca* amphipods were recorded in the Offshore feeding area, with a marked gradient at around 50 m of depth – amphipod biomass values ≥ 300 g/m^2 are found consistently at depths greater than 50 m (e.g. documents WGWAP-17/6, WGWAP-18/17). The characteristics of the water column and bottom sediments in 2016 were similar to previous years. Fine sand dominated the Piltun feeding area at depths shallower than 10-15 m and also prevailed at > 95% of the stations in the offshore area.

2.1.2.2 PANEL DISCUSSION AND CONCLUSIONS

The Panel was disappointed to learn that V. V. Ivin, the Joint Programme's benthos expert, is no longer associated with the programme. The Panel expressed continuing **concern** about the major and persistent decline in amphipod biomass since 2013, with the lowest biomass recorded in 2016. Although the sharp decline of amphipods at Piltun in 2013 was attributed, according to document WGWAP-17/6, to lower salinity levels linked to an Amur River flood event that year, this does not account for the continued declines in 2014, 2015 and 2016.

It was pointed out that the number of gray whales using the Piltun feeding area appears to have declined in recent years, suggesting that depletion by gray whale feeding is unlikely to be the cause of the recent decrease in amphipod biomass. It was further noted, once again, that sandlance are pelagic foragers that prey mainly on calanoid copepods. Pomerleau pointed out that the decline in amphipod biomass, together with an increase in sandlance, could signal that there has been a change in the benthic-pelagic coupling dynamics in the Piltun feeding area. She emphasized that despite the availability of 14 years of data on the benthos, no time-integrated studies have been undertaken of the diet of gray whales in the Sakhalin region (e.g. using biochemical tracers including stable isotope analysis and fatty acids). Therefore, the assumption that has been made consistently by Joint Programme scientists – that gray whales feed significantly on sandlance – has no scientific basis. Further analyses of gray whale skin samples and of sample from a broader array of presumed prey species would improve understanding of the feeding ecology of the whale using that Sakhalin feeding grounds.

Because of the implications for gray whale feeding energetics and therefore the overall health and productivity of the Sakhalin population, the Panel **recommends** that the companies explore the nature and causes of the decline of the amphipod biomass in much greater depth and detail than has been done to date. For such investigations, it is important to consider multiple explanatory hypotheses, some of which may relate to changes in the demography or behaviour of the gray whales and others to biophysical events or processes in the regional marine ecosystem. In this regard, the Panel **reiterates** recommendations WGWAP-17/03, 16/11 and 12, and the suggestions contained in the JPTF-2[2] report and particularly under item 4 and in Annex E of the JPTF-3 report[3].

2.1.3 Distribution

[2] https://www.iucn.org/sites/dev/files/content/documents/jptf-2_may_2016_report_final.pdf

[3] https://www.iucn.org/sites/dev/files/content/documents/jptf-3_final_report.pdf

2.1.3.1 COMPANY PRESENTATION

Document WGWAP-18/18 described the distribution of gray whales off northeastern Sakhalin based on observations made in August-September 2016. Distribution surveys were conducted by offshore (vessel-based) and onshore teams following the same transect lines and survey protocols as in 2015.

Shore-based observations were made in the nearshore feeding area from 1 August through 30 September. Twenty-seven synchronized surveys were conducted, with 11 completed in August and 16 in September. The average number of whales counted during these surveys was 22.1 and the maximum number counted was 40 (range = 11-40). As has been regularly observed since these distribution surveys began, in 2016 whales tended to be aggregated in proximity to the mouth of Piltun lagoon. Several peculiarities about the distribution of whales in 2016 were noted in the report, including: (1) the relatively low number of whales using the nearshore feeding area – the maximum single-survey count of 40 whales in both 2016 and 2015 represents the lowest number recorded between 2004 and 2016, (2) a decrease in the average number of whales counted per survey from 25.7 in 2015 to 22.1 in 2016, (3) the decreased number of whales north of the lagoon mouth and (4) the increased number of whales south of the lagoon mouth.

In the offshore feeding area, three complete surveys were conducted between August and September. The average number of whales counted during these surveys was 45 (range = 41-48). In comparison, in 2015 the average number of whales counted was 54.5 (range = 42-67). Sightings were made mostly in the central and eastern portions of the survey area and approximately 10-15 km north of where the majority of sightings were made in 2015. Whales were seen feeding, however, throughout the entire offshore area. Two synchronized onshore and offshore surveys were completed on 8 August and 7 September. The maximum combined count was 84 in August (38 whales counted near shore and 46 whales offshore) and 61 in September (13 whales counted near shore and 48 offshore). The maximum combined count in 2015 was 107.

2.1.3.2 PANEL DISCUSSION AND CONCLUSIONS

The Panel welcomed the information provided by the Company and **reiterated** the importance of this long-term data set and the need for continuing to collect data that are consistent and comparable. The Panel expressed **concern** about an emerging pattern (since about 2013) of declining numbers of whales in the general area and a southward shift of whales in the nearshore feeding area. These concerns include: (1) the continued low maximum number of whales (40) counted in the nearshore feeding area; (2) the decrease in the maximum number of whales (48) counted in the offshore area; (3) the decrease in the maximum number of whales (84) counted during synchronized onshore and offshore surveys; and (4) a redistribution of whales to the southern portion of the nearshore feeding area. These concerns are further underscored by the continued decline in total amphipod biomass near shore (item 2.1.2). Recalling previous Panel recommendations, it would be timely for the companies and their scientists to undertake analysis of the multi-year distribution data set, incorporating benthic data when possible.

2.1.4 Photo-ID

2.1.4.1 JOINT PROGRAMME

Document WGWAP-18/19 provided an overview of information collected during the joint Sakhalin Energy/ENL 2016 photo-identification surveys. Photo-identification effort was undertaken by four teams of observers. These teams consisted of one based on Sakhalin Energy vessels working mostly

in the offshore feeding area between 10 August and 10 October, one surveying the nearshore (Piltun) feeding area by operating from a small boat launched from Piltun Lagoon between 7 August and 25 September and two vehicle-based teams collecting images from shore between 1 July and 28 September as well as 20-29 November. Together, these four teams collected more than 32,000 photographs of gray whales and identified 128 individuals. A total of 274 whales have been identified by the Joint Programme between 2002 and 2016. Of these 274 whales, 119 (42%) were first identified as calves and are therefore of known age.

The ship-based effort resulted in identification of 61 whales in the offshore area and 17 in the nearshore area. The small-boat effort resulted in the identification of 45 whales in the nearshore area. Finally, the vehicle-based effort resulted in the identification of 43 whales by the southern team and 55 by the northern team. In total, 74 whales were identified in the nearshore feeding area.

Of the 61 whales identified in the offshore feeding area, 54 were sighted only in that area during 2016 (i.e. they were not sighted in the nearshore area). Of the 74 whales identified in the nearshore area, 67 were identified only in that area (i.e. they were not sighted in the offshore area). Only seven individuals were seen in both feeding areas. The relatively low degree of apparent movement between the offshore and nearshore feeding areas in 2016 stands in contrast to the high degree of such movement in 2015, when 47 of the 102 whales sighted in the offshore area were also sighted in the nearshore area and 52 of the 113 whales sighted in the nearshore area were also sighted in the offshore area.

The 2016 research effort recorded 14 calves and one previously unidentified non-calf. Eight of the calves were still associated with their respective mothers when first sighted while six were apparently weaned and independent of their mothers. No mother-calf pairs or independent calves have ever been sighted in the offshore feeding area.

The assessment of body condition continued in 2016. Photographs of 108 whales were suitable for evaluating body condition. Of these, 23 (23.1%) were judged to be in "poor" body condition. This is the highest percentage of whales rated in poor condition since this annual assessment was started in 2003. WGWAP-18/19 reports that the condition of many of these whales, however, improved over the course of the feeding season.

In addition to the 1 July to 28 September vehicle-based photo-identification work, effort was undertaken between 20-29 November. During this time, effort on 6 days in the nearshore area (between 52° 47' N and 53° 50' N) identified 4 whales (although the photographs of 2 of them were reported as being of poor quality and unusable). All of these whales were reported to be $\leq$ 4 years of age.

Feasibility tests were conducted in 2016 to evaluate the utility of small handheld drones for conducting or supplementing the other photo-identification efforts and aiding in the determination of mother-calf pairs. Further testing of drone-based platforms will be conducted in 2017.

In discussion, the Panel asked about the certainty in distinguishing calves of the year from yearlings when the subject animal was not with an accompanying adult female. Tyurneva reported that body characteristics were used to determine calves but did not further elaborate on the protocols used. The Panel **reiterates** its previous advice to use published protocols that refer to barnacle and pigmentation characteristics to identify gray whale calves (Bradford *et al.*, 2011).

Finally, the Panel again expressed caution concerning the number of photographic images being collected on an annual basis – over 32,000 images (of 128 whales) in 2016. This concern is based on the associated time and effort for analysts to process the data. Understanding the threshold of when data collection becomes excessive is part of conducting effective research that results in publishing papers on a timely basis. The Panel **reiterates** its earlier point that collection of data

should not be the end product of conducting research but rather part of a process leading to rigorous analyses that address specific questions.

2.1.4.2 RUSSIA GRAY WHALE PROJECT

Burdin summarized the results of 2017 field studies conducted by the Russia Gray Whale Project (RGWP - formerly the Russia-U.S. Program). This research program started in 1994 and has been ongoing annually since 1997, funded in large part by IFAW (the International Fund for Animal Welfare). It represents the 20+-year time-series that has served as the foundation for population assessment (see item 2.1.5).

The 2017 season resulted in the photo-identification of 46 individuals, including four calves and five previously unidentified non-calves. The general distribution of whales in 2017 (and 2016) was notably different to that in 2015 and earlier, with most of the whales encountered south of the mouth of Piltun Lagoon (a trend consistent with that reported by the Joint Programme; see item 2.1.3). Burdin expressed his concern that the number of whales using the nearshore feeding area appears to be declining and that the southerly shift of distribution could be related to ever-increasing oil and gas activities, including the relatively frequent seismic surveying and ENL's sealift operations in the important gray whale habitat located at and near the entrance to the lagoon (see item 2.2).

Additionally, the coastal salmon trap-net fishery, which overlaps spatially and temporally with feeding gray whales during the summer and fall, may present considerable risk to whales in the nearshore feeding area (see item 7.3). Part of this risk comes from fishing gear, free-floating or anchored, that has been abandoned by operators of the fishery. On 18 August 2017 the RGWP, in collaboration with a contractor from Sakhalin Energy, removed three lengths of derelict 3.5 cm-thick rope, totalling 250 meters, from the nearshore feeding area. The risk posed by this fishery is of particular concern because adult females and their calves demonstrate strong fidelity to this feeding area at a critical time when the females are recovering from pregnancy and lactation and the calves are being weaned. Further, the relatively recent shift in whale distribution to waters south of the lagoon mouth places them in proximity to where the salmon set nets are located, and therefore at increased risk.

The Panel commended the ongoing work of the RGWP, reiterated the importance of this research to the current understanding of gray whales in the western North Pacific and particularly at Sakhalin, and **recommends** that the studies continue into the future. The Panel also thanked IFAW for supporting the RGWP and expressed hope that this would continue.

2.1.4.3 CROSS-MATCHING OF CATALOGUES

The Panel noted that the RGWP and IBM (Joint Programme) catalogues have not been cross-matched since the 2011 season. The Panel **recommends** that the new whales sighted by each team during 2012-16 be cross-matched.

2.1.4.4 UPDATE ON JOINT PHOTO-ID CATALOGUE UNDER IWC AUSPICES

Following a long-standing recommendation of the Panel, Donovan provided an update on his recent efforts within the IWC to facilitate development of a combined photo-identification catalogue and related database, inclusive of information from Sakhalin and Kamchatka collected by the Russia Gray Whale Project and the Joint Programme. This combined catalogue and database would be held under the auspices of the IWC and follow the guidelines specified in its time-tested data sharing agreement.

In discussion, Lock indicated that both parties to the Joint Programme (Sakhalin Energy and ENL) were in agreement that this effort should move forward. Similarly, the RGWP has expressed interest in achieving this goal. Donovan confirmed that the IWC's offer to co-ordinate the cross-matching and to curate a combined catalogue still stands. With that, the Panel thanked Donovan for his efforts and encouraged him to continue these important negotiations. Further, the Panel encouraged all involved to take up the offer from the IWC, noting that the matter has been under discussion for some time.

2.1.5 Annual assessment of biological and demographic characteristics of 'western' gray whales

Document WGWAP-18/24 provided an update of the population assessment. The individual-based, stage-structured model used for previous assessments presented to WGWAP and IWC meetings was used, with modifications to accommodate the features of the current data sets.

This assessment used photo-id data collected off Piltun from 1995 to 2016 by the Russia Gray Whale Project (Burdin *et al*. 2017), data collected off Sakhalin from 2002 to 2016 by the IBM/Joint Programme project (document WGWAP-18/19) and data collected off Kamchatka during 2004-2012 by V. Vertyankin (document WGWAP-13/8, Vladimirov *et al*. 2013). Genetic sex determinations from the RGWP and IBM projects, photo-id matches between Sakhalin and Mexico, along with the three records of tagged whales tracked to the eastern North Pacific, were also used.

The cross-matching of catalogues has not been kept up-to-date recently, and 2011 was the last field season for which the catalogues have been fully matched. Some modifications to the model-fitting procedure were necessary to make use of unmatched data. Incomplete matching adds, in principle, to the uncertainty in the assessment, but to an extent that has not been quantified.

The non-calf population in Sakhalin and Kamchatka was estimated at 271-311 whales in 2016, of which 175-192 were predominantly Sakhalin-feeding whales, assuming that the whales consist of a mixture of a predominantly Sakhalin-feeding and a predominantly Kamchatka-feeding group.

The population is estimated to have been increasing at 2-5% per year over the last 10 years, but there has been statistically significant fluctuation in reproductive success and hence in population growth. It is currently unknown what the main drivers affecting reproductive success are, nor is it known whether they are important from a conservation point of view. The Panel notes that the North Atlantic right whale (*Eubalaena glacialis*) is an example of a population that had been increasing fairly steadily for decades but has declined over the last few years due to reduced reproductive success (Pace *et al*., 2017).

Paternity analyses by Lang (2010) found that about 50% of Sakhalin-sampled calves were fathered by Sakhalin-sampled males. This result is consistent with predictions from the current assessment model under the hypothesis that Sakhalin and Kamchatka whales together form a self-contained mating population, but would not be consistent with the hypothesis that the predominantly Sakhalin whales mate exclusively with one another.

Using the results from tagging and matching with Mexican catalogues, the assessment implied an upper bound of about 100 whales as the possible number of Sakhalin whales that migrate to a putative western North Pacific wintering ground.

Weller and Kato drew attention to observed movements between Sakhalin and Japan, which have included at least one mother-calf pair, and at least one repeated movement of a particular individual (Weller et al. 2016). The possibility that some Sakhalin whales migrate regularly to Asian waters cannot be ruled out, although it remains unknown whether a specific western Pacific wintering ground exists.

There was no new information on the possible detection of gray whales in the East China Sea by the US Navy, that had been reported to WGWAP-17.

The Panel requested that this population assessment be presented to the next IWC range-wide workshop on gray whales, scheduled for April 2018, where the implications for stock structure could be discussed in more depth.

Vertyankin and Tyurneva questioned whether it was sufficient to consider just two groups of whales (predominantly Sakhalin-feeding and predominantly Kamchatka feeding). It was agreed that the IWC workshop should address this question.

2.2 Exxon Neftegas Limited (ENL) 2017 Odoptu sealift operations and implementation of 2017 Marine Mammal Protection Plan

At WGWAP-17, ENL representatives presented information on the company's 'sealift' operations in 2016 (WGWAP-17 report, item 7.1.1) and NGOs presented the results of their independent monitoring programme of that year's sealift operations (WGWAP-17 report, item 7.1.3). It was indicated at the time that a final sealift operation would take place in 2017. At the present meeting, ENL representatives kindly provided a slide presentation and shared some of the 2017 results. NGOs made a brief verbal presentation and participated in the discussion of this topic.

2.2.1 Presentation by ENL

Jennifer Dupont of the Houston office of Exxon gave the presentation. She was accompanied by Vladimir Nechayuk and Ervin Kalinin and all three participated in the question-and-answer session following the presentation.

The 2017 sealift operations spanned the period 11 June – 5 July (compared to 7 June – 3 August in 2016). Of the 23 days in the field, 9.5 days were considered 'operational' time – therefore no activity was taking place for 58% of the time. Over the period 17-29 June seven large modules were delivered, without incident, via shallow-draft tugs and barges to the Temporary Offloading Facility (TOF) inside Piltun Lagoon (Bay). Since the process was highly dependent on the tide for navigation and safety (no screeding was reported to have been required in either 2016 or 2017 – see the WGWAP-17 report), movements of the tugs and barges into and out of the lagoon took place only during high tide.

In 2017 four 'primary' mitigation measures and two 'technology-enhanced' mitigation measures were implemented.

The primary measures were:

(1) *Timing* – start and finish operations as early in the season as feasible, before the peak of whale presence in the Piltun feeding area;

(2) *Vessel speed limits* –10 knots in good visibility, 7 knots in reduced visibility in the whale safety area around the mouth of Piltun Lagoon; 7 knots in good visibility, 5 in poor visibility in the safety area when whales were sighted; 15 knots in good visibility, 10 in poor visibility inside Piltun Lagoon (exclusive of the mouth area where tugs and barges were operationally constrained to < 5 knots);

(3) *Vessel-based marine mammal observers (MMOs)* – 2 MMOs on the lead shallow-draft tug and 1 on each of the others (4 operated at a time);

(4) *Land-based MMOs* – 2 MMOs continuously on watch at Station 9 (located at the northern end of the southern spit and closest to the mouth of the lagoon) and other observers stationed at the Piltun lighthouse.

The technology-enhanced measures were:

(1) Hand-held infra-red cameras used by MMOs on the lead tug and the 'observer' tug ((practical range approximately 1 km) and an array of 9 stationary infra-red (IR) cameras deployed at Station 9 to monitor (in overview) each of the seven operations;

(2) Real-time acoustic monitoring using 12 AUAR stations, 4 of which were additionally equipped with satellite telemetry.

Mitigation measures were triggered by the proximity of whales on seven occasions. All of these involved a reduction in vessel speed; two involved a change in vessel heading. On four of the occasions, the whales observed left the area and on three they stayed.

Regarding the IR cameras, the land-based system was described as an 'upgraded version' of the system that is being used by NOAA researchers to aid with the gray whale census in California (see WGWAP-17 report, item 5.4). The nine thermal IR cameras each had a 10-degree field of view providing an estimated 90º coverage, with an estimated practical range of 4-6 km from shore. An automatic detection algorithm was used in combination with visual monitoring of the video feed by observers on-site. Dupont reported that the IR cameras were useful during most night-time operations although there were false detections ('false positives'); the systems were also ineffective under dense foggy conditions. A publication on the efficacy of this shore-based system (e.g. comparing detections by the automated system to detections by MMOs) is anticipated in 2018.

Acoustic monitoring was continuous during active operations using 12 AUARs, 4 of which also had real-time transmission (via satellite telemetry). According to Nechayuk, there were no technical failures and the levels recorded remained below thresholds that would have required intervention. The acoustic footprint predicted by the model for ocean-going tugs and barges closely matched the footprint computed after the seasons with the numerical model calibrated by the recorded values. Shallow tug operations in the vicinity of the mouth of Piltun Lagoon did not produce sound pressure levels exceeding 120 dB_{RMS} re 1µPa as measured at the closest AUAR and the majority were in fact below 110 dB_{RMS} re 1µPa. It was noted that in 2017 the offshore barges were anchored rather than held in position by the ocean-going tugs using their engines as in 2016, a factor that considerably reduced the duration of sound emissions. Nechayuk clarified that the transfer point for switching from ocean-going tugs to the shallow-draft tugs was farther offshore than in 2016. The acoustic buoy situated 2.5 km from the transfer point recorded a sound pressure level (SPL) of 130 dB_{RMS} re 1µPa for short periods of time but generally levels were in the range of 120-130 dB_{RMS} re 1µPa

Dupont emphasized that with completion of the sealift operation, the Sakhalin-I project has entered the production phase of the project in which no further development activities (related to added infrastructure) are envisioned.

The Panel thanked the ENL representatives for their presentation and **commended** the Company for what appears to have been a well-planned and well-executed operation. It **agreed** that the paper on the efficacy of IR cameras will be of scientific interest and assist in the development of future mitigation measures for whales.

2.2.2 Presentation by Russian NGOs on their activities related to monitoring of the ENL operations in 2017

In a brief presentation, several NGOs referred to their interactions with ENL prior to the 2017 sealift operation. This subject was addressed at the 12th meeting of the Noise Task Force (NTF) in Gland in April 2017, and the summary from the NTF report is included here as background.

> 'Carbone confirmed that she had facilitated a meeting between ENL and three Russian Non-Governmental Organizations (NGOs) on 14 March in Moscow. The NGOs presented a report and highlighted several questions noted by ENL, whose representatives had agreed to provide answers. Discussion of activities planned for summer 2017 included the fact that from the NGOs' point of view, the ideal situation would have been for the modules to be transported by land, not by sea. ENL confirmed that they had reviewed their Marine Mammal Protection Plan (MMPP) for the sealift operation and a number of changes had been integrated into the 2017 version. One of these would require the use of night-vision equipment in the safety zone. The NGOs also suggested that an Independent Observer be incorporated into the 2017 operations, that all ship movements be avoided at night, and that heavy loads be transported only during the highest tides. ENL confirmed their intention to share the MMPP 2017 with the NGOs and reconvene a meeting in April 2017 to discuss the feedback (Note: This meeting did not take place.). The NGOs also asked to receive 2017 tide data. Carbone noted that she had requested the MMPP be made publicly available.
>
> The NTF thanked Carbone for her efforts in this regard, noted the progress made, and looked forward to receiving further information as it becomes available. It was noted that the Panel had still not received answers to questions it had formulated for ENL concerning the 2015 seismic survey. The NTF agreed that an invitation to ENL to participate in and provide information at WGWAP-18 (in November 2017) would be valuable.'

At WGWAP-18, the NGOs indicated that they had made a number of specific recommendations to ENL regarding vessel speed limits that were not incorporated into the Company's MMPP. They nevertheless expressed appreciation for the opportunity to exchange views with the Company and considered the meeting in Moscow in March 2017 to have been productive.

The field monitoring effort by NGOs in 2017 was limited to monitoring compliance with the speed limit provisions in ENL's MMPP. Monitoring took place on 21, 23, 25, 26 and 27 June and repeated night-time violations were alleged, with vessels travelling at speeds greater than the limit of 7 knots.

The evidence of tugs occasionally deviating from a direct course was raised during the discussion and it was pointed out that this was likely an inevitable result of travelling slowly in a strong tidal current, i.e. a navigational necessity.

The Panel once again thanked the NGOs for their presence at this meeting and for their interest and concern. It **commended** both the NGOs and ENL for engaging in a frank and civil dialogue on these controversial matters, and thanked Carbone for her constructive role in facilitating that engagement.

3 SCOPE OF WORK FOR PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2017, 2018 AND BEYOND

3.1 Joint Programme plans in 2018 and beyond

3.1.1 Scope of work of the Sakhalin Energy/ENL Joint Programme

Samatov provided preliminary results from the 2017 Joint Monitoring Programme which consisted of three components as follows:

(1) Vessel-based photo-ID, conducted from inflatables launched from the Sakhalin Energy supply vessels as in previous years. There were 5 field days from 9 August to 13 October, and only 43 individual whales were identified, fewer than in previous years.

(2) Shore-based photo-ID, which in addition to photography from shore incorporated a drone to photograph gray whales from above. There were 65 field days from 2 July 2 to 28 September.

(3) Distribution survey of the offshore feeding area, using the Polar Baikal crew change vessel and its MMOs (4 field days from 8 July to 23 September).

Drone flights were reported to have increased the number of whales photo-identified from shore. High-quality photos suitable for individual identification were obtained. Dorsal-view images will be added to the catalogue from the 2017 season onwards.

Document WGWAP-18/21 outlined the Joint Programme plans for 2018, which have already received approval from the authorities. These plans involve continuation of the three components from 2017 plus a new, fourth component:

(4) infra-red (IR) systems to detect gray whales will be deployed at the northern and southern ends of the nearshore (Piltun) feeding area (mid-May to end June).

There was limited discussion of the 2018 plans because these were already fixed. However, with regard to plans for 2019 and beyond, the Panel had several concerns. In particular, the Panel stresses that it is unable to review thoroughly (in line with its Terms of Reference) the plans given the way they have been presented. Apart from stating that field elements such as acoustics, behavioural observations and benthic sampling are to be discontinued due to the significant quantity of data already collected during 'routine' operations, the plans provide little or no rationale or discussion of any quantitative implications of any changes. The advice provided at the Joint Program Task Force meetings does not appear to have been taken into account. To give one example, the Panel notes that discontinuation of benthic sampling will make it harder to interpret any future changes in whale distribution should they occur. Benthic sampling would not necessarily have to be conducted every year, but some level of benthic sampling should be considered for 2019 and later years.

With respect to use of the IR system, it appeared that little thought had gone into how the data would be analysed and interpreted. For example, whales could arrive from any direction and leave again, and it could be difficult to determine how many different individuals were seen and recorded. The lack of temporal overlap between the IR system and the photo-ID effort planned for 2018 means that there would be no way to calibrate the former. This omission should not be repeated in 2019.

While results from the drone-based work in 2017 show promise for photo-ID, the Panel emphasized that it is the long-term nature of photo-ID data series that makes them most valuable. It is essential that work is undertaken to check that most or all of the drone-based identification photos of dorsal aspects will be matchable with the existing catalogues, and to adjust field procedures for the drone photography if necessary.

The plans for the 2019 Joint Programme need to be submitted to the authorities by September 2018, i.e. before the next WGWAP meeting. The Panel **requests** that IUCN liaise with the Company with a view to ensuring that the Panel can provide input into the plans well before they are submitted, and before they are agreed between the two companies. The Panel also expressed **concern** that despite considerable work within the Joint Programme Task Force, there had been little if any feedback since the most recent meeting (JPTF-3) in November 2016.

The Company noted that it still wished the Panel to be involved in the discussions of the long-term Joint Program (i.e. beyond 2019) and that it would be working with ENL to ensure that this can happen.

3.1.2 Russia Gray Whale Project (RGWP) plans in 2018 and beyond

Burdin confirmed that the RGWP would continue in 2018 with support from IFAW. He also noted that in addition to the continuation of photo-ID work, targeted biopsy sampling of calves and other young animals not previously sampled may resume. The Panel **agreed** that such sampling has great value particularly for establishing the sex of photo-identified individuals of known age. Although a gap of a few years in the genetic sampling work does not compromise the long-term photo-ID data series for population assessment, as the gap lengthens the value of such data is reduced.

The Panel **reiterated** that any biopsy sampling programme should be designed thoughtfully, with priorities set according to the questions such a programme is expected to address. In addition to demographic analyses, tissue biopsies can be used for studies of feeding ecology and diet. The Panel also **emphasised** the importance of obtaining tissue samples from dead animals if they become available (e.g. stranded, entangled, floating carcasses).

4 SAKHALIN ENERGY'S PLANS FOR A SEISMIC SURVEY IN 2018

4.1 Sakhalin Energy's seismic survey plans 2018

4.1.1 Update on plans for an OBN/streamer survey 2018

Blonk summarized the business drivers for conducting the seismic survey in 2018, which include: filling in data gaps near the platforms (2 x 25 km^2), well positioning and drilling risk avoidance, waterflood management and optimization, and identifying pockets of bypassed oil. He then informed the Panel that the seismic survey will be executed by SovComFlot Geo (SCF) as lead contractor, working with MAGE and Magseis as sub-contractors for the OBN deployment. As per plan, the work for Piltun-Astokh (P-A) consists of a 2015-repeat streamer survey (350 km^2), complemented by OBN coverage over the critical P-A platform data gaps (2 x 25 km^2) using nodes-on-rope technology. The process of obtaining required Russian Federation (RF) permits has been initiated (led by SCF), making use of the provided draft MMP and MMPP. This will lead to the RF EIA (OVOS), public hearings (January 2018), and documentation for the SEER (State Environmental Expert Review) process. The overall timeframe for the survey is: public hearings Dec-Jan; SEER process Mar-May; ice retreat 6-15 June; end of shooting by 1 Aug.

An operational kick-off and hazard identification event was held in Yuzhno in early November with Sakhalin Energy, the contractor, and Shell representatives, to be followed by a technical workshop in early 2018 focusing on geophysical and logistical details, including small-source tests. The base acquisition schedule is to acquire the P-A streamer part first, followed by the OBN part, but the order may still change. Neil Dorrian was introduced as Sakhalin Energy's Marine Environmental Advisor for the seismic survey project. His role currently focuses on: (i) screening and selecting onshore and offshore MMOs with the goal of securing experienced MMO teams that satisfy the requirements of the MMP, and (ii) monitoring technology options for use during night-time and poor-visibility operations. In 2018 Dorrian will assume the role of central commander (CC), a role to which he brings substantial MMO and organizational experience.

Potential night-time and poor-visibility technology options and their practical implementation were discussed, as was ongoing vendor engagement led by Dorrian regarding options, conditions, and set-up for a vessel-based Camera Monitoring System (CMS; Dual Thermal Imaging/High Definition system). Using the CMS would involve an offshore Mitigation Field Technologist, who would both operate the CMS and train other offshore MMOs to operate it but would also occupy one of the limited number of berths on the vessel. The actual implementation will be determined by the monitoring potential, feasibility of on-board installation and implementation (vessel and bunk capacity), and costs. Experience with an IR system during ENL's 2017 operations (see item 2.2.1) revealed that the IR cameras had many false detections ('false positives') and also that they were

ineffective under dense foggy conditions. The Panel noted that the nine cameras used by ENL had only a 10-degree field of view, whereas the three units to be deployed by Sakhalin Energy each spanned 120 degrees. Therefore, the resolution of the latter system may be lower. The Panel stressed that Sakhalin Energy needs to be aware of and attendant to these potential limitations. Ideally, data will be collected under circumstances where the CMS data can be compared directly with observer data as means of characterizing the performance of the system deployed by Sakhalin Energy. Lastly, the Panel pointed out that the CMS operator would probably be unavailable for other MMO duties since monitoring the CMS system will likely be a full-time job for at least one person. Regarding other observation platforms and tools, a mobile set-up for optimizing big-eye binocular utilization was discussed. The big-eye binoculars are intended to be used to monitor for whales in the area between the seismic vessel and the perimeter monitoring line (PML), so they need to be positioned accordingly for northbound and southbound line acquisition.

Blonk described the operational chain of command for shut-downs, involving single-point authority with the CC and the offshore Lead MMO (or delegate) for onshore- and offshore-triggered shutdowns, respectively. Furthermore, he indicated that visual monitoring protocols are being developed with Dorrian, and that opportunistic use of drones is being considered. While the Panel encourages the use of better and/or more efficient methods of monitoring whale locations and behaviour, it **cautions** the Company that absent a coherent plan as to how and for what purpose these devices would be used, a drone 'program' could divert resources and effort away from established observational protocols. The Panel **reiterated** the importance of having data collected and analysed in ways that allow robust, credible comparison to what has been observed in previous years and seismic surveys.

Blonk further indicated that (i) POI is actively working on AUAR upgrades, (ii) the iESHIA being developed by Donaghy is on track and (iii) successful SEER engagement on a gray whale exclusion zone cannot yet be guaranteed. He concluded by expressing appreciation for the ongoing constructive discussions with the WGWAP and NTF, and stating his intention to keep the Panel, and especially those who are members of the small advisory group (see item 4.1.2), informed of developments in advance of and during the survey.

Finally, with regard to industrial activities other than Sakhalin Energy's scheduled for 2018, it was noted that Gazprom Neft would be continuing its operations on the Ayashsky Block (Neptune oil field) , which overlaps the offshore feeding area. It was suggested, and the Panel **agreed**, that the incorporation of Gazprom Neft's activities in analyses of cumulative impacts (e.g. from noise exposure) would be beneficial. Sakhalin Energy indicated that it has been making efforts to communicate with Gazprom Neft and that there are signs suggesting it is open to the possibility of participating in such a process. The Panel **encourages** IUCN and Sakhalin Energy to pursue a dialogue with Gazprom Neft to that end.

4.1.2 Monitoring and Mitigation Plan (MMP) for 2018 seismic survey

Donovan summarized the work of the Noise Task Force since the last Panel meeting with regard to development of the Monitoring and Mitigation Plan (MMP) for the 2018 seismic survey. The overall objectives of the MMP are four-fold: (i) prevent physical injury to the whales, (ii) avoid behavioural disturbance, primarily within the Piltun feeding area (bounded by the PML), (iii) minimize the whales' cumulative noise exposure; and (iv) collect data to allow for improved mitigation in the future.

In developing the 2018 MMP, the NTF took as its starting point the MMP developed for the 2010 survey, which represents arguably the most comprehensive such plan available for the Sakhalin context and for which the overall approach has been explained in a peer- reviewed publication (Nowacek *et al*., 2013). In light of experiences with Sakhalin Energy's previous surveys and

bearing in mind the framework outlined by Nowacek *et al.* (2013), the NTF addressed several specific issues, including: (i) the need to re-evaluate the Perimeter Monitoring Line (PML) and if possible obtain additional early-season data; (ii) results of simulation studies to evaluate the benefits and costs of certain decisions; (iii) exposure thresholds and how to define and configure the exclusion zone; (iv) the concept of a 'moving A-zone'; and (v) practical issues such as MMOs and shut-down protocols.

The MMP was the subject of several teleconferences and three meetings in 2017 – NTF-12 in Gland in March-April, the 'small group meeting' (SMG) held at Duke University in July, and NTF-13 in Amsterdam just prior to WGWAP-18. Other noise-related issues were discussed during these meetings, and these are mentioned and considered elsewhere in this report (item 2.1.1).

To create the PML initially (for the 2010 survey), the Panel and the Company used several years of data (especially early-season data from June and July) but those data are now quite old and probably outdated with respect to any new trends that might led to changes in whale distribution in the region. The Panel **reiterated** the importance of collecting data (using consistent or appropriately calibrated methods) at times (i.e. June and July) and in years other than only during particular events such as seismic surveys; in recent years data (on behaviour in particular) have been collected only during 'event' years (i.e. disturbed periods), making it more and more difficult to have confidence in comparisons against a baseline that represents 'undisturbed' conditions. As the Joint Programme is 'refreshed', the Panel **recommends** that the Company incorporate sampling during quiet, undisturbed periods. Without such sampling, the Company runs the risk of having data that cannot be used to determine whether or not whales were disturbed by its activities.

Simulation studies (conducted by Cooke) were used to assess trade-offs between certain mitigation measures and survey duration, e.g. by comparing total noise exposure of the gray whales off Sakhalin during the seismic survey under several scenarios. These studies used the 2015 seismic survey operations as a basis for estimating things such as the number of whale-prompted shut-downs, and considered factors such as operational strategies and decisions, different shut-down rules (e.g. presence of only mother-calf pairs vs. presence of all whales, rules for continuing seismic acquisition during periods of poor visibility), metrics of exposure, and abundance of whales in the Piltun area during the survey period. The simulation studies confirmed that the most important strategy for mitigation is to start and complete the survey as early in the season as possible. The results also showed that most mitigation measures had little or no positive effect on the overall population's exposure to noise and that if behavioural shut-downs were extended to all animals (and not just female-calf pairs), this could lead to extended survey duration and increased overall exposure of whales.

Given this extensive work, the Panel **concurred** with the view of the NTF that for the 2018 survey (whilst not setting a precedent), additional protection measures will apply only to mother-calf pairs, recognising that this represents a difficult balance in terms of protecting individuals and minimising overall exposure of the population. It also **agreed** that other segments of the population (e.g., pregnant females, post-weaning females) arguably require protective measures as well, although they are difficult to identify in the field.

Finally, the Panel **emphasizes** that the best way to effectively reduce the overall exposure of whales to noise is by reducing the strength of the sound source itself, which has been frequently noted by the NTF and the Panel in the past. The Panel **recommends** that, following the Company's initial proposal, the Company indeed put some priority on experimental work to examine this during the OBN part of the survey as discussed in the NTF-13 report.

With respect to exposure thresholds and the exclusion zone, the NTF focused on revising its recommendation on the size of the exclusion zone as there has been significant new research on

levels that cause hearing damage in cetaceans, although the data are limited to toothed whales. To define the exclusion zone requires a definition of the threshold for physical injury. NOAA (1998) defined the threshold for injury as 180 dB_{RMS} re: 1µPa though with no reference to frequency-specific effects on hearing. The SMG reviewed all current information and approaches to defining injury thresholds (e.g. Southall et al. 2007; Finneran 2016) and, given the absence of data on baleen whales and the conservation concerns with western gray whales, recommended, and the NTF agreed on, a more precautionary interpretation of Southall et al. (2007) that includes frequency weighting. The NTF adopted a value of 195 dB re: 1 μPa^2-sec for gray whales, with M-weighting; the detailed description and rationale for this number are contained in the NTF-13 report. This number then had to be translated into a 'zone' for the seismic survey and, based on modelling of the 2018 source, the radius is ~ 500 m. The NTF agreed to add precaution based on uncertainty in the modelling and recommended an exclusion zone with a radius of 1 km, a number that needs formal approval by the SEER before it can be implemented by the Company. The Panel **concurs** with this conclusion and **endorses the recommendation** of the NTF.

The NTF also reviewed the definition of the 'moving A-zone', which is the zone within the feeding area where additional protection is given to whales so they are not exposed at levels above the agreed disturbance threshold of 156 dB SEL. The balance here is between providing adequate protection for feeding whales while not unnecessarily extending the survey's duration and thus increasing overall exposure of the whale population to noise. Racca presented an updated explanation of the moving A-zone concept including a more pragmatic way to implement it than was available before the NTF-13 meeting. This approach was adopted by the NTF as part of the MMP and the Panel **agrees** that it is appropriate (see the NTF-13 report for a full description).

The NTF briefly considered the subject of analyses of data acquired during implementation of the 2015 MMP. The Panel finds it regrettable and inexcusable that the data collected during the 2015 seismic survey proved to be of marginal quality and have not been meaningfully or fully analysed. The NTF made several suggestions about combining data sets, either the 2010 and 2015 SEIC data sets and/or the 2015 SEIC and ENL data sets. ENL declined Sakhalin Energy's offer to combine data and is instead planning to publish its own results separately, at the earliest in 2018 which will not be in time to inform the MMP for Sakhalin Energy's 2018 survey. Sakhalin Energy has not pursued the idea of combining its own 2010 and 2015 data sets. The Panel **recommends** that the Company's planning and budgeting for its 2018 effort include consideration of how, by whom, and on what timeframe analyses of the MMP-related data will be accomplished, e.g. personnel, funding, analytical methods.

Finally, with respect to finalising the MMP, Donovan informed the Panel of several outstanding logistical issues: (a) there is still work to be completed on the field protocols, which will be finalized by the NTF at its upcoming meeting in March 2018; (b) IUCN is in the process of finalising the terms of reference for the Independent Observer (IO) and contracting an IO for the 2018 seismic survey; and (c) a small advisory group consisting of a subset of Panel members will again be convened to assist with issues arising during the final run-up to and the execution of the MMP (the terms of reference for this group can be found here);.

The Panel **endorses the recommendations** and conclusions of the NTF as summarized above, and the recommendations are incorporated into the Panel's formal list of recommendations from this meeting (see Table at end of this report).

5 OTHER SAKHALIN ENERGY ACTIVITIES IN 2016, 2017 AND BEYOND

5.1 Update on other Sakhalin Energy activities in 2017 and plans for 2018 onwards

5.1.1 Updated Marine Mammal Protection Plan

Sakhalin Energy has been reviewing and revising its Marine Mammal Protection Plan (MMPP) over the last two years. As explained by Donaghy, this document represents the operations manual for the Company's routine activities and includes rules and guidance for reducing risks to and mitigating impacts on marine mammals, with special attention given to gray whales. It is incorporated into the Sakhalin Energy Health, Safety, Environmental and Social Action Plan, which is a covenanted document under the loan agreement. Donaghy emphasized the difference between a detailed Monitoring and Mitigation Plan (MMP) which is activity-specific (e.g. for a seismic survey) and the MMPP which governs all marine and coastal activities of the Company and its contractors. The MMPP is intended to identify and describe the risks to marine mammals posed by those activities and the strategies used by the Company to address them.

The current MMPP is outdated (last updated in 2009). The revised MMPP in its final form will be published and made public on the Company's website. As mentioned in its last report (WGWAP-17, item 8.1), the Panel had received a preliminary, partially revised draft for review in October 2016 which, after a brief review, the Co-chairs determined required further work before going to the Panel.

A substantially improved complete draft, which incorporated numerous changes in response to comments and edits recommended by Reeves, Donovan and Brian Dicks (WGWAP Associate Scientist), was received by IUCN in August 2017 and circulated immediately to the entire Panel for review. The extensive feedback from the Panel was transmitted to Donaghy on 26 September 2017 and Donaghy, in turn, made final revisions and passed the pre-final draft along to the Lenders' representatives for their review and to obtain the Lenders' approval before publication.

Discussions of the Noise Task Force since NTF-12 have identified the need for reconciliation between the agreed MMP for Sakhalin Energy's planned seismic survey (see item 4.2, above) and the guidance given in the MMPP regarding limits of acoustic exposure of gray whales. The Panel provided updated information to Donaghy (e.g. on thresholds for behavioural disturbance and auditory injury), to make sure the two documents are aligned in this regard.

Donaghy thanked the Panel for its input and gave assurance that all the advice received had been (or would be) duly considered and incorporated into the latest draft, which would now go to the Lenders' representatives (Ramboll Environ) for their review. Hancox, on behalf of Ramboll, gave assurance that his company's high-level review would include checking to ensure that the Panel's input (to which he was privy) was dealt with appropriately by the Company. Final approval of the revised MMPP by the Lenders was expected in a matter of weeks.

In response to questions during discussion, Lock and Donaghy clarified that the MMPP is 'open' to being changed as recommendations are received and as the Company sees a need for modifications. In addition, the Company's document management system triggers an annual review of all official documents including the MMPP. Hancox added that in addition to this annual review, there is a 'management of change' process in place at other times to deal with issues that arise between the reviews; as a covenanted document under the loan agreement, any changes to the MMPP need to be agreed by the Lenders. When asked how the Company tracks and addresses non-compliance with the terms set forth in the MMPP, Lock replied that she viewed that question as a good input to the 2019+ Joint Programme. At present, the procedure is for non-compliance, when reported, to be investigated, followed by measures implemented to avoid future occurrences.

Panel Conclusions

The Panel notes that the MMPP in general does not commit the Company to specific protection measures beyond those already implemented for other purposes. On noise, for example, the document simply refers to the thresholds that have been agreed, and indicates that any action taken when these are exceeded will be decided on a case by case basis. The violation of the 120 dB continuous noise exposure that was documented to have occurred in 2016 with the multi-beam vessels (see item 2.1.1) is one such case, and the Panel expects the Company to address this issue beyond simply investigating the source, i.e. mechanisms must be in place to address violations of the MMPP at the time they occur, not simply in retrospect. Furthermore, with respect to this 120 dB_{RMS} re 1 μPa exposure threshold to which the Company agreed, there is no discussion of a different threshold in the updated MMPP, so the Panel assumes that it has not changed.

The Panel also notes that the MMPP includes items where the Company has assessed the risks to be sufficiently low that protection measures are not warranted. This leads to some ambiguity in the text. As one example, a vessel speed limit of 35 knots in the Crew Transfer Corridor is listed as a 'standard mitigation measure'. However, the speed is not being limited to 35 knots to protect whales (see item 5.1.2 below). Rather, it is the normal transit speed for the vessel class used for crew transfers and is thus *not* a 'mitigation measure'. The MMPP itself notes that vessel strikes on whales at 17 knots or above are around 90% likely to be fatal. The 35-knot speed is considered acceptable by the Company because the risk analyses cited in the document have shown that the annual probability of ship strikes in the designated corridors is low. The Company has therefore decided that the 'mitigation measure' that would normally be in force for ship strikes to reduce the chance that a strike will be lethal (i.e. reduce speeds to less than about 12 knots) is not necessary given that whales will rarely or never be in the area. It is in effect a trade-off between reducing the risk of a lethal strike and the operational effectiveness of the vessel and HSE considerations from a human perspective. The Panel **recommends** that speed limits listed in the MMPP only be described as mitigation measures for marine mammals when they are lower than the limit that would have been set in the absence of marine mammal-related considerations.

The Panel **recognises** that the MMPP serves a necessary function in terms of allowing the Company to meet requirements of the loan agreement and is similar to other documents produced for such purposes. Therefore, in providing its advice on the MMPP, the Panel generally did not raise complex issues of substance and detail. Rather, in line with the Company's wish to handle potentially high-risk activities on a case by case basis, the Panel resolved to continue to give advice on specific activities, such as seismic surveys, vessel traffic and construction projects, as it has always done, i.e. in context where it is likely to be most effective.

The Panel thanked Donaghy for his hard work in completing the MMPP revision and noted that the new version represents a significant improvement. Also, it commended the Company for putting in place a good process for ensuring that the MMPP is kept up to date in the future.

5.1.2 Programme on routine Marine Mammal Observers (MMOs) and ship strike avoidance, including speed limit implementation

In addition to the information on implementation of the Marine Mammal Observer (MMO) programme in 2016 in document WGWAP-18/13, Samatov provided some preliminary information on the implementation in 2017 of recommendations WGWAP-17/08 and 09 relating to the relaxation of the speed limit for crew change vessels.

In 2016, 12 MMOs were stationed on 7 vessels. They logged 209 sightings of gray whales totalling 353 individuals. There were 15 cases of gray whales sighted at or within the designated safety

radius of 1 km, and strike avoidance measures (course change and/or deceleration) were taken in 7 cases. No marine mammal ship strikes were reported.

The Panel had agreed that the crew change speed limit of 21 knots could be relaxed to 35 knots, for a provisional period of 2 years but that the 21-knot limit be retained during darkness or poor visibility. This recommendation (17/08) was based on the Panel's assessment that a ship strike of a gray whale was statistically unlikely, even if the speed was too high for there to be much chance of detecting an animal on vessel's heading before a strike would occur. The Panel also had recommended (17/09) that accelerometers be installed with a view to detecting ship strikes, given that these events, especially when the impact on the animal is a 'glancing' blow, would not necessarily always be noticeable in real time.

Samatov reported that, instead of using accelerometers, GPS devices had been installed on each crew change vessel in 2017. These devices were programmed to record the speed at 1s intervals, with a view to detecting changes in speed caused by hitting an object. The stored data had not been analysed, because it was not thought that any strikes of whales had occurred.

The Panel questioned whether the 1s resolution would be sufficient to detect glancing strikes that might only last tenths of a second, but which could still be fatal at such high speeds. Given the technical nature of the matter, the Panel **agreed** to the suggestion of the Company that the discussion should continue inter-sessionally, with a view to ensuring that a procedure is in place by the 2018 season that will ensure that any vessel strikes of whales that occur are detected and diagnosed, while recognizing that the probability of striking a gray whale in any given season is probably quite low.

Samatov reported that approximately a third of the crew change transits were in periods of darkness or poor visibility, for which the 21-knot limit was retained. During these periods, MMOs may be unable to detect gray whales, and therefore reliance is apparently placed on the intrinsically low likelihood of a strike.

The Panel noted the potential scientific and monitoring value of the times and locations of MMO gray whale sightings, and requested to initiate intersessional discussion as to how these data could be made available subject to the normal data protection safeguards.

5.1.3 Oil spill response planning and drills: Panel review and plans for 2018

In the annual update on Sakhalin Energy's Oil Spill Response (OSR) planning and drills, Lock again briefly summarised the basic policy of prevention with a zero-spillage objective – 'no harm, no leaks' (see item 8.3, WGWAP-17 report). She emphasised that a full suite of controls is in place for spill prevention and that the Company's comprehensive OSR plans have been approved by the Russian Federation (RF) authorities and were reviewed in 2017 by Dicks (WGWAP Associate Scientist; see below) and the Lenders' consultant (PCCI). Plans are regularly tested by a wide range of OSR exercises and some of the drills are large-scale. A major well control exercise was planned for November 2017.

In response to a question as to whether there had been any incidents over the past year (i.e. since WGWAP-17), Lock stated that overall losses in 2016 were less than one litre and no spillages had been reported in 2017 to date. A leak reported by the media in March 2017 at Lunskoye did not activate a response because it was quickly determined that no oil was lost.

In 2017, Dicks was commissioned by the Panel to review Sakhalin Energy's recent OSR plans (for P-A, Lunskoye and Prigorodnoye) and drill/exercise reports (document WGWAP-18/14-A). In addition, he reviewed, in consultation with Reeves, all 'open' oil-related WGWAP recommendations and the oil sections of Sakhalin Energy's updated draft MMPP (see item 5.1.1).

During the review process, Dicks and Reeves engaged in e-mail discussions with Sakhalin Energy that resulted in resolution of some issues as reported below.

Outstanding oil-related recommendations:

WGWAP 10/17 – Oil Spill Response in Ice Manual. Revision of the manual has not been completed since this recommendation was made by the Panel in 2011 or since Dicks's last review of documents in 2014. The Company confirmed that it plans to update the manual in 2018 and the manual will be made available for Panel review as soon as the update is complete. On that basis, this recommendation is classified as 'Closed – superseded' by recommendation WGWAP-18/15 (see below).

WGWAP 12/011B – Blind drills. This recommendation that OSR exercises be conducted 'blind' (i.e. with participants unaware of their nature and timing) to make them as realistic as possible and maximise the benefits to everyone involved was carefully considered by the Company even though it concluded that it was unable to comply fully. Lock explained that these exercises, particularly the major ones, involve large numbers of people and as a result, it is not feasible to run them blind. For example, having the right official observers in place is critical, and this may require flying some of them in from elsewhere in Russia and even from other countries. Participants in Sakhalin Energy's major OSR exercises are notified in advance only of the date and location of the exercise. Pre-knowledge of scenarios is limited to only those persons involved in planning the exercise. In regard to immediate response readiness, Sakhalin Energy's offshore facilities, emergency response vessels and contractors conduct 'blind' notification training for their emergency response teams. Given this, Dicks and Reeves considered the Company's response acceptable and therefore concluded that this recommendation should be classified as 'Closed – implemented/resolved satisfactorily' and accompanied by an explanatory note from Sakhalin Energy.

14/011/B - Helicopter dispersant spraying. This recommendation, which calls for testing this technique through a field exercise, was formally Rejected by Sakhalin Energy, and the reasons are given in the Response column of the recommendations log on the WGWAP website. Lock explained that the Company does not have its own aerial dispersant systems. Its OSRP strategy is to apply dispersants with systems that are installed on marine vessels. Use of third-party helibuckets is a secondary option, and the regional (Singapore) contractor's fixed-wing aircraft is a tertiary option. Hence, Sakhalin Energy has exercised marine vessel application using water in place of dispersant. Lock noted that the Company was investigating the purchase of new helicopters for passenger (e.g. crew-change) operations and that although these were not currently planned for use in dispersant spraying, it would be possible to apply dispersant by air if determined to be feasible and reasonable from OSR, technical and environmental perspectives. This possibility is already included in the scope of current OSRPs.

Review of OSRPs:

Dicks's main approach to reviewing OSRPs was to focus on whether previously identified Panel concerns and any issues of particular relevance to gray whales had been addressed in the latest versions. This approach was consistent with his earlier OSRP reviews for the Panel. Given the volume of the plans (more than 1,800 pages), Dicks focussed on the Piltun-Astokh OSRP as the most relevant to gray whale feeding areas.

Dicks made it clear in his report (Document WGWAP-18/14-A) that the content of the OSRPs cannot be the sole basis of assessing whether spill response arrangements are adequate. First-hand assessment of the status of equipment stockpiles, the quantity and quality of spill response equipment and its maintenance, and response personnel and training, along with attendance by Panel representatives at oil spill exercises have all contributed in the past to the Panel's ability to judge the adequacy of Sakhalin Energy's response capabilities. The Panel's view is that similar

processes would need to take place for it to remain confident of the Company's spill response capabilities. Therefore, the Panel **recommends** that the actions listed below are undertaken by at least one Panel member in conjunction with the Company in 2018:

(1) Stockpile visits to Nogliki and Prigorodnoye to evaluate equipment status and maintenance and to discuss preparedness with response personnel.
(2) Attendance at a spill exercise, preferably a field deployment (to assess staff training and the ability of personnel to apply common sense in the field). It would be best if this was a drill associated with the Nogliki stockpile which is more closely associated with the nearshore gray whale feeding area. A desktop drill in Yuzhno might also be worthwhile if it included RF authorities, PCCI, OSRL etc.
(3) Attendance at a spill response training session.
(4) Review of the Ice Response Manual (and any other new or revised documents relevant to spill response and gray whales), preferably in advance of the site visit so that issues could be raised directly with Company personnel.
(5) Discussion with Company personnel regarding plans for final disposal of oily wastes from a spill clean-up operation.

Dicks noted that in general, the OSRPs were broadly similar to earlier versions although they remain complex and not user-friendly. Many response arrangements such as for oil recovery at sea, dispersant use, shoreline cleaning, equipment maintenance and spill management organisation were similar to previous versions and therefore are considered adequate. Dicks noted that the Panel's earlier concern over unrealistic approaches to defensive boom deployment in lagoon mouths had been addressed and improved in the latest versions of the plans. He also considered that statements regarding spill response options in or near gray whale feeding areas should be more clearly highlighted in the plans, especially the prohibition of dispersant application and shoreline surf washing in such areas. Lock responded that Sakhalin Energy would not apply dispersant in gray whale feeding grounds and she thanked Dicks for bringing both of these oversights – i.e. the lack of clear statements in the OSRPs about dispersant use and surf washing – to the Company's attention.

A long-term concern that has been expressed frequently over the years by the Panel is that OSRPs, including the latest versions, recommend attempting to protect wave-washed coastline with defensive booms. Experience at most oil spills has shown that not only does this often fail, but it can result in severe damage to valuable response resources and waste manpower. Lock noted that the Company would be happy to receive suggestions of alternative approaches. Dicks' response (provided by e-mail after the meeting) was that there is no alternative. In fact, in his view the Company should be investigating deflection boom deployment and boom deployment aimed at bringing oil onto shore where easier access can speed clean-up. Dicks suggested that the best approach for the Company is not to undertake defensive booming when it is clear that it will fail.

Dicks again queried the Company's approach to *in situ* burning and requested an update. Lock explained that this was listed in the OSRPs as an optional technique, recognizing that it is controversial worldwide, but also noting that it is general practice to include it in plans as an option. She added that the Company had completed a 'net environmental benefit analysis' on *in situ* burning. The Panel **requests** that this be made available for review.

Dicks determined that in broad terms, short- and medium-term handling of recovered oily wastes was dealt with well in the OSRPs and it had been tested in exercises. He considered it important that Sakhalin Energy update the Panel on the final disposal arrangements approved by RF authorities as it appeared to him that final disposal might be especially problematic on Sakhalin.

Lock pointed out that the onshore OSRPs provide more detail on the methods to be used to dispose of this waste and offered to provide the relevant document(s) for Panel review. The Panel **requests** that this documentation be made available for review.

Dicks noted that the 2017 Piltun-Astokh OSRP appears to contain no innovations regarding response in winter ice compared with earlier versions. Sakhalin Energy has completed a number of drills in ice and holds equipment suitable for oil recovery and burning in ice, but the OSRPs remain rather confident (and very likely unrealistic) about what can be achieved in these difficult scenarios. Dicks remains of the opinion that spill response in winter ice will be extremely challenging and slow, and in a relatively large spill, clean-up is unlikely to be completed until after the spring thaw. Sakhalin Energy (and other companies) appear more optimistic than may be appropriate. Lock acknowledged that this is another global issue and the Company is always looking for ways to improve its capacity to respond to a spill in winter ice conditions. As mentioned above in regard to Recommendation WGWAP 10/17, the Response in Ice Manual is to be updated in 2018, incorporating consideration of earlier Panel comments, and it is expected that the new manual will be made available for Panel review.

As a final point, Dicks noted that the plans propose a zero-boundary approach, that is, the principle that spilled oil should be contained at or very close to the spill source. However, given that Vityaz crude is both light and volatile, the booming of large volumes near a platform (if that were the source) could pose considerable risks. Lock stated that the Company was well aware of these risks and would apply risk assessment in making any decisions. This awareness should be better explained in the plans.

An Observer requested clarification about dispersants and whether the Company, and the Panel, would consider their use desirable in the Sakhalin context. Lock stated that the Company had produced a 'net environmental benefit analysis' concerning the use of dispersants which considered technical and operational factors. It was deemed highly unlikely that their use would be considered appropriate in a whale feeding area. Reeves explained that the Panel's position has been that the use of dispersants should not be entirely ruled out, but that the importance of the feeding areas and the risks of contaminating the benthos always need to be taken into account explicitly during any spill response operation.

5.1.4 *Other activities 2017-2020*

Lock gave a presentation on Sakhalin Energy's potentially noise-generating offshore activities (other than seismic surveys) in 2017-2021 (insofar as these could be foreseen). This is a regular item on the WGWAP meeting agenda.

The *Heimdal*, which has been used for many years as the Company's offshore personnel accommodation vessel, was used for the last time in 2017 and will be replaced henceforth by four new permanent standby vessels with accommodation capacity (three of which have already been delivered). These new vessels rely on dynamic positioning (DP) and the Panel expressed **concern**, considering that DP is very noisy. Lock however stressed that it was vital for some operations to be undertaken by these vessels. Because the introduction of these noisy vessels to Sakhalin Energy's routine operations could significantly change acoustic background in the area, this introduction could well be viewed as a new 'acoustic event' that merits special attention. As the Company is considering the future scope of the Joint Program and may cease acoustic monitoring except during years with acoustic events, the Panel **recommends** that the Company treat the introduction of the four new vessels as such an event and provide for the Panel's review at its next meeting the noise signatures of the four vessels, as measured in the mode or modes by which they are expected to operate (e.g. dynamic positioning). This information will be essential for estimating and assessing increases in noise levels in the Piltun feeding area.

Lock stated that the planned decommissioning of the single anchor leg mooring at the PA-A platform was on hold and that the maintenance and repair work on the concrete legs and ice cladding was now planned for 2019, as was installation of the temporary beach landing facility near OPF/LUN-A (well away from the whale feeding areas). Otherwise, the work planned over the next five years is largely related to routine monitoring and maintenance.

The Panel thanked Lock for providing this information.

6 IMPLEMENTATION OF INTERNATIONAL FINANCE CORPORATION (IFC) PERFORMANCE STANDARDS FOR SOCIAL AND ENVIRONMENTAL SUSTAINABILITY

6.1 Update on Sakhalin Energy's plans for IFC PS6 implementation and progress with the development of key associated documents

6.1.1 Company presentation of draft updated Critical Habitat Assessment (CHA) and offset strategy, focusing on the marine component

Tsarenko provided an update on Sakhalin Energy's Critical Habitat Assessment (CHA) and offsets strategy following on what had been presented and discussed at the May 2016 meeting of the IFC PS Task Force[4] (summary in WGWAP-17 report, item 9.1) and at WGWAP-17 last November (WGWAP-17 report, item 9.3.3).

1. The Company has identified three marine Discrete Management Units (DMUs) for its CHA: a Shelf Zone DMU in NE Sakhalin from shore to 100 m depth, an Aniva Bay DMU in southern Sakhalin, and a Coastal Zone DMU that consists of the marine environment with depths of less than 20 m. Only the first of these – in NE Sakhalin – is considered relevant for marine mammals. Specifically, the zone from 0-20 m of depth off NE Sakhalin is considered, in the context of the Sakhalin-2 project, to be an important part of the range of western gray whales.

Five species of marine mammals (gray whale, bowhead whale, North Pacific right whale, fin whale, Steller sea lion) were included in the CHA. These were all assessed against the five criteria for defining an area as critical habitat: (1) Species is listed as critically endangered or endangered; (2) Species (or population) is endemic and/or range-restricted; (3) Species (or population) is migratory and/or congregatory; (4) Ecosystem is highly threatened and/or unique; (5) Key evolutionary processes are dependent on the habitat. Sakhalin Energy determined that the gray whale was the only marine mammal species to meet any of these criteria in the NE Sakhalin context (only one criterion must be met for a species to qualify for critical habitat designation), and this was used by the Company to conclude that the Shelf Zone DMU and the Coastal Zone DMU in NE Sakhalin are critical habitat for the purposes of the IFC Performance Standards. This conclusion was essentially the same as proposed at the IFC PSTF-1 meeting in May 2016 and discussed at WGWAP-17.

Tsarenko also updated the Panel on the Company's offset strategy. As set forth in IFC PS6 paragraph 10 (2012), for 'natural habitats', a biodiversity offset should be designed and implemented to achieve measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity. A net gain is required in critical habitats. In order to achieve a net gain, a company has to compensate for its residual impact through projects that would generate conservation gains in biodiversity value that are similar to the biodiversity loss resulting from the company's activities and operations. This clearly requires

[4] https://www.iucn.org/sites/dev/files/content/documents/pstf-1_may_2016_report_final.pdf

credible measurement of biodiversity loss (in this case meaning, for example, the level of disturbance caused to the whale population) and an explanation of how that loss will be compensated for.

Among the ways to achieve a net gain is by developing and implementing 'special programs' (at the site of work) to improve the habitat and preserve biodiversity. Besides pointing to the fact that the number of gray whales using the Sakhalin feeding areas increased steadily from 2013-2016 while the Company's gray whale monitoring programs, MMPP, and special mitigation measures (MMPs for seismic surveys) were in place, Tsarenko stated that Sakhalin Energy is considering the following five actions as part of its offset strategy:

(1) proactive interaction with Rosprirodnadzor in the Sakhalin region and the Sakhalin-Kuril territorial office of the Federal Agency for Fisheries through Biodiversity Group by a gray whale protection subgroup;
(2) informing the authorities about the abandoned fishing gear on the beach and in the sea around the mouth of Piltun Lagoon;
(3) removing (in co-operation with IFAW) abandoned fishing gear around Piltun to prevent entanglement of whales in nets;
(4) organizing meetings with the management of fishing companies operating in NE Sakhalin;
(5) supporting NGOs and government authorities in efforts to increase the local and regional capacity for 'rescuing' entangled or stranded marine mammals.

According to Tsarenko, the following three assertions provide a basis for demonstrating that the Company has achieved net gains:

(1) State regulatory authorities have recommended to other companies operating on the NE Sakhalin shelf that they place marine mammal observers on all vessels (presumably meaning all vessels that are likely to encounter gray whales).
(2) The Company, individually and in conjunction with ENL, has direct evidence that the quality and quantity of scientific data and information on gray whales has improved as a result of work under the Joint Programme. Several scientific papers and reports have been produced on gray whale behaviour, distribution, benthic organisms that are assumed to be prey of the whales, and Sakhalin gray whale habitat. Several scientific papers are in production and expected to be submitted to peer-reviewed journals.
(3) Sakhalin Energy informed the fishing company "IRIDA" that operates on Sakhalin Island of the risks to the whales posed by the fishing industry. This included identifying the areas where whales are most at risk of entanglement in licensed fishing gear, thereby enabling the authorities to reduce the entanglement risks to whales by not issuing permits to fish in those areas. The Company also participated in meetings with the management of fishing companies, highlighting the risk posed by their activities and exploring ways of managing those risks.

Other points mentioned by Sakhalin Energy in this context were that it (a) is actively promoting publication of peer-reviewed papers from Joint Programme work and (b) has been providing support to the Boomerang Club – a Sakhalin-based group that has participated in fishing gear removal at Piltun, helped organize the IWC-led disentanglement training in Yuzhno, and led the effort several years ago to rescue ice-entrapped killer whales at Sakhalin.

6.1.2 Discussion and conclusions

Hancox summarised the Lenders' role in Sakhalin Energy's efforts to ensure that the Sakhalin-2 project conforms to the IFC Performance Standards. The Lenders (with assistance from Ramboll) are expected to review the Company's compliance and normally the results of such a review are made public. Once its strategy for offsets has been approved, the Company must prepare a detailed biodiversity action plan which is monitored by the Lenders to ensure the planned actions are carried out.

Hancox expressed his view that, given the Panel's agreement with the Company's position that the Sakhalin NE offshore area meets at least some of the criteria for Critical Habitat due to the presence there of 'western' gray whales and their regular, annual use of the area as critical feeding habitat, its responsibility for advising on the CHA aspect has been met. Subjects on which further advice from the Panel would be useful are the Company's offset strategy and its biodiversity action plan. Defining offsets for migratory marine mammals is challenging and, according to Hancox, the Panel's views on the likely effectiveness of proposed offsets and on how the Company should monitor effectiveness would be especially welcome.

Hancox commented that it is ideal for offsets to be measurable and 'like for like' so that demonstrating 'net gains' for biodiversity is straightforward. The difficulty of measuring impacts on or benefits to gray whales from different activities or actions must not be underestimated. Measuring the impacts of a given activity (e.g. a seismic survey) on gray whales has been shown repeatedly to be a challenge (e.g. Gailey *et al*., 2016) but considerable progress has been made to develop methods for quantitative assessment of the impacts of disturbance on marine mammals, including gray whales (Villegas-Amtmann *et al*., 2015; King *et al*., 2015). Hancox further noted that the best approach for assessing benefits in the specific case of the Sakhalin gray whale population might be to apply, at least semi-quantitatively, the concepts of 'averted loss (impact)' or 'averted risk'.

The Panel suggested that it might be possible to model benefits in the same way that impacts have been modelled. For example, the benefits of removing a certain amount of fishing gear of a particular type in an area used by gray whales could be model-estimated in terms of reduced entanglement risk (and associated mortality and injury). As part of its strategy, Sakhalin Energy would need to set out a plan for demonstrating effectiveness, possibly again using modelling to demonstrate that what was predicted in terms of reduced loss or risk actually happened.

The onus is on Sakhalin Energy to identify and develop potential offsets, and the presentation by Tsarenko represented a preliminary attempt to do that. However, considerable further work will be needed to show, in detail, how net gains have been, or would be, achieved and how the Company plans to go about demonstrating this. The Panel noted that it could be difficult for Sakhalin Energy to make a credible case that things like sharing information, encouraging other companies to adopt 'good practices', or lobbying authorities to take particular kinds of action (e.g. denying permits to fish in a given area or implementing policies to regulate noise-generating activities) constitute net gains for biodiversity if for no other reason than that it is almost impossible to quantify the different factors that influence policy-making. Moreover, there is a statement in IFC Guidance Note 6 that "*Providing training or capacity building or financing research would rarely, if ever, be considered a demonstrable outcome 'on-the-groun*d'."

7 MANAGING / ADDRESSING OTHER ISSUES ON THE SAKHALIN SHELF

7.1 Update on other oil and gas activities in and near the whale feeding areas in Sakhalin / Sea of Okhotsk in 2017 and beyond

7.1.1 Presentations

Despite efforts by IUCN to facilitate the presence and participation of oil and gas companies, no companies (other than Sakhalin Energy and ENL) were represented at the meeting. The usual summary of publicly available information compiled by IUCN from the internet, NGOs, individual Panel members and companies directly was provided for the Panel's background. Carbone stressed that IUCN was unable to verify the accuracy of all this information and therefore it would be inappropriate to make the full compilation publicly available.

Burdin and Tsidulko, who provided the meeting with a verbal synthesis of the information, began by noting that the compilation covered not only the Sakhalin region, the primary area of interest to the Panel, but also areas throughout the known or suspected range of western gray whales in Russian waters. They also commended the compilers for their thoroughness.

The licence blocks of greatest immediate interest to the Panel (because of their proximity to the NE Sakhalin feeding areas) are Piltun-Astokh (Sakhalin-2 – SEIC), Chaivo, Arkutun-Dagi and Odoptu (Sakhalin-1 – ENL), Lebedinskoye, Deryuginsky, Odoptu North More (offshore), Odoptu More (offshore), Northern Tip of Chaivo, Veninsky block, Vostochno-Kaigansky and the Sakhalin-5 field group including the Kaygansky-Vasyukansky block (Rosneft), and Ayashsky block (Gazprom Neft). Of these projects, those at Piltun-Astokh, Chaivo, Arkutun-Dagi, Odoptu and Northern Tip of Chaivo have completed or nearly completed the construction phase while the others are at earlier stages of development.

Judging from the information summarized by IUCN, it does not appear that any major noise-generating activities other than Sakhalin Energy's 2018 Piltun-Astokh seismic survey are planned in 2018. However, the potential for vessel strikes and oil spills remains at all sites and the potential cumulative impacts have yet to be addressed in a rigorous way. In addition, it was pointed out that a number of projects in the general vicinity of the feeding areas were planning extraction wells and would need to conduct further seismic surveys to monitor the oil and gas fields as extraction proceeds.

The status of Rosneft's development at Lebedinskoye was unclear from the information available. There had been concern that slant drilling from shore could bring wells directly under the northern end of the Piltun feeding area and involve noisy operations, potentially causing significant disturbance to gray whales. The materials from IUCN suggested that well drilling was completed in 2017 and reservoir development had begun at Lebedinskoye.

In their presentation, Burdin and Tsidulko further noted that Sakhalin 5, operated by Rosneft, could become a significant source of disturbance to gray whales in the future. However, thus far only some seismic surveys and exploratory drilling are known to have taken place there in 2008-2011.

Finally, it was noted that the anomalous distribution of the whales at Piltun in 2017, with most sightings south of the lagoon mouth, may have been related to some unreported industrial activity or be the cumulative effect of multiple activities. It will be important for the previously rarely visited southern portions of the whales' summer and autumn range to be monitored more regularly in the future. Also, since surveys for hydrocarbon resources are being carried out in other parts of the Okhotsk Sea where gray whales are known to have occurred historically as well as recently (see WGWAP-17 report, item 2.2), more survey effort is needed in such areas.

7.1.2 Discussion and conclusions

The Panel thanked the IUCN team for their good work at producing the background information, and Tsidulko and Burdin for synthesizing and evaluating the extensive compilation provided. The Panel concluded that in the future, a synthesis prepared and presented by IUCN, with assistance as necessary from Panel members, NGOs and others, should be presented at the annual Panel meeting. This synthesis should focus on projects off NE Sakhalin and be provided as a 'pre-read' document as well as a meeting presentation.

The difficulties caused by uncertain, variable, and changing names of projects, oil and gas deposits and other features of interest were noted. It was suggested that an authoritative and up-to-date map showing all known fields and projects would be very helpful. Knizhnikov pointed out that such a map, produced by Ramona, had been distributed at the most recent oil and gas conference and he agreed to provide a copy to the Panel via IUCN.

Lisitsyn drew the Panel's attention to a large-scale seismic survey conducted by Rosneft in Nabil Bay, just south of the Vostochny Reserve (also known as Vostochny Wildlife Refuge), in 2016 and noted that further activity was expected there in 2018. The Panel expressed **concern** that this development could be near the site suggested as a new acoustic control station (see WGWAP-17 report, item 4.1.1). This requires further investigation by IUCN before a Panel recommendation is finalized regarding the site of a new control station. Therefore, the Panel **requests** that IUCN investigate and report back.

7.2 Update on cruise ship visits to Piltun in 2017 and beyond

7.2.1 Presentations

Samatov gave a brief illustrated presentation concerning a visit to the Piltun area by the cruise ship *Silver Discoverer*, which anchored about 2 km offshore opposite Station 8 on 1 September 2017. Ten inflatable boats were launched with about 10 people aboard each. Several of the boats were observed to approach 2-3 gray whales before returning to the ship. Joint Programme MMOs observed the entire event and reported seeing no evidence to suggest the whales were disturbed. The ship was present in the area for a total of about five hours.

Duramy mentioned that two visits by cruise ships in 2017 had been documented by IUCN, one that mentioned above and the other by Heritage Expeditions, a company for which Tsidulko has worked as an onboard tour leader. He further noted that IUCN was not aware of any cruise ship visits to Piltun planned for 2018.

7.2.2 Discussion and conclusions

Tsidulko stated that he had not been on the 2017 Heritage Expeditions cruise but that in his experience, this is a responsible company with a relatively small ship that deploys only 3-5 boats on the water at any one time.

Concerning Piltun's current popularity as a cruise destination, Tsidulko explained that there was considerable interest in visits but that the permit application process was onerous and off-putting to some companies.

Weller noted that a photograph contained in the IUCN compilation of cruise ship information (document WGWAP-18/28) appeared to be of an emaciated gray whale with markings suggestive of entanglement. The photograph was credited as "taken from the blog of Caroline and Stephen." The Panel **requests** that IUCN try to track down the photographer and obtain any related information as well as additional photographs if available.

The Panel was advised that cruise vessels in the Sea of Okhotsk follow strict guidelines maintained by the Association of Arctic Expedition Cruise Operators, and therefore disturbance at Sakhalin would only become an issue if visits became considerably more frequent and intrusive than they have been in recent years.

7.3 Update on interactions between fisheries and whales in Sakhalin

7.3.1 Outcomes of 2017 IWC disentanglement and stranding response training in Sakhalin and next steps

As explained at previous Panel meetings, the IWC has developed disentanglement guidelines and established a programme to provide training in entanglement response via an international advisory group of experts under the leadership of David Mattila[5]. Within this programme, a training event focussing on large whale entanglement (and stranding) response was staged in Yuzhno-Sakhalinsk, from 1-4 June 2017 with sponsorship from the IWC, IFAW, Sakhalin Energy, the Russian Marine Mammal Council, the Boomerang Club and the Center for Coastal Studies in Provincetown (USA)[6]. The Yuzhno disentanglement training was combined with training in stranding response led by Brian Sharpe of IFAW. This combining of elements was undertaken to take full advantage of the available resources. Some 60 participants, including representatives of local environment ministries, the RFE Ministry of Emergency Control, nature reserves and oil and gas companies as well as local veterinarians and members of the Marine Mammals Rescue Social Group attended the first two days of classroom and outdoor (on land) sessions and 22 'practical trainees' participated in two days of on-water training.

In his presentation on this topic, Donovan emphasized that disentanglement must not be viewed as a solution to the bycatch problem, which can only come from preventing entanglements in the first place. He also noted that this training event constituted a contribution to implementation of one of the priorities of the IWC/IUCN Western Gray Whale Conservation Management Plan (as drafted in 2010 and currently being updated).

Ramage assured the meeting that IFAW was committed to continuing to support this kind of work, and reinforced the point made earlier by Donovan that entanglement is more than a conservation issue: it also has an important animal welfare dimension. Besides expressing appreciation to the individual co-sponsors, he stressed the value of partnerships and particularly commended Sakhalin Energy for its commitment to the overall WGWAP process. Further, he expressed hope that as the Company continues its transition to a largely operational phase of the Sakhalin-2 project, the engagement with conservation partners on Sakhalin, elsewhere in Russia, and internationally will remain strong. In Ramage's view, the process still provides a powerful model in the international context, and IFAW intends to continue its own modest contribution.

7.3.2 Update on the 2017 fisheries season and interactions with whales (incl. MNR order implementation)

Lisitsyn reported that 2017 had been the worst in 20 years for the salmon fishery on Sakhalin, apparently due to stock depletion and poor spawning runs. On the conventional belief that a pattern of alternating high- and low-yield years is 'normal' for Sakhalin, authorities expect 2018 to be a

[5] https://iwc.int/entanglement

[6] https://iwc.int/iwc-entanglement-and-stranding-response-sakhalin

high-yield year, and therefore the pressure to construct salmon trap nets at Piltun will likely be strong again.

In 2017, two net removal operations took place at Piltun. The Russia Gray Whale Project removed gear that had been set in 2016 but was still in the water (derelict) when the team arrived in the 2017 field season. In a separate operation later in the season, the Boomerang Club removed new gear that had been set in 2017 and abandoned by the fishing company. Samatov confirmed that in 2017 salmon gear was in the water in the Piltun feeding area from July to the end of September.

Several participants emphasized the important role played by the Boomerang Club. Among the activities undertaken by this skilled and enthusiastic group are removing abandoned fishing gear from the near-shore environment and responding to marine mammals in trouble – whether from entanglement, ice entrapment or stranding. Sakhalin Energy has provided grant support to the club for emergency response situations, including stranding, entanglement, and contamination (e.g. oil spills). Also included under the grant from Sakhalin Energy is the maintenance and replenishment of the necropsy kits in anticipation of whale strandings[7].

It was suggested that there is a need for more local veterinarians and biologists to be trained in emergency response and necropsy methods, and that enabling individuals to spend time abroad as trainees or interns at sites where whale strandings are frequent and there is strong local capacity to respond (e.g. Provincetown or San Francisco, USA) could be a good investment. Donovan noted that the IWC was about to hire a stranding response co-ordinator and training for people from Sakhalin could be considered as a priority in this context; it could also be considered as an 'action' in a revised CMP.

7.3.3 IUCN Working Paper on fisheries interactions with whales and next steps

The Working Paper anticipated at the last meeting (see WGWAP-17 report, item 7.2.3) was prepared early in 2017 by Vladimir Burkanov and Lloyd Lowry as Associate Scientists, in collaboration with Weller and Reeves (Burkanov et al. 2017). The paper was submitted as a document and presented at the annual meeting of the IWC Scientific Committee in May 2017. Small contracts were issued to Burkanov and Lowry to continue working on the paper for formal journal submission and this is expected to occur well before the next Panel meeting.

The Working Paper was circulated by IUCN to regulatory authorities and research institutes on Sakhalin, both to raise awareness and to ensure that the entanglement risks to gray whales are considered when future salmon (and other) fishing permits are issued. Sakhalin Energy (Samatov) also gave a presentation to the biodiversity group in Yuzhno based on the paper. Although Carbone reported that no official government responses had been received, it was noted that the Ministry of Natural Resources and Ecology of the Russian Federation issued a recommendation in July 2017 that salmon fishing permits should not be issued for areas inhabited by gray whales. However, according to Lisitsyn, the fishing companies refused to implement this recommendation, as fisheries are under the jurisdiction of the Ministry of Agriculture, rendering the minister's order ineffective.

8 MANAGING / ADDRESSING ISSUES AT THE RUSSIAN NATIONAL AND REGIONAL LEVELS

8.1.1 Update on the activities at the Federal/MNR level

[7] see https://www.iucn.org/downloads/wgwap_7_doc_20_necropsy_kit_presentation.pdf; https://darchive.mblwhoilibrary.org/handle/1912/1823; WGWAP-7 report, item 9

No official from the Federal or Sakhalin Oblast government was present at the meeting to provide an update.

8.1.2 Update on the UNDP/GEF-MNR project

Igor Kostin, Deputy National UNDP/GEF Project Director, apologized for his absent colleague Svetlana Sheynfeld, Manager, UNDP/GEF/MNR Project "Mainstreaming biodiversity conservation into Russia's energy sector policies and operations", who had intended to provide this update but was called away urgently for other duties. This five-year project, which was scheduled to finish at the end of 2017, was discussed at some length during previous Panel meetings (e.g. see WGWAP-17 report, item 3.1). Western gray whales were regarded as a focal 'species' within the project. The project's objectives were to develop guidelines for biodiversity conservation in the oil and gas production, mining and other extractive industries and then to promote the adoption of those guidelines as part of legal or regulatory measures. The project is currently being evaluated in terms of the extent to which it met the objectives.

Kostin mentioned several project achievements, including adoption of regulatory documents, declaration of new protected areas and agreements between companies involved in the project with governmental agencies and NGOs meant to encourage biodiversity conservation in those companies' areas of operation. Also, in collaboration with WWF-Russia, the project established a program that assigns 'environmental responsibility' ratings to mining and oil and gas companies. According to Kostin, some of those companies are now competing with one another on environmental performance.

Finally, Kostin reported that the document presented last year to MNR in Moscow as the outcome of an IUCN-UNDP collaboration ("Principles and Guidelines of Impacts on Large Whales from Offshore Industrial Activity in Russian Waters"; Document WGWAP-17/28; see WGWAP-17 report item 3.1) has finally been approved after prolonged internal review and is expected to be signed by the MNR minister in the near future, at which point it would gain legal status. Kostin clarified that a directive from the ministry would still be required to make regulations based on the guidelines legally binding. The ministry could, for example, instruct its local branches to apply the guidelines within their jurisdictional ambit.

The Panel thanked Kostin for the informative update and looks forward to hearing more in the future concerning progress with the implementation of mitigation and monitoring measures in Russia.

8.1.3 Update on activities of the Biodiversity Group / Sakhalin Oblast Environmental Council at Sakhalin MNR level

Tsarenko gave a brief update on recent activities of the Biodiversity Group, which discusses issues including entanglement and to make recommendations to regulatory bodies. Samatov clarified that fishing activities fall under the purview of the Agriculture Ministry and that locally, salmon fishing is regulated by a commission that involves both Oblast and Federal institutions, such as MNR and Rosprirodnadsor (RPN). It is Sakhalin Energy's position that this commission is the appropriate body for IUCN and others to communicate with regarding fishery management issues – at least those related to salmon fishing. Lisitsyn emphasized during the discussion that the commission is expected to follow guidance provided by scientific institutes and therefore that information and recommendations concerning fishery management (including marine mammal bycatch) should be directed to those institutes as well.

The Panel thanked Tsarenko, Samatov and Lisitsyn for this update.

9 RANGE-LEVEL ISSUES: CONTRIBUTION TOWARDS THE IMPLEMENTATION OF RANGE STATES' MEMORANDUM OF COOPERATION ON GRAY WHALE CONSERVATION AND PROGRESS UPDATING THE IUCN/IWC CONSERVATION MANAGEMENT PLAN

9.1 Process and timeline to update 2010 Conservation Management Plan (CMP) and the implementation of the Memorandum of Cooperation

9.1.1 Progress made and steps towards completion of the CMP and its implementation

Donovan reported recent progress on the 'Range-wide Review of the Status of North Pacific Gray Whales' and the 'Western Gray Whale Conservation Management Plan' (CMP). Since 2004, IUCN and the IWC have emphasized the need for a comprehensive international CMP to mitigate anthropogenic threats facing gray whales throughout their western North Pacific range. The need for and outline of such a CMP was initiated at an IUCN-convened international workshop in Tokyo in summer 2008 (IUCN 2009). A draft of the CMP was completed in 2010 (Brownell *et al*., 2010) and this has been endorsed by IUCN and the IWC.[8] The first major recommendation in the draft CMP to be implemented was a telemetry project conducted at Sakhalin, which was complemented by a Pacific-wide photo-identification catalog comparison. The results showed that some of the whales sighted off Sakhalin in the summer and autumn migrate east, across the Pacific, reaching portions of the North American coast between British Columbia, Canada and the gray whale wintering lagoons in Baja California, Mexico. That new information prompted the IWC Scientific Committee to engage in a rangewide review of the status of North Pacific gray whales.

The rangewide review is examining stock structure and movements, population dynamics and abundance, and past and future removals (direct and incidental) while taking into account uncertainty and considering all plausible scenarios. The first in a series of workshops was convened in 2014 and follow-up workshops have taken place each year since then. The 2017 workshop reviewed early modelling work (conditioning) and updated: (1) plausible stock structure hypotheses in light of new data, (2) information on bycatches and ship strikes (past and future) and (3) abundance information, including that from the Sakhalin and Kamchatka regions (IWC 2017). Additionally, a set of four updated maps were created that depict gray whale feeding, migration and wintering distributions across the Pacific Ocean basin[1]. The next step in the rangewide review process consists of intersessional work to finalize model conditioning and complete 'base case' runs for each stock structure hypothesis. Results from this intersessional work will be reviewed at the fifth workshop in March 2018, with the expectation that final model runs and related conclusions will be reached and reported in time for consideration by the IWC Scientific Committee at its annual meeting in April of 2018.

In support of the CMP, in 2014 a Memorandum of Cooperation Concerning Conservation Measures for the Western Gray Whale Population was signed by Japan, Russian Federation and the USA. In 2016, this memorandum was signed by Mexico and the Republic of Korea and Prof. Hidehiro Kato of the Tokyo University of Marine Science and Technology was appointed as coordinator of the memorandum. It is expected that the other two range states, Canada and China, will sign the memorandum. An important component of this effort is a planned stakeholder workshop (tentatively anticipated to occur in 2019) that will help finalize the CMP and develop a strategy for

[8] https://www.iucn.org/western-gray-whale-advisory-panel/about-gray-whales/rangewide-conservation-issues

its implementation. The workshop, which would be co-sponsored by IWC, IUCN and the signatories to the Memorandum of Cooperation, should be broad-based and include representatives of national and local governments, industry (e.g. oil and gas, fishing, shipping and tourism), IGOs and NGOs. Objectives should include: (1) review and updating of the CMP taking into account any new scientific results from the rangewide workshops, (2) establish a stakeholder Steering Group to monitor CMP implementation, (3) arrange for a CMP coordinator and (4) establish a work plan and consider funding mechanisms to implement the actions of the plan. The IWC has a small CMP fund to partially finance the stakeholder workshop. It is expected, however, that after the first year of CMP implementation, range states will contribute the necessary funds to advance the conservation actions described in the plan.

9.1.2 Discussion and conclusions

In discussion of the above efforts, several examples were mentioned of specific areas (e.g. Kamchatka) where additional detail could be added to the distribution maps. Donovan encouraged input on the maps and highlighted the importance of 'local knowledge' in making them as accurate as possible. The use of autonomous acoustic recorders to help map the distribution of gray whales was mentioned and the Panel agreed that this method had promise of providing new data in the future.

With respect to CMP-related processes, the Panel highlighted the support of Sakhalin Energy, often through IUCN. That investment has enabled several important activities, including the 2008 rangewide workshop in Tokyo and the satellite-tagging studies that followed. To date, the investment of IUCN and IWC in these processes has also been considerable. In closing, Donovan mentioned the IWC Voluntary Fund for Conservation, to which donations can be specifically directed towards the gray whale CMP and related work. The Panel welcomed this information, thanked Donovan and Reeves for their efforts, and encouraged IUCN to continue to coordinate closely on these issues with the IWC and to collaborate when relevant and feasible.

9.2 Gray whale observations outside Sakhalin feeding areas, including Kamchatka

Vladimir Vertyankin of the Kronotsky State Reserve in SE Kamchatka provided an update on the monitoring for gray whales conducted on an opportunistic basis in Kronotsky Reserve and South Kamchatka Reserve from 2012-2017. The data had been compiled in collaboration with Olga Tyurneva (IBM, RAS FEB). Among the objectives of this monitoring are to improve understanding of gray whale movements and 'mixing' between the Sakhalin and SE Kamchatka grounds, assess the demography (e.g. numbers, group size and composition) of the gray whales using the sandy bays along the Kamchatka coast, and learn more about their behaviour there (e.g. feeding). The monitoring has been conducted from small boats or from shore, following protocols (e.g. for photo-id, assessment of body condition) consistent with those of the Joint Programme. Most of the work was funded by Sakhalin Energy or ENL, and the rest of it was conducted on a voluntary basis by employees of the Kronotsky Reserve.

The total number of individual gray whales photo-identified at Kamchatka thus far (Kamchatka catalogue; 2004, 2006-2017) is 167. This includes 85 individuals that are also in the IBM Sakhalin catalogue, which contains 274 different whales photographed from 2002-2016. Annual counts of gray whales in Olga Bay between 2002-2017 ranged from 7 (2014) to 56 (2009), with the highest numbers attained in years with boat-based effort. In addition to the Olga Bay surveys, there was some monitoring effort in Vestnik Bay from 2009-2015 during the late spring (June) and winter (late November through late December). Whales were seen travelling south in June and north in the winter, when four to 16 individuals were present daily in the bay. According to Vertyankin's

observations, gray whales are present in SE Kamchatka from April through December, they are occasionally seen in January and early February.

Benthic sampling was carried out in both bays for three consecutive years (with support from the companies). The results appeared in the annual reports of the Joint Programme but Vertyankin said he has been unable to determine where the samples had been archived (assuming they had been).

The Panel thanked Vertyankin and Turnyeva for the interesting update from Kamchatka and **reiterated** its view that more regular monitoring (with photo-id and biopsy components) is desirable given the considerable movement of whales between Sakhalin and Kamchatka. It also stressed that additional satellite tagging at either Sakhalin or Kamchatka, or both, would be valuable to clarify migratory routes and timing as well as to help inform stock delineation.

No new information was available at this meeting concerning the U.S. Navy acoustic records of whales (possibly gray whales) in the East China Sea reported at WGWAP-17 (see WGWAP-17 report, item 2.2).

Regarding Japan, Weller reported a sighting of a gray whale near Aogashima, approximately 350 km SE of Tokyo in March 2017. A photograph documenting this sighting was found during an internet data-mining exercise by D. Yasutaka Imai. Also, a recent publication (Nakamura et al. 2017) summarized all recent records of gray whales in Japan, including information on a photographic match of an individual previously observed at Sakhalin (see Weller *et al.*, 2015, 2016).

10 REVIEW OF RECOMMENDATIONS

10.1 Presentation by IUCN

Carbone provided the usual overview of the WGWAP recommendations database, which is viewable and searchable on the public website[9]. The total number of recommendations in the database at the time of this meeting was 575, nearly half (48%) of which were made in the first three years of the Panel's history (2005-2007). The largest topic of recommendations is 'Noise' (> one-third of the total).

As summarized in the WGWAP-17 report (item 10.1), statistical sorting of the recommendations according to the 11 status categories (Closed – implemented, Open – in progress etc.) should not be regarded as a simple and reliable way of gauging the Panel's effectiveness as an advice-giving body. Even though 526 (>90%) of the recommendations had been classified as Closed at the time of this meeting, only 296 (around 56%) of those had been closed because they were considered 'implemented satisfactorily'. The rest were closed because they were 'moot' or 'no longer relevant', or they had been superseded by a new recommendation. Although the vast majority of the recommendations (>75%) cite Sakhalin Energy as at least one of the responsible parties, others are directed at IUCN, a Panel member, the Panel as a whole, or some other party. A handful of recommendations (6) have been Retracted by the Panel and 26 of them have been Rejected by Sakhalin Energy. As specified in the WGWAP Terms of Reference, the Company must provide an explanation for any such rejection and such explanation is displayed on the public website.

During discussion of the status category 'Closed – implemented/resolved satisfactorily but needs to be tracked regularly', it was suggested that Panel recommendations to Sakhalin Energy should be

[9] https://www.iucn.org/western-gray-whale-advisory-panel/recommendations

drafted whenever possible in such a way that, upon implementation, the recommended concept could be incorporated into the Company's internal operating practices and procedures – as specified in the MMPP, a MMP, or some other guidance or rules document. This would, at least in some or many cases, obviate the need for 'regular tracking' to ensure that implementation does not lapse with time.

11 WGWAP WORKPLAN FOR 2018

As in 2017, two meetings of the Noise Task Force (NTF-14 and -15) are anticipated in 2018. NTF-14 is likely to take place in March with the primary objective of completing review of the MMP for Sakhalin Energy's planned 2018 seismic survey. An Independent Observer under contract to IUCN will be in the field for the duration of the seismic survey and will prepare a report for review by the Panel and the NTF. Also, a small 'advisory group' consisting of selected Panel members of the NTF will be established and 'on call' to respond to questions from Sakhalin Energy and the Independent Observer concerning MMP implementation during preparations for the seismic survey and while the survey is being conducted. An autumn meeting of the NTF (NTF-15) will, among other things, review the report from the Independent Observer and the initial results of the gray whale monitoring program associated with the seismic survey.

If it proves feasible, at least one Panel member will meet with Joint Programme leadership in February in Vladivostok to follow up on the advice from the Panel that was developed at the 2016 meetings of the Joint Programme Task Force and to learn more about the companies' future plans for the Joint Programme. Further engagement of the Panel with advising Sakhalin Energy on the structure and content of the Joint Programme would be re-evaluated afterwards.

Also in 2018 (probably during the summer or autumn season), if it proves feasible, a WGWAP Associate Scientist (likely Brian Dicks) will observe an oil spill response exercise at Sakhalin and reassess various aspects of the Company's equipment stockpile and OSR personnel, after which he will present a report of findings to the Panel.

In March-April, the co-chairs and several other Panel members will participate in the IWC Scientific Committee's 5th workshop on gray whales (Granite Canyon, California) and the annual meeting of the full Scientific Committee (Bled, Slovenia). Efforts will be made at both of these events as well as later in the year to further update the CMP and to organize and participate in the stakeholder workshop tentatively anticipated to occur in early 2019 (see item 9.1).

In keeping with recent practice, there will be one full Panel meeting in 2018 – namely WGWAP-19 in Moscow in November. This meeting will, inter alia, review reports from NTF-14 and NTF-15, the report of the Independent Observer of Sakhalin Energy's seismic survey, final reports of Joint Programme work in 2017, an updated assessment of the Sakhalin-Kamchatka gray whale population, updates on IWC work related to gray whales, and progress on the usual array of projects and issues considered at WGWAP meetings.

IUCN will conduct its periodic independent review of WGWAP and initiate recruitment of a new panel in 2018. This will begin with announcement of the co-chair positions in autumn followed by selections in December. Panel member positions will be announced in November (following WGWAP-19) and selection will occur in January 2019.

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13 SUMMARY TABLE OF RECOMMENDATIONS AND REQUESTS FROM THE 18TH MEETING OF THE WGWAP

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
2 OUTCOMES OF PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2016 AND 2017 & ANNUAL POPULATION ASSESSMENT					
WGWAP-18/01	**2.1.1**	The Panel was … informed that noise in the offshore feeding area was not monitored in 2017 by either the Joint Programme or Sakhalin Energy, due to 'unacceptable loss of gear' in previous years due to fishing operations. To compensate for the lack of measurements in the offshore area, the Company presented results of noise-level estimation based on measurements of transmission loss (TL) in that area in past years. The Company considered this to show that the noise levels were acceptable, but did not provide information on how the accuracy of the modelled levels was verified. The Panel **requests** that details of the calculations, with estimation accuracy and spectral characteristics of TL, be provided in future reports.	**Sakhalin Energy**	**For NTF-15, November 2018**	
WGWAP-18/02	**2.1.1**	[…] prolonged levels of continuous noise at 120 dB or above along the 20m isobath (i.e. the edge of the Piltun feeding area) are in violation of Sakhalin Energy's own exposure criteria, as specified in the Company's MMPP. As a result of this and other periods of loud noise, the Panel **recommends** that any activity with the *potential* to violate the Company's MMPP	**Sakhalin Energy**	**Commitment made as soon as possible**	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		with respect to noise exposure be presented and reviewed so that appropriate mitigation measures can be identified.			
WGWAP-18/03	**2.1.1**	While acknowledging that there are differences among multi-beam echosounder (MBE) systems, the Panel is concerned about the use of MBEs in general given the lack of knowledge or effort to understand their potential effects on whale behaviour. […] The Panel **recommends** that in future it is informed of any noise-generating systems or tools that the Company plans to use as part of its operations, with as much detail as possible concerning output and operational plans.	**Sakhalin Energy**	**Commitment made as soon as possible**	
WGWAP-18/04	**2.1.1**	Drawing firm conclusions from the analysis of control site acoustic data presented by the Company is difficult, in part because of the time resolution of those data. Therefore, to rectify the situation and to help clarify this issue, the Panel **recommends** that as a follow-up to recommendation WGWAP-17/02 (which is classified as Closed – implemented satisfactorily), it be given an opportunity to review data from the control site according to the following analytical scheme: hourly averages in the same frequency bins as those normally used in the analyses of acoustic data (2-15000 Hz and	**Sakhalin Energy**	**Prior to NTF-14, 14-16 March 2018**	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		2-1000 Hz) and percentile distributions at the same time resolution for 2-1000 Hz. Ideally, these data would be available for consideration at the NTF-14 meeting so that, if warranted, a recommendation for a new control station could be made in time for the 2018 field season.			
WGWAP-18/05	**2.1.1**	POI and JASCO have been developing methods for automated detection of both anthropogenic noise and gray whale sounds. When reviewing acoustic data, there are limitations to what can be understood from sonograms and percentile distributions. Therefore, the Panel **requests** that selected informative sound recordings, based on the newly developed detection schemes, be made available for its review.	**Sakhalin Energy**	**Prior to NTF-14, 14-16 March 2018**	
WGWAP-18/06	**2.1.2**	Because of the implications for gray whale feeding energetics and therefore the overall health and productivity of the Sakhalin population, the Panel **recommends** that the companies explore the nature and causes of the decline of the amphipod biomass in much greater depth and detail than has been done to date. For such investigations, it is important to consider multiple explanatory hypotheses, some of which may relate to changes in the demography or behaviour of the gray whales and others to biophysical events or processes in the regional marine ecosystem. In this regard, the Panel	**Sakhalin Energy / ENL (Joint Programme)**	**Report back at WGWAP-20, November 2018**	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		reiterates recommendations WGWAP-17/03, 16/11 and 12, and the suggestions contained in the JPTF-2 report and particularly under item 4 and in Annex E of the JPTF-3 report.			
WGWAP-18/07	**2.1.4**	The Panel commended the ongoing work of the Russia Gray Whale Program (RGWP), reiterated the importance of this research to the current understanding of gray whales in the western North Pacific and particularly at Sakhalin, and **recommends** that the studies continue into the future. The Panel also thanked IFAW for supporting the RGWP and expressed hope that this would continue.	**RGWP / IFAW**	**Ongoing**	
WGWAP-18/08	**2.1.4**	The Panel noted that the RGWP and IBM (Joint Programme) catalogues have not been cross-matched since the 2011 season. The Panel **recommends** that the new whales sighted by each team during 2012-16 be cross-matched.	**Sakhalin Energy / ENL / RGWP**	**Prior to WGWAP-20, Nov 2018**	
3	**SCOPE OF WORK FOR PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2017, 2018 AND BEYOND**				
WGWAP-18/09	**3.1.1**	The plans for the 2019 Joint Programme need to be submitted to the authorities by September 2018, i.e. before the next WGWAP meeting. The Panel **requests** that IUCN liaise with the Company with a view to ensuring that the Panel can provide input into the plans well before they are	**IUCN/ Sakhalin Energy**	**Well before September 2018**	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		submitted, and before they are agreed between the two companies.			
4 SAKHALIN ENERGY'S PLANS FOR A SEISMIC SURVEY IN 2018					
WGWAP-18/10	**4.1.2**	The Panel **reiterated** the importance of collecting data (using consistent or appropriately calibrated methods) at times (i.e. June and July) and in years other than only during particular events such as seismic surveys; in recent years data (on behaviour in particular) have been collected only during 'event' years (i.e. disturbed periods), making it more and more difficult to have confidence in comparisons against a baseline that represents 'undisturbed' conditions. As the Joint Programme is 'refreshed', the Panel **recommends** that the Company incorporate sampling during quiet, undisturbed periods. Without such sampling, the Company runs the risk of having data that cannot be used to determine whether or not whales were disturbed by its activities.	**Sakhalin Energy**	**For WGWAP-20, Nov 2018**	
WGWAP-18/11	**4.1.2**	the Panel **emphasizes** that the best way to effectively reduce the overall exposure of whales to noise is by reducing the strength of the sound source itself, which has been frequently noted by the NTF and the Panel in the past. The Panel **recommends** that the Company put some priority on experimental	**Sakhalin Energy**	**Prior to planned 2018 seismic survey**	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		work to examine this during the OBN part of the survey as discussed in the NTF-13 report.			
WGWAP-18/12	**4.1.2**	The NTF agreed to add precaution based on uncertainty in the modelling and recommended an exclusion zone with a radius of 1 km, a number that needs formal approval by the SEER before it can be implemented by the Company. The Panel **concurs** with this conclusion and **endorses the recommendation** of the NTF. [*See NTF-13 report for full details*]	**Sakhalin Energy**	**Prior to planned 2018 seismic survey**	
WGWAP-18/13	**4.1.2**	The Panel **recommends** that the Company's planning and budgeting for its 2018 [seismic survey monitoring and mitigation] effort include consideration of how, by whom, and on what timeframe analyses of the MMP-related data will be accomplished, e.g. personnel, funding, analytical methods.	**Sakhalin Energy**	**Prior to planned 2018 seismic survey**	
5 OTHER SAKHALIN ENERGY ACTIVITIES IN 2016, 2017 AND BEYOND					
WGWAP-18/14	**5.1.1**	The Panel **recommends** that speed limits listed in the MMPP only be described as mitigation measures for marine mammals when they are lower than the limit that would have been set in the absence of marine mammal-related considerations.	**Sakhalin Energy**	**Prior to WGWAP-20, November 2018**	
WGWAP-18/15	**5.1.3**	[Regarding oil spill response,] the Panel **recommends** that the actions listed below are undertaken by at least one Panel member	**Sakhalin Energy**	**Prior to WGWAP-20, November 2018**	

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		in conjunction with the Company in 2018: (1) Stockpile visits to Nogliki and Prigorodnoye to evaluate equipment status and maintenance and to discuss preparedness with response personnel. (2) Attendance at a spill exercise, preferably a field deployment (to assess staff training and the ability of personnel to apply common sense in the field). It would be best if this was a drill associated with the Nogliki stockpile which is more closely associated with the nearshore gray whale feeding area. A desktop drill in Yuzhno might also be worthwhile if it included RF authorities, PCCI, OSRL etc. (3) Attendance at a spill response training session. (4) Review of the Ice Response Manual (and any other new or revised documents relevant to spill response and gray whales), preferably in advance of the site visit so that issues could be raised directly with Company personnel.			

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
		(5) Discussion with Company personnel regarding plans for final disposal of oily wastes from a spill clean-up operation.			
WGWAP-18/16	**5.1.3**	The Panel **requests** that this [Sakhalin Energy's net environmental benefit analysis on in situ burning as part of oil spill response planning] be made available [to the Panel] for review.	**Sakhalin Energy**	**Prior to WGWAP-20, November 2018**	
WGWAP-18/17	**5.1.3**	. The Panel **requests** that this documentation [in onshore OSRPs] concerning disposal of oily wastes] be made available for review.	**Sakhalin Energy**	**Prior to WGWAP-20, November 2018**	
WGWAP-18/18	**5.1.4**	As the Company is considering the future scope of the Joint Program and may cease acoustic monitoring except during years with acoustic events, the Panel **recommends** that the Company treat the introduction of the four new vessels as such an event and provide for the Panel's review at its next meeting the noise signatures of the four vessels, as measured in the mode or modes by which they are expected to operate (e.g. dynamic positioning). This information will be essential for estimating and assessing increases in noise levels in the Piltun feeding area.	**Sakhalin Energy**	**For NTF-15, November 2018**	
7 MANAGING / ADDRESSING OTHER ISSUES ON THE SAKHALIN SHELF					

Recommendation Number	Cross-Reference Agenda item	WGWAP Recommendation	Responsible Party/Parties	Target Completion Date	Sakhalin Energy's Response
WGWAP-18/19	**7.1.2**	Lisitsyn drew the Panel's attention to a large-scale seismic survey conducted by Rosneft in Nabil Bay, just south of the Vostochny Reserve (also known as Vostochny Wildlife Refuge), in 2016 and noted that further activity was expected there in 2018. The Panel expressed **concern** that this development could be near the site suggested as a new acoustic control station (see WGWAP-17 report, item 4.1.1). This requires further investigation by IUCN before a Panel recommendation is finalized regarding the site of a new control station. Therefore, the Panel **requests** that IUCN investigate and report back.	**IUCN**	**Prior to NTF-14, 14-16 March 2018**	
WGWAP-18/20	**7.2.1**	Weller noted that a photograph contained in the IUCN compilation of cruise ship information (document WGWAP-18/28) appeared to be of an emaciated gray whale with markings suggestive of entanglement. The photograph was credited as "taken from the blog of Caroline and Stephen." The Panel **requests** that IUCN try to track down the photographer and obtain any related information as well as additional photographs if available.	**IUCN**	**Prior to WGWAP-20, November 2018**	

ANNEX 1. LIST OF PARTICIPANTS

Panel Members present

Alexander BURDIN
Kamchatka Branch of Pacific Geographical Institute
Partizanskaya, 6
Petropavlovsk-Kamchatsky, 683000
Russian Federation

Justin COOKE Centre for Ecosystem Management Studies
Höllenbergstr. 7
79312 Emmendingen
Germany

Greg DONOVAN (Co-chair)
Head of Science
International Whaling Commission
The Red House, 135 Station Road
Impington, Cambridge CB24 9NP
UK

Douglas P. NOWACEK
Duke University
Nicholas School of the Environment &
Pratt School of Engineering
135 Duke Marine Lab Rd.
Beaufort, NC 28516
USA

Corinne POMERLEAU
Centre for Earth Observation Science
University of Manitoba
586 Wallace Building
Winnipeg, Manitoba R3T 2N2
Canada

Randall REEVES (Co-chair)
Okapi Wildlife Associates
27 Chandler Lane
Hudson
Québec J0P 1H0
Canada

Grigory TSIDULKO
Marine Mammal Council
Nakhimovskiy Ave, 36
Moscow 117997
Russian Federation

Alexander I. VEDENEV
Head of Noise in Ocean Laboratory
P.P. Shirshov Institute of Oceanology
Russian Academy of Sciences
Nakhimovskiy Ave, 36
Moscow 117997
Russian Federation

David WELLER
Marine Mammal & Turtle Division Southwest Fisheries Science Center National Marine Fisheries Service National Oceanic and Atmospheric Administration 8901 La Jolla Shores Drive La Jolla, CA 92037-1022
USA

Apologies: Brandon Southall

Sakhalin Energy Investment Company Ltd.

Bastian Blonk
Mike Donaghy, MDA Ltd.
Stephanie Lock
Natalia Tsarenko
Alexander Rutenko (Days 1& 2)
Valery Vladimirov (Day 1)
Ruslan Oblekov (Day 2)
Roberto Racca, JASCO
Andrey Samatov
Aoife Reynolds
Olga Tyurneva /(Day 1)

IUCN

Giulia Carbone
Jerome Duramy
Simon Delany (Rapporteur)
Boris Erg

Observers - Lenders

Jonathan Hancox, Ramboll Environ

Bruce Mate, Ramboll Environ

Moe Suzuki, Mizuho Bank

Observers - NGOs

Ludmila Danilova, IFAW Russia

Dmitry Lisitsyn, Sakhalin Environment Watch

Maria (Masha) Vorontsova, IFAW International

Alexey Knizhnikov, WWF Russia

Patrick Ramage, IFAW International

Observers - Government Authorities

Egor Likov, Department of Public Policy and Regulation for Environmental Protection, Ministry of Natural Resources and Ecology of the Russian Federation (MNR)

Igor Kostin, UNDP/GEF/MNR Project: "Mainstreaming biodiversity conservation into Russia's energy sector policies and operations" (Day 3)

Valery Fyodorov, Ministry of Natural Resources and Ecology of the Russian Federation

Observers – Other operators

Tatyana Bobrovetskaya, HSE Manager, Shell Russia

Olga Kalashnikova, Shell Exploration and Production Services (Russian Federation),

Vladimir Nechayuk, ExxonMobil (Day 1)

Jennifer Dupont, ExxonMobil / Exxon Neftegas Limited (ENL) (Day 1)

Ervin Kalinin, ExxonMobil (Day 1)

Observer – WGW MoC Coordinator

Hidehiro Kato, Tokyo University of Marine Science and Technology, Japan / Coordinator of the Western Gray Whale Memorandum of Cooperation (MoC) of Range States

Observers - local scientists and others

Alexander Boltnev, VNIRO (Day 1)

Mamaev Matvey, Institute of Evolution and Ecology

Vladimir Vertyankin, Kronotsky Zapovednik (Nature Reserve)

Dmitry Glazov, Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences (RAS), Moscow

Alexander Somov, VNIRO

Elena Vorontsova-Kasumyan, retired

Interpreters

Alexander Danilov

Grigory Shkalikov

ANNEX 2. FINAL MEETING AGENDA

WESTERN GRAY WHALE ADVISORY PANEL		**15-17 November 2017**
18th meeting		**Radissson Blu Belorusskaya Hotel, Rooms "Mozart" & "Beethoven" Moscow, Russian Federation**
FINAL AGENDA AND TIME SCHEDULE		
Day 1 - Wednesday, 15 November 2017		**Documents / presentations**
1. INTRODUCTIONS		
08:45 – 09:00	Welcome coffee	
09:00 – 09:30	**1.1. Organizational matters** [Reeves, Donovan, Carbone] 1.1.1 Welcome from IUCN 1.1.2 Co-chairs welcoming remarks 1.1.3 Brief introductions of all participants 1.1.4 Adoption of agenda 1.1.5 Documents 1.1.6 Report drafting procedures and timeline 1.1.7 Logistics	WGWAP-18/1 WGWAP-18/2 WGWAP-18/3 WGWAP-18/4
2. OUTCOMES OF PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2016 AND 2017 & ANNUAL POPULATION ASSESSMENT		

09:30 – 12:30 (incl.20 min coffee break at an appropriate moment during the session)	**2.1 Summary of 2016 results and 2017 preliminary fieldwork results (incl. progress with studies/analysis using long term data)** 2.1.1 Acoustics [Sakhalin Energy] 2.1.2 Benthic (incl. recs see below) and hydrology [Sakhalin Energy] 2.1.3 Distribution (incl. recs see below) [Sakhalin Energy] 2.1.4 Photo-ID (incl. drone technology), biopsy and genetics (incl. recs see below) • Genetics [Sakhalin Energy] • Photo-ID (incl. drone technology) and biopsy [Sakhalin Energy] • Photo-ID [Burdin/Russia Gray Whale Project (RGWP)] • Presentation of the annual assessment of biological and demographic characteristics of western gray whales [Cooke] • Update on joint Photo-ID catalogue under IWC auspices (incl. recs see below) [Donovan, Sakhalin Energy, Burdin] 2.1.5 Sonar mapping of what may be gray whale feeding depressions – related questions [Reeves] 2.1.6 Q&A and discussion *Relevant open recommendations:* • *WGWAP-16/011on biochemical analyses* • *WGWAP-16/012 on stable isotopes analyses of whale skin plus prey sampling* • *WGWAP-16/015 on stable isotope and fatty acid analyses of whale skin and prey* • *WGWAP-16/016 on photo-ID catalogue cross-comparison* • *WGWAP-16/017 on definitive IBM dataset WGWAP-16/020 on assessment of tag injury from photos* • *WGWAP-17/03 on Companies' analysis of causation for decline in benthic biomass* • *WGWAP-17/04 on Companies' analysis of complete dataset to determine 'core use' areas etc.*	WGWAP-18/5 WGWAP-18/16-RU WGWAP-18/16-EN WGWAP-18/17-RU WGWAP-18/17-EN WGWAP-18/18-RU WGWAP-18/18-EN WGWAP-18/19-RU WGWAP-18/19-EN WGWAP-18/20-RU WGWAP-18/20-EN WGWAP-18/22 WGWAP-18/23-EN WGWAP-18/23-EN WGWAP-18/24 WGWAP-18/INF.1 WGWAP-18/INF.10
12:30 – 13:30	Lunch	
13:30 – 14:40	**2.2 Exxon Neftegas Limited (ENL) 2017 Odoptu sealift operations and implementation of 2017 Marine Mammal Protection Plan** 2.2.1 Presentation by ENL 2.2.2 Presentation by Russian NGOs on their activities related to monitoring of the ENL operations in 2017 [IFAW on behalf of IFAW Russia, WWF Russia, Sakhalin Environment Watch] 2.2.3 Q&A and discussion	WGWAP-18/31
14:40 – 15:00	Coffee break	
3. SCOPE OF WORK FOR PROGRAMMES ON GRAY WHALE RESEARCH AND MONITORING IN 2018 AND BEYOND		

15:00 - 16:30	**3.1 Programme plans in 2018 and beyond** 3.1.1 Scope of work of the Sakhalin Energy/ENL Joint Programme: • Progress update on the work since JPTF-3 (November 2016) including specific cross-referencing to conclusions in JPTF reports [Sakhalin Energy] • Presentation on the 2018 scope of work [Sakhalin Energy] 3.1.2 Update on Russian Gray Whale Project (RGWP) plans in 2018 and beyond [Burdin] 3.1.3 Q&A and discussion on overall challenges and opportunities (including but not limited to synergies, etc.) 3.1.4 Conclusions concerning further engagement of Panel in reviewing and advising on Joint Programme into future	WGWAP-18/21-EN WGWAP-18/21-RU WGWAP-18/32-EN WGWAP-18/32-RU
16:30	Adjourn	
Day 2 – Thursday, 16 November 2017		**Documents / presentations**
INTRODUCTIONS		
08:45 – 09:00	Welcome coffee	
09:00 – 09:05	Introductions of new participants in the room (if any)	
4. SAKHALIN ENERGY'S PLANS FOR A SEISMIC SURVEY IN 2018		
09:05– 12:00 (incl.20 min coffee break at an appropriate moment during the session)	**4. 1 Sakhalin Energy's seismic survey plans 2018** 4.1.1 Presentation on updated plans for an OBN/streamer survey 2018 [Sakhalin Energy] 4.2.1 Monitoring and Mitigation Plan (MMP) for planned 2018 seismic survey: • Recap on recommendations/conclusions from NTF with regards to MMP (incl. any implications/lessons from 2015, previous Panel recommendations and outcomes of NTF-12, intersessional work and NTF-13 meetings) [Donovan] • Presentation of the MMP • Q&A and discussion 4.3.1 Conclusions and suggestions for recommendations *Relevant open recommendation (on the understanding that it would have been addressed in depth before or at NTF-13):* • *WGWAP-16/005 A, B & C re-opened on seismic survey planning, recruitment, equipment, testing and training*	NTF-11/REPORT NTF-12/REPORT WGWAP-18/5 WGWAP-18/7 (NTF-12/INT.3) WGWAP-18/8 (NTF-13/1) WGWAP-18/9 (NTF-13/2) WGWAP-18/10 (NTF-13/3)
12:00 – 13:00	Lunch	
5. OTHER SAKHALIN ENERGY ACTIVITIES IN 2017, 2018 AND BEYOND		

13:00 – 14:30	**5.1 Update on other Sakhalin Energy activities in 2017 and plans for 2018 onwards** 5.1.1 Presentation of the updated Marine Mammal Protection Plan (MMPP) (incl. Panel review) [Sakhalin Energy, Co-chairs] 5.1.2 Programme on routine Marine Mammal Observers (MMOs) and ship strike avoidance, including speed limit implementation (incl. open recs WGWAP-17/08 on dashcams, WGWAP-17/09 on accelerometers) [Sakhalin Energy] 5.1.3 Oil spill response planning and drills: Panel review and plans for 2018 (incl. open rec WGWAP-10/017 on handbook review) [Sakhalin Energy, Reeves for Dicks] 5.1.4 Other activities 2017-2020 [Sakhalin Energy] 5.1.5 Conclusions and suggestions for recommendations	WGWAP-18/5 WGWAP-18/11 WGWAP-18/12 WGWAP-18/13-EN WGWAP-18/13-RU WGWAP-18/14-A WGWAP-18/14-B WGWAP-18/15 WGWAP-18/INF.9 WGWAP-18/INF.11 WGWAP-18/30-EN WGWAP-18/30-RU
14:30 – 14:50	Coffee break	
6. IMPLEMENTATION OF INTERNATIONAL FINANCE CORPORATION (IFC) PERFORMANCE STANDARDS FOR SOCIAL AND ENVIRONMENTAL SUSTAINABILITY		
14:50 – 16:00	**6.1 Update on Sakhalin Energy's plans for IFC PS6 implementation and progress with the development of key associated documents** 6.1.1 Presentation on the draft updated Critical Habitat Assessment (CHA) and offsets strategy, focusing on the marine component [Sakhalin Energy] 6.1.2 Q&A and discussion 6.1.3 Conclusions (including next steps and expectations on additional Panel input)	WGWAP-18/25
16:00	Adjourn	
Day 3 – Friday, 17 November 2017		**Documents / presentations**
INTRODUCTIONS		
09:00 – 09:15	Welcome coffee	
09:15 – 09:20	Introductions of new participants in the room (if any)	
7. MANAGING / ADDRESSING OTHER ISSUES ON THE SAKHALIN SHELF		
09:20 – 09:50	**7.1 Update on other oil and gas activities in and near the whale feeding areas in Sakhalin / Sea of Okhotsk in 2017 and beyond** 0:30 7.1.1 Space for other operator updates/presentations on 2017, 2018 activities and future plans (to be confirmed), supplemented by IUCN overview) 7.1.2 Discussion and conclusions	WGWAP-18/26
09:50 – 10:10	**7.2 Update on cruise ship visits to Piltun in 2017 and beyond** 7.2.1 Presentation [Sakhalin Energy, IUCN] 7.2.2 Discussion and conclusions	WGWAP-18/27 WGWAP-18/28

10:10 - 11:30 (incl.20 min coffee break at an appropriate moment during the session)	**7.3 Update on interactions between fisheries and whales in Sakhalin** 7.3.1 Update on the 2017 fisheries season and interactions with whales (incl. MNR order implementation) [Sakhalin Energy, NGOs, Panel members with information) 7.3.2 Outcomes of 2017 IWC disentanglement and stranding response training in Sakhalin and next steps [Donovan, Sakhalin Energy, IFAW] 7.3.3 IUCN Working Paper on fisheries interactions with whales and next steps [Reeves, Weller, other co-authors present] 7.3.4 Discussion and conclusions (incl. reflection on next year strategy)	WGWAP-18/INF.2-EN WGWAP-18/INF.2-RU WGWAP-18/INF.3 WGWAP-18/INF.4 WGWAP-18/INF.11
8. MANAGING / ADDRESSING ISSUES AT THE RUSSIAN NATIONAL AND REGIONAL LEVELS		
11:30 – 12:00	**8.1. Government updates** 8.1.1 Update on the activities at the Federal/MNR level (to be confirmed) 8.1.2 Update on the UNDP/GEF-MNR project "Mainstreaming biodiversity conservation into Russia's energy sector policies and operations" [Kostin/UNDP] 8.1.3 Update on the activities of the Biodiversity Group / Environmental Council at Sakhalin MNR level (to be confirmed) 8.1.4 Q&A and discussion	
12:00 – 13:00	Lunch	
9. RANGE-LEVEL ISSUES: CONTRIBUTION TOWARDS THE IMPLEMENTATION OF RANGE STATES' MEMORANDUM OF COOPERATION ON GRAY WHALE CONSERVATION AND PROGRESS UPDATING THE IUCN/IWC CONSERVATION MANAGEMENT PLAN (CMP)		
13:00-14:10	**9.1 Process and timeline to update 2010 Conservation Management Plan (CMP) and the implementation of the Memorandum of Cooperation (incl. Panel input)** [Donovan] 1:10 9.1.1 Progress made and final steps planned to complete the CMP (including IWC Scientific Committee Workshops reviewing the range-wide status of North Pacific gray whales & Panel input) 9.1.3 Plans for a Stakeholder Workshop to finalize the CMP and develop a strategy for its implementation and its endorsement 9.1.4 Q&A and discussion **9.2 Other rangewide scientific issues** 9.2.1 Gray whale observations outside Sakhalin feeding areas, incl. Kamchatka [Vertyankin/Kronotsky Nature Reserve, others with information] 9.2.2 New maps of gray whale distribution in the North Pacific on seasonal basis: presentation of the working draft and call for input [Reeves, IUCN] 9.2.2.Any other range-wide scientific issues 9.2.4 Q&A and discussion	WGWAP-18/INF.5 WGWAP-18/INF.6 WGWAP-18/INF.7 WGWAP-18/INF.7-F WGWAP-18/INF.7-J WGWAP-18/INF.7-O WGWAP-18/INF.8 WGWAP-18/INF.12 WGWAP-18/33 Ru WGWAP-18/33 En
14:10 – 14:30	Coffee break	
10. REVIEW OF RECOMMENDATIONS		
14:30 – 15:00	**10. Review of WGWAP recommendations** [Reeves, IUCN] 10.1 Presentation by IUCN 10.2 Discussion (incl. any other recs that may not be addressed under other agenda items or at NTF-13)	WGWAP-18/5 WGWAP-18/6
11. WGWAP PLANS FOR 2018 & BEYOND		

15:00 – 15:40	**11. WGWAP Workplan 2018** [Co-chairs, IUCN] 11.1 Presentation of workplan 11.2 Discussion	
15:40 – 15:50	**12. ANY OTHER BUSINESS**	
15:50 – 16:00	**13. WGWAP-18 CLOSING REMARKS**	
16:00	Adjourn	

ANNEX 3. LIST OF DOCUMENTS

DOCUMENT #	TITLE	LANGUAGE	STATUS
PRIMARY DOCUMENTS			
General			
WGWAP18_1	Final Agenda (including time schedule)	English	Public
WGWAP18_2	Повестка дня (включая расписание)	Russian	Public
WGWAP18_3	List of documents distributed in connection with the 18th meeting of the WGWAP	English	Public
WGWAP18_4	Список документов, распространяемых в соответствии с 18м заседанием КГЗСК	Russian	Public
ENL/Sakhalin Energy Joint Programme on Gray Whale Monitoring			
WGWAP18_16_Ru	Отчет по Программе мониторинга серых китов у северо-восточного побережья острова Сахалин в 2016 г. (основной доклад)	Russian	Public
WGWAP18_16_En	Report on Gray Whale Monitoring Program off the Northeast Sakhalin Island in 2016 (main report)	English	Public
WGWAP18_17_Ru	СОСТОЯНИЕ БЕНТОСА В РАЙОНАХ НАГУЛА СЕРЫХ КИТОВ (*ESCHRICHTIUS ROBUSTUS*) У ПОБЕРЕЖЬЯ СЕВЕРО-ВОСТОЧНОГО САХАЛИНА В 2016 ГОДУ	Russian	Public
WGWAP18_17_En	The state of benthos in the feeding grounds of gray whales (*Eschrichtius robustus*) off the Northeast coast of Sakhalin in 2016	English	Public
WGWAP18_18_Ru	РАСПРЕДЕЛЕНИЕ И ЧИСЛЕННОСТЬ СЕРЫХ КИТОВ В ШЕЛЬФОВЫХ ВОДАХ СЕВЕРО-ВОСТОЧНОГО САХАЛИНА В АВГУСТЕ-СЕНТЯБРЕ 2016 Г.	Russian	Public
WGWAP18_18_En	Distribution and Abundance of Gray Whales Offshore NorthEast Sakhalin August-September of 2016	English	Public
WGWAP18_19_Ru	ФОТОИДЕНТИФИКАЦИЯ СЕРЫХ КИТОВ (*ESCHRICHTIUS ROBUSTUS*) У СЕВЕРО-ВОСТОЧНОГО ПОБЕРЕЖЬЯ О. САХАЛИН В 2016 ГОДУ	Russian	Public
WGWAP18_19_En	Photo-Identification of Gray Whales (Eschrichtius robustus) off the Northeast Coast of Sakhalin Island in 2016	English	Public
WGWAP18_20_Ru	Акустико-гидрофизические исследования на северо-восточном шельфе о. Сахалин в 2016 г.	Russian	Public
WGWAP18_20_En	2016 Acoustic and Hydrophysical Studies Offshore North-East Sakhalin	English	Public

DOCUMENT #	TITLE	LANGUAGE	STATUS
WGWAP18_21_En	2018 Program for Gray Whale Monitoring Off the North-East Coast of Sakhalin Island	English	Public
WGWAP18_21_Ru	ПРОГРАММА МОНИТОРИНГА СЕРЫХ КИТОВ НА СЕВЕРО-ВОСТОЧНОМ ШЕЛЬФЕ ОСТРОВА САХАЛИН НА 2018 год	Russian	Public
WGWAP18_22	List of papers prepared in 2017 as a part of the Sakhalin Energy/ENL Joint Gray Whale Monitoring Programme	English	For internal use only
WGWAP18_23_En	Presentation on the Sakhalin Energy/ENL Joint Gray Whale Monitoring Programme preliminary results in 2017	English	For internal use only
WGWAP18_23_Ru	Презентация о предварительных результатах Совместной программы «Сахалин Энерджи»/ЭНЛ по мониторингу серых китов в 2017 г.	Russian	For internal use only
WGWAP_18_31	2017 NGO activities presentation , IFAW Russia	English/ Russian	Public
WGWAP18_32_EN	DRAFT Joint Programme Scope of Work 2018	English	Public
WGWAP18_32_RU	Черновик - План работ по Совместной программе мониторинга серых китов Сахалин Энерджи и ЭНЛ в 2018 году	Russian	Public
Population assessment *			
WGWAP18_24	Updated assessment of the Sakhalin gray whale population and its relationship to gray whales in other areas (by J.G. Cooke et al.) ** See also document WGWAP-18/Inf.10 below*	English	Public
Sakhalin Energy's plans for a seismic survey and other potentially noise-generating offshore activities			
NTF-11/REPORT	11th Noise Task Force report, November 2016	English	Public
NTF-12/REPORT	12th Noise Task Force report, March-April 2017	English	Public
WGWAP18_7 (NTF-12/INT.3)	Analysis of effects of alternative mitigation policies on the duration of the proposed Piltun-Ashtok seismic survey in summer 2018 and the consequences for sonic exposure of gray whales in the main Sakhalin shelf feeding area (post-NTF-12 intersessional technical WGWAP/NTF technical paper NTF-12/INT.3 by Justin G. Cooke, June 2017)	English	For internal use
WGWAP18_8 (also for NTF-13/1)	Report of the NTF from its intersessional "Small Group" meeting, 6-7 July 2017, Durham, USA (Annex to NTF13 report)	English	Public
WGWAP18_9 (also for NTF-13/2)	Draft Monitoring and mitigation plan (MMP) for the 2018 Piltun-Astokh 4D seismic survey of Sakhalin Energy (working version as of 22 September 2017)	English	For internal use
WGWAP18_10 (also for NTF-13/3)	NTF-13 Status Update of 2018 4D Seismic Survey at Piltun-Astokhskoye (by B.Blonk, Sakhalin Energy)	English	For internal use only
WGWAP18_11	List of Sakhalin Energy's offshore activities potentially generating noise, 2017-2021	English	Public

DOCUMENT #	TITLE	LANGUAGE	STATUS
Sakhalin Energy's Marine Mammal Protection Plan and Observer Programme			
WGWAP18_12	Draft updated Sakhalin Energy's Marine Mammal Protection Plan (MMPP), working version as of 23 October 2017 (as submitted to Lenders following Panel's review)	English	For internal use
WGWAP18_12_Note	Pre-read/cover note on the MMPP update (by M.Donaghy, MDA/Sakhalin Energy, October 2017)	English	Public
WGWAP18_13_Ru	Программа наблюдения за морскими млекопитающими в 2016 г., заключительный отчет	Russian	Public
WGWAP18_13_En	2016 Marine Mammal Observer Programme, Close-out Report	English	Public
WGWAP18_30_Ru	Презентация «Сахалин Энерджи» о Программе наблюдений за морскими млекопитающими	Russian	Public
WGWAP18_30_En	Presentation of Sakhalin Energy's Marine Mammals Observation Programme	English	Public
Sakhalin Energy's Oil spill preparedness and response (OSRP)			
WGWAP18_14A	Review of 2017 Oil Spill Response Plans (OSRPs) provided by Sakhalin Energy, September 2017 (by B.Dicks, WGWAP Associate Scientist)	English	Public
WGWAP18_14B	Consolidation of questions posed to Sakhalin Energy by B.Dicks, WGWAP Associate Scientist following Review of OSR Exercise reports and outstanding recommendations, Sakhalin Energy response and additional comments by B.Dicks and R.Reeves, WGWAP Co-chair, October 2017	English	For internal use only
WGWAP18_15	Sakhalin Energy's presentation on continued improvement of Sakhalin Energy's OSR capability in 2017 and 2018	English	For internal use only
Implementation of the IFC Performance Standards			
WGWAP18_25	Draft Critical Habitat Assessment and Offset Strategy for the Sakhalin-II Project, Sakhalin Island, Russian Federation (v. October 2017)	English	For internal use only
Activities of other operators and sectors			
WGWAP18_26	IUCN compilation of information sheets on other operator activities in the Sea of Okhotsk from the IUCN mapping exercise (including a summary overview), updated v. September-October 2017	English	For internal use only
WGWAP18_27	Field report/memo by Peter van der Wolf, the South Piltun Joint Programme Photo ID team on Cruise ship Silver Discoverer visit to South Piltun lagoon, 1 September 2017	English	For internal use only
WGWAP18_28	IUCN compilation of information on cruise ship visits / offers in the Sea of Okhotsk, including Piltun Lagoon (based on publicly available information), updated v. October 2017	English	Public
FOR INFORMATION DOCUMENTS			
Russia Gray Whale Project			

DOCUMENT #	TITLE	LANGUAGE	STATUS
WGWAP18_INF1	Burdin, S., Sychenko, O., Volkov, A., Mamaev, M. 2017. Status of western north Pacific gray whales off northeastern Sakhalin Island and eastern Kamchatka, Russia, in 2016. IWC Scientific Committee (SC67, Bled, May 2017) Paper SC/67A/NH/03	English	Public
Fisheries and western gray whales interactions **			
WGWAP18_ INF2_EN	Vladimir N. Burkanov, Lloyd F. Lowry, David W. Weller and Randall R. Reeves (2017). *Entanglement Risk to Western Gray Whales in Russian Far East Fisheries.* IUCN working paper on fisheries. IWC Scientific Committee (SC67, Bled, May 2017) Paper SC/67a/HIM/17	English	Public
WGWAP18_ INF2_RU	Владимир Н. Бурканов, Лойд Ф. Лоури, Дэйвид В. Веллер и Рендал Р. Ривз (2017). *Риск запутывания западнотихоокеанских серых китов в орудиях рыболовства на Дальнем Востоке России.* Рабочий отчет МСОП.	Russian	Public
WGWAP18_ INF3	News story " Entanglement and Strandings Training in Russia" published by the International Whaling Commission (IWC), 12 June 2017	English	Public
WGWAP18_ INF4	News story "Сергей Донской поручил обеспечить дополнительные меры охраны охотско-корейской популяции серых китов в Сахалинской области" [*Sergey Donskoy issued an order to apply additional measures for the protection of the Okhotsk-Korean gray whale population in the Sakhalin Oblast*] published by the Ministry of Natural Resources and Environment of the Russian Federation (MNR), 20 June 2017	Russian with unofficial translation in English	Public
*** See also relevant excerpts from the below 2017 IWC SC reports where the fisheries subject was discussed*			
Range-wide issues			
WGWAP18_INF5	A short document with the new maps on gray whale distribution on seasonal basis as published on both IUCN & IWC websites and call for input	English	Public
WGWAP18_INF6	Report of the fourth rangewide Workshop on the Population Structure and Status of North Pacific Gray Whales (April 2017, La Jolla, California) *** **** See also relevant excerpts (highlights) on the workshop in the Report of the IWC Scientific Committee (SC67, Bled, May 2017 - document WGWAP-18/INF.7 below)*	English	*Expected soon*

DOCUMENT #	TITLE	LANGUAGE	STATUS
WGWAP18_INF7	Relevant excerpts (highlights) from the Report of the IWC Scientific Committee (SC67, Bled, May 2017), as well as other relevant items/highlights, including: *Item 8. STOCKS SUBJECT TO ABORIGINAL SUBSISTENCE WHALING INCLUDING MANAGEMENT ADVICE (AWMP). 8.2 North Pacific gray whales* *Item 10. STOCKS THAT ARE OR HAVE BEEN SUGGESTED TO BE THE SUBJECT OF CONSERVATION MANAGEMENT PLANS (CMP). 10.1 Stocks with existing CMPs, 10.1.3 North Pacific gray whales, 10.1.3.1 THE RANGEWIDE ASSESSMENT, 10.1.3.2 REGIONAL STUDIES (Russia, Japan, East China Sea, Mexico), 10.1.3.3 PROGRESS WITH THE CMP, 10.4. Workplan 2017-2018.* *Item 11. STOCK DEFINATION AND DNA TESTING. 11.1. DNA testing. 11.3.5.2 INFERENCE OF DEMOGRAPHIC HISTORY USING WHOLE GENOME SEQUENCES (including gray whales)* *Item 12. CETACEAN ABUNDANCE ESTIMATES, STOCK STATUS. 12.1 Summary of abundance estimates and update of IWC consolidated table - Table 18. Agreed Abundance Estimates During the 2017 SC Meeting (in cluding North Pacific Gray Whales). 12.2 Methodological issues - 12.2.2 Review new survey techniques/equipment.* *Item 13. BYCATCH. 13.1 Review new estimates of entanglement rates, risks and mortality (large whales). 13.1.2. Gray whales.* *Item 15. ENVIRONMENTAL CONCERNS. 15.1 Pollution 2020 - 15.1.2 Receive review on mercury in cetaceans. 15.10 Arctic issues - 15.10.1 Progress on priority topics including co-operation with other bodies* *Item 25. SCIENTIFIC COMMITTEE BUDGET FOR THE BIENNUM 2017-2018. 25.1 Status of previously funded research, workshop proposals, data processing and computing needs. 25.1.1 Funded proposals for the current biennium 2017-2018 & 25.2.1 Workshops. (including gray whale rangwwide workshop and CMP drafting group).* *26. WORKING METHODS OF THE COMMITTEE.*	English	Public
WGWAP18_INF7_Q	Annex Q to the IWC Scientific Committee (SC67, Bled, May 2017): Report of the Ad Hoc Working Group on Abundance Estimates, Stock Status and International Cruises	English	Public
WGWAP18_INF7_J	Annex J to the IWC Scientific Committee (SC67, Bled, May 2017): Report of the Working Group on Non-Deliberate Human-Induced Mortality of Cetaceans	English	Public
WGWAP18_INF7_O	Annex O to the IWC Scientific Committee (SC67, Bled, May 2017): Report of the Sub-Committee on Cetacean Stocks that are or might be the Subject of Conservation Management Plans (CMPs)	English	Public
WGWAP18_INF8	Olga A. Filatova, Ivan D. Fedutin, Olga V. Titova, Olga V. Shpak, Alexandr M. Burdin, Erich Hoyt (2017). *Cetacean surveys in the coastal waters of the Russian Pacific in 2014-2016*. IWC Scientific Committee (SC67, Bled, May 2017) Paper SC67A/NH/06	English	Public
WGWAP18_INF9	Justin G.Cooke (2017). *Dynamics of whale/ship collisions: an exploratory analysis*. IWC Scientific Committee (SC67, Bled, May 2017) Paper SC67A/HIM/16	English	Public

DOCUMENT #	TITLE	LANGUAGE	STATUS
WGWAP18_Inf10	Justin G. Cooke, David W. Weller, Amanda L. Bradford, Olya Sychenko, Alexander M. Burdin, Aimee R. Lang, and Robert L. Brownell, Jr. (2017). *Population Assessment Update for Sakhalin Gray Whales, with Reference to Stock Identity*. IWC Scientific Committee (SC67, Bled, May 2017) Paper SC/67a/NH/11	English	Public
WGWAP18_Inf11	Jonathan Scordino, Jim Carretta, Paul Cottrell, Justin Greenman, Kate Savage, Joe Scordino, and Kristin Wilkinson (2017). *Ship Strikes and Entanglements of Gray Whales in the North Pacific Ocean, 1924-2015*. IWC Scientific Committee (SC67, Bled, May 2017) Paper SC/67a/HIM/06	English	Public
WGWAP18_Inf12	Regina A. Guazzo, Tyler A. Helble, Gerald L. D'Spain, David W. Weller, Sean M. Wiggins, John A. Hildebrand (2017). *Migratory behavior of eastern North Pacific gray whales tracked using a hydrophone array*. PLoS ONE12(10): e0185585.	English	Public
WGWAP18_Inf13	Nakamura, G., Katsumata, H., Kim, Y., Akagi, M., Hirose, A., Arai, K. and Kato, H. (2017) Matching of the Gray Whales of off Sakhalin and the Pacific Coast of Japan, with a Note on the Stranding at Wadaura, Japan in March, 2016. Open Journal of Animal Sciences, 7, 168-178. https://doi.org/10.4236/ojas.2017.72014	English	Public
WGWAP18_33_RU	Результаты мониторинга серых китов (Eschrichtius robustus) в акватории Кроноцкого заповедника и Южно-Камчатского заказника в 2012- 2017 годах, Вертянкин Владимир	Russian	Public
WGWAP18_33_EN	Gray Whale (Eschrichtius robustus) Monitoring Results in Kronotsky Reserve and South Kamchatka Reserve Waters in 2012-2017 , Dr. V. Vertyankin	English	Public