2013 NMFS Open Water Peer Review Panel
Monitoring Plan Recommendations Report:

SHELL EXPLORATORY DRILLING AND MARINE SURVEYS

For the 2013 Open Water season Shell is proposing the same kinds of exploratory drilling operations as proposed and largely not completed in 2012, as well as a new marine surveys program. While each kind of operation and monitoring effort was discussed in separate documents with their applications, there is sufficient overlap in some of the monitoring efforts that the panel felt they were best discussed in a single recommendations report. We provide first an assessment of the proposed exploratory drilling followed by our assessment of the marine surveys program.

SHELL EXPLORATORY DRILLING BEUAFORT AND CHUKCHI SEAS

Shell is proposing to conduct exploratory drilling operations in the Beaufort and Chukchi seas at identical sites and with very similar methods to those included in their 2012 applications. There are several minor modifications in operational equipment and protocols, including slightly larger offshore supply vessels, additional sound dampening to the Kulluk rig, reduced total gun volume for the airgun arrays in the zero-offset vertical seismic profiles, and refined protocols for ice management based on 2012 field experience. Each of these modifications has minor implications for the predicted acoustic impact and take calculations that have been accounted for in the respective applications.

Shell's proposed monitoring plans for the Beaufort and Chukchi exploratory drilling operations are also very similar to those proposed in 2012. Consequently, the panel largely refers to the detailed comments provided on these plans in the 2012 panel reports for the Beaufort and Chukchi sea operations. Additionally, for operations in both areas we consider here the proposed modifications and remaining questions based on the questions listed below that were set forth by the National Marine Fisheries Service's Office of Protected Resources (OPR), we and provide the following recommendations.

Each monitoring plan has three general elements: vessel-based, aerial, and acoustic monitoring. Each element is assessed relative to four questions regarding objectives, likely efficacy, and potential modifications. Answers to, and recommendations based on, the specific questions were developed using the general monitoring requirements outlined in the Marine Mammal Protection Act (MMPA) implementing regulations and further guidance provided by OPR, which were included in the Peer Review Panel instruction document and have been copied into this document below the questions. There were substantial changes made to the monitoring plans originally proposed in 2010 compared to those presented to the panel in 2012, and some

modifications made for the 2013 operations. While the panel had some additional questions and suggestions, some of which were addressed at the panel review meeting with Shell and its representatives, it is very clear that Shell has continued to respond to previous suggestions and made important improvements in their proposed monitoring approach.

Panel Questions

I. Will the applicant's stated objectives effectively further the understanding of the impacts of their activities on marine mammals and otherwise accomplish the goals stated above? If not, how should the objectives be modified to better accomplish the goals above?

Vessel-Based Monitoring

As in the 2012 applications, the stated objectives for the vessel-based monitoring program for the Beaufort and Chukchi seas are "to ensure that disturbance to marine mammals and subsistence hunts is minimized, that effects on marine mammals are documented, and to collect data on the occurrence and distribution of marine mammals in the project area." One minor modification to the vessel-based monitoring plan in both IHA applications and 4MPs is that protected species observers (PSOs) will be aboard only drillships and primary and secondary ice management vessels in 2013, rather than aboard all vessels in 2012. The panel does not see this as negatively impacting the efficacy of the overall monitoring plan. Shell also described a new data entry and archive system for observations from PSOs, which the panel sees as a logical and positive development in handling and ultimately analyzing data.

The panel again notes that the overall objective should be to provide reliable, statistically robust estimates of the marine mammals in the project area, their distribution and movement patterns, and evidence sufficient to determine if, and if so how, project operations affect their presence, distribution, and movements. The vessel-based monitoring plan will provide useful information, but that information will not meet the standards of rigorous scientific surveys and should not be viewed as providing baseline information on the marine mammals in the area. Within the context of the proposed operations and requirements, however, the vessel based monitoring plan should largely achieve the purpose of mitigating potential interactions between project vessels and marine mammals.

Aerial Survey Program

The aerial survey program objectives are to provide data on the distribution, abundance, and behavior of marine mammals in operational areas, particularly near traditional hunting areas. These objectives are appropriate and will contribute to Shell's efforts to meet their permit requirements and assess impacts of aspects of their operations. Coastal survey should be particularly helpful in evaluating concerns that oil and gas activities will interfere with

subsistence hunts, particularly for beluga whales. Initial assessment of the efficacy of high-resolution photographs and high definition video from airplanes flying line transects in 2012 seem promising. The panel welcomes this addition to the overall monitoring plan and believes that it has the potential to be useful in meeting monitoring objectives, pending additional testing and evaluation.

Acoustic Monitoring Program

The specified objectives are identical to 2012 and should enable Shell to meet their monitoring requirements. In essence, Shell's objectives in acoustic monitoring in the Chukchi Sea include direct measurements of sounds around the proposed exploratory drilling operations that are largely similar to the proposed approach in the Beaufort Sea. Shell has developed an excellent capability to monitor sound levels and variance in time and range from these operations, but is more limited in terms of measuring the spatial variance (directionality) of resulting sound fields.

Shell continues to support deployments of acoustic arrays as part of a multi-partner Joint Monitoring Program to measure ambient noise and biological acoustics across wider areas of the Chukchi Sea. The broader program appears well positioned to assess large-scale changes in the distribution of several marine mammal species in the area and is occurring over sufficiently large area and time scales; additional integration of Shell's acoustic and aerial monitoring components relative to their known operations within the larger program is encouraged.

II. Can the applicant achieve the stated objectives based on the methods described in the plan?

Vessel-Based Monitoring

The panel largely views the vessel-based monitoring plans for both areas with the same assessment and caveats as 2012, some of which are repeated here because of their importance. The more focused use of PSOs on drill ships and selected support vessels rather than all ships is seen as a likely positive development in that it should enable a more focused assessment of animals potentially impacted around the parts of operations with more intense activities. Overall, the proposed monitoring should largely enable Shell to meet its stated objectives, but some specific caveats are noted, given the nature of visual observations and the conditions in which offshore operations are expected to occur.

- First, the overall efficacy of observations should be acknowledged as being generally undetermined. That is, the probability that the observers will detect a marine mammal in a safety zone may be relatively high for some species but low for others, but in no case is the actual efficacy known.
- Second, observations become less efficient to the point of being completely ineffective as sighting conditions deteriorate (e.g., nighttime, high sea state, precipitation or fog).

- Third, visibility may be adequate for safety zones but the ability to sight animals declines with distance, and disturbance of animals beyond sighting distance may go undetected.
- Fourth, it is difficult to characterize animal responses because observers are not able to focus on animal behavior without compromising their likelihood of observing other animals in the area.

It is thus not possible to estimate the number of animals taken with reliable degrees of confidence based on vessel-based PSO visual observations alone. As noted earlier, these are not scientifically rigorous surveys, but rather preventative measures of undetermined efficacy. They should be implemented, but should not be used or considered to constitute baseline estimates of the numbers of marine mammals in the area. Although there may be no immediate remedy for these shortcomings that can be implemented to improve the utility of vessel-based monitoring, each of the above shortcomings should continue to be evaluated with the overall aim of characterizing and improving PSO efficiency over time.

Aerial Survey Program

The proposed aerial survey program will be largely the same as proposed for 2013, with one minor modification that the panel does not feel will negatively impact the program. Aerial surveys in the Beaufort Sea will not extend beyond October 31 in any situation, whereas in 2012 surveys would extend 5-7 days after the end of the drilling season if the drilling season extended to within 7 days or less of the 31st. The methods being used are largely seen as adequate for Shell to meet the stated objectives for this part of the monitoring program although the panel has some specific additional questions and suggestions given here, some of which are in response to earlier discussions with Shell before and during the panel meeting.

The panel continues to have concerns regarding the protocols proposed for circling on bowhead whale sightings during aerial surveys. Shell has indicated that the aerial survey protocol does not include circling of every bowhead sighting, but would like to preserve circling as an option in some circumstances (such as to better document a feeding aggregation). They have further noted that not circling sightings may bias group size estimates low, but if sightings are to be circled than changes to other correction factors [i.e. g(0)] would also need to be considered. However, the panel note that based on Thomas et al (2002)[1], the existing correction factors have no way to correct for biased group sizes or missed calf sightings. Notably, "…calves were excluded [from $g_a(0)$] because their dive profiles are quite different, and because calves are generally detected after the observer's attention has been attracted by sighting the mother." First, this means that there is not an availability correction factor for

[1] Thomas, T.A., Koski, W.R. and Richardson, W.J. 2002. Correction factors to calculate bowhead whale numbers form aerial surveys of the Beaufort Sea. pp. 15-1 to 15-28. In: W.J. Richardson and D.H. Thomson (eds.) Bowhead whale feeding in the eastern Alaskan Beaufort Sea: Update of Scientific and Traditional Information. Rep. from LGL Ltd., King City, Ontario, for US Minerals Management Service, Anchorage, Alaska and Herndon Virginia. OCS Study MMS 2002-012

calves. Second, Shell relies on the assumption made by Thomas et al. (2002) that "calves are generally detected after the observer's attention has been attracted by the sighting of the mother," which is untested and likely inaccurate. If nobody looks for calves, how can one be certain that they are not present? Based on ASAMM survey data from 2012, when almost all cetacean sightings were circled to estimate group size and determine whether a calf was present, 83.3% of bowhead whale calves and 43.3% of gray whale calves would not have been detected had circling not been undertaken. If the mitigation criteria implemented in previous years related to numbers of cow/calf pairs are no longer in effect, there is no "penalty" for sighting calves. Furthermore, there is considerable value in knowing whether calves are in the vicinity of and, therefore, potentially influenced by, industry's activities because cow/calf pairs are potentially more vulnerable to behavioral disturbance. Additionally, obtaining an estimate of calf density is potentially useful for monitoring the population and understanding whether certain habitats are preferred by cow/calf pairs. A generic availability correction factor for calves is unlikely to be effective because calf productivity exhibits inter-annual variability, so it would be erroneous to assume a constant value for a correction factor. Finally, although not explicitly stated in Thomas et al. (2002), the detectability bias correction factor, $g_d(0)$, likely does not (nor could it) correct for animals, including calves, not counted within a sighted group of animals. The detectability bias correction factor is the correction factor for groups of whales at the surface but not detected. Thomas et al. (2002) states, "…this calculation is based on the number of whale groups sighted by only one observer vs. the number seen by both observers." Therefore, $g_d(0)$ refers only to *groups* of animals, and provides no information to the accuracy or bias associated with group size estimates.

There is value in having an accurate estimate of group size and rough age composition (i.e., number of calves) in order to estimate density and understand how the animals are distributed in space and time. Circling on sightings to get accurate estimates of group size and calf numbers would provide more accurate, less biased data, and the panel questions how circling would affect existing g(0) values. ASAMM started specifically recording when animals were sighted during circling in 2009, and it has become increasingly apparent that circling is important in order to get accurate group size estimates and estimates of calf numbers. Therefore, as a general rule, ASAMM circles on all cetacean sightings; in the relatively rare cases where weather or fuel reserves prohibit circling, the "calf detection certainty" field in the ASAMM database allows observers to evaluate on a scale of 1 to 3 the likelihood of detecting a calf if it were present, based subjectively on the distance to the sighting and how good of a look the observer got of the sighting. The panel recommends that Shell consider this assessment and approach in other aerial surveys being used for bowhead whales and consider implementing a similar approach with regard to circling bowhead whales.

The methods for offshore aerial surveys involving high-resolution photographs and video tested in 2012 are acknowledged to be potentially promising. Early assessment of the images obtained seem positive, but (understandably) Shell notes that they have not had enough time to go through the imagery and associated data to provide an accurate estimate of precision. Their use, and potential implementation on future unmanned aerial platforms, is a positive development, but the efficacy and degree to which this contributes to Shell's objectives will

depend on the validation of these and should not yet be viewed as equivalent to traditional aerial surveys using human observers.

Acoustic Monitoring Program

The proposed measurements of sounds associated with drillship operations, all operational vessels (including drill ships in transit mode), and the ZVSP surveys are adequate and appropriate to meet the stated objectives of measuring sound levels and variations in time and distance from sound sources. For the sound source characterization and verification efforts, Shell is using appropriate monitoring equipment and technical personnel with a proven track record for making these kinds of measurements accurately.

Exploration drilling sound monitoring will again include bottom-mounted hydrophones at distances of 0.5, 2, 4, and 8 kilometers (km) from the anchored drill ships. However, the bottom-mounted hydrophone at 0.5 km will not be cabled back to a surface float housing a digital acquisition system capable of streaming data real-time as occurred in 2012 in Camden Bay. While this does not necessarily impede Shell's ability to meet the stated objectives for source characterization, the panel viewed this is a positive development in 2012 in order to increase operational awareness of the surrounding environment during operations and is disappointed to see this part of the monitoring removed.

III. Are there technical modifications to the proposed monitoring techniques and methodologies proposed by the applicant that should be considered to better accomplish their stated objectives?

Vessel-Based Monitoring

The panel made a number of recommendations in the combined comments on the 2012 monitoring plans for both areas, most of which have been implemented or there are clear reasons why they cannot be. Notably, the panel is pleased to see modifications based on observer location on survey vessels, data acquisition and archive software, and the refined focus of PSOs on vessels most likely associated with impact given the limited ability of PSOs to assess any other than near-field impacts. The panel again notes these limitations (see II above) and emphasizes that Shell should ensure that that the on duty PSOs have the power to implement required mitigation measures (*e.g.*, slow down or diverst the ship based on a sighting) irrespective of operations underway unless those measures would pose a risk to human safety or increase substantially the risk of an accident with potentially serious complications. As discussed at the panel meeting, further work is needed to improve marine mammal detection capabilities when sighting conditions are poor (e.g., nighttime, high sea states, precipitation, and fog).

Aerial Survey Program

The panel reiterates earlier comments regarding coastal aerial surveys, in that earlier timing in the seasons is important to ensure that Shell has the potential to detect and interpret movement patterns of belugas in and around the operational area. Surveys in previous seasons have typically begun in mid-July, but the panel feels that surveys would likely need to begin around June 25 in order to appropriately study the coastal movements of beluga whales. These surveys should analyze coastal distributions relative to offshore activities, while taking into consideration confounding factors of commercial transport or other vessel traffic, including vessels not associated with Shell's program.

As noted above, the panel welcomes the new effort to conduct aerial surveys in offshore areas with alternate technologies and looks forward to the results of pilot efforts. The efficacy of this approach and subsequent modifications should be determined from both its use in the Chukchi Sea and (most importantly) a careful comparison of relative performance of photographic versus human observers in near-shore areas. The panel notes that there could be interesting approaches to take in a methods comparison study, but it would be important to identify the metrics prior to the study in order to be certain that the appropriate data are collected. If one waits until the data are processed to determine metrics to be used in the comparison, there could be concern that metrics providing unsatisfactory results would be overlooked or would go unreported, or that insufficient data were collected to conduct an informative comparison. Some recommendations to consider include: 1) # sightings of each species; 2) group sizes for sightings observed by both platforms; 3) calves observed in sightings detected by both platforms; 4) CV(D) resulting from detections from both platforms; 5) amount of time required to collect and process the data from each platform; and 6) cost of acquiring data from both platforms. In addition, the question of survey hours required to achieve a target CV(D) is a value that could be estimated prior to the study based on data from existing line-transect surveys in the study area.

Regarding the precision of marine mammal density estimates from the digital imagery, the panel understands that Shell has not had sufficient time to explore the imagery and associated data to provide an estimate of precision and efficacy. The panel notes, however, that there are estimates that could be derived from existing line transect survey data. Buckland et al.'s Introduction to Distance Sampling text[2] has a section on survey design and estimating how much trackline should be flown in order to achieve a given level of precision in CV(D), based on data from a pilot survey.

Acoustic Monitoring Program

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[2] Introduction to Distance Sampling: Estimating Abundance of Biological Populations. (2001). S.T. Buckland, D.R. Anderson, K.P. Burnham, J.L. Laake, D.L. Borchers and L. Thomas. Oxford University Press.

The panel appreciates the attention paid to comments made regarding sound source characterization following comments in the 2012 report. These largely appear to have been implemented in the design of the 2013 monitoring, and are thought to improve the methods. The panel feels these are sufficient for these purposes, but notes that the removal of at least one real-time acoustic system is regrettable.

IV. Are there techniques not proposed by the applicant (i.e., additional monitoring techniques or methodologies) that should be considered for inclusion in the applicant's monitoring program to better accomplish their stated objectives?

The panel repeats here comments made in the 2012 report for the Chukchi Sea. In the Chukchi Sea, Shell will not be collecting discharge streams and disposing of them onshore. The three visual and acoustic monitoring systems will not provide the information needed to assess the potential impact of physical discharge from exploration drilling operations on marine mammals or their habitat. Toxic chemicals introduced into the water column could pose risks to marine mammals and, subsequently, those who rely on those marine mammals for subsistence purposes. The panel estimates that these risks should be relatively low, but also believes that they should be evaluated. In addition, the risks from such discharge could increase over time if more oil and gas operations are initiated in the Chukchi Sea. This is an ongoing and expanding general concern as offshore industrial activity increases.

Vessel-Based Monitoring

The panel repeats here comments made in the 2012 reports. As is the case for night-time observations, the panel encourages use of the best available technology to improve detection capability during periods of fog and other types of inclement weather. Such technology might include night-vision goggles or binoculars as well as other instruments that incorporate infrared technology; presently the efficacy of these technologies appears limited but we encourage continued consideration of their applicability as it continues to evolve. It would also be useful to apply appropriate statistical procedures for probability estimation of marine mammals missed, based on observational data acquired during some period of time before and after night or fog events. It should be clear, however, that acoustic sensing should be recognized as the most logical approach in these conditions.

Aerial Survey Program

The panel is aware of no additional technology or methods that could be used for monitoring the impacts of Shell's proposed activities on marine mammals.

Acoustic Monitoring Program

The panel is aware of no additional technology or methods that could be used for monitoring the impacts of Shell's proposed activities on marine mammals.

As discussed at the meeting, the panel suggests that Shell consider the potential integration of visual and acoustic data from the Chukchi monitoring program and the Joint Monitoring Program to produce estimates of bowhead, beluga, and walrus density using methods developed in the DECAF project by the Center for Research into Ecological and Environmental Modeling (CREEM) at the University of St. Andrews in Scotland.

V. What is the best way for an applicant to present their data and results (formatting, metrics, graphics, etc.) in the required reports that are to be submitted to NMFS (i.e., 90-day report and comprehensive report)?

The panel repeats here comments made in the 2012 reports, which are particularly of increasing importance given the overlapping marine survey program Shell is also conducting. The panel feels it is important that the required reports should be useful summaries and interpretations of results of the various elements of the monitoring plan, as opposed to merely regurgitations of the raw results. They should thus represent a first derivative level of summary/interpretation of the efficacy, measurements, and observations rather than raw data or fully processed analysis. A clear timeline and spatial (map) representation/summary of operations and important observations should be given. Any and all mitigation measures (*e.g.*, vessel course deviations for animal avoidance, operational shut-down) should be summarized. Additionally, an assessment of the efficacy of monitoring methods should be provided.

SHELL MARINE SURVEY PROGRAM

Shell is proposing to conduct Geophysical and Geotechnical and Surveys in the Chukchi and Beaufort seas in 2013 to gather data on seafloor soil properties and ice gouge characteristics; these extend some earlier measurements made in 2006 and 2008 in similar areas. The proposed exploratory surveys occur over relatively limited areas using a range of impulsive and continuous sounds, most of which are either relatively low power or very high frequency. The sound sources consequently have much more restricted overall sound footprints than the seismic and drilling operations involved in other proposed projects. The panel reviewed the marine mammal monitoring and mitigation program (4MP) for the proposed marine surveys. The basic elements and protocols for the monitoring of these activities are very similar to those used for the more intense operations involved in their proposed exploratory drilling programs (discussed above).

The panel has also provided some suggested changes and questions on those other monitoring programs (see exploratory drilling comments above). Overall, however, Shell has developed a quite robust program and application of the monitoring approach taken from the exploratory drilling program to these less intense activities (acoustically and in terms of overall scope of operations) is deemed to provide adequate monitoring of near-field acute impacts, as required. Our main comment and suggestion is that there be a synthesized and integrated assessment of the overlapping operations and observations being made by Shell across their combined activities in 2013, rather than considering them independently. We consider here the proposed marine mammal monitoring on questions listed below that were set forth by the National Marine Fisheries Service's Office of Protected Resources (OPR), and provide the following assessments.

I. Can the applicant achieve the stated objectives based on the methods described in the plan?

The following are the stated objectives and our assessment of the ability to achieve each.

Vessel-based Visual Monitoring Program Objectives:

- to ensure that disturbance to marine mammals and subsistence hunts is minimized and all permit

stipulations are followed,

- to document the effects of the proposed survey activities on marine mammals, and
- to collect baseline data on the occurrence and distribution of marine mammals in the study area

The application also indicates that the vessel-based monitoring will provide:

- *the basis for real-time mitigation, if necessary, as required by the various permits that Shell receives,*
- *information needed to estimate the number of "takes" of marine mammals by harassment, which must be reported to NMFS and USFWS,*

- *data on the occurrence, distribution, and activities of marine mammals in the areas where the survey program is conducted,*
- *information to compare the distances, distributions, behavior, and movements of marine mammals relative to the survey vessel at times with and without various activities,*
- *A communication channel to coastal communities including Inupiat whalers and other subsistence users.*

Vessel-based protected species observation serves as the primary monitoring element for the proposed marine surveys. The panel sees this as appropriate, given the composition of the operations and expected spatial scale of influence, and finds the above objectives as largely appropriate and achievable. However, we note the points repeated above in the exploratory drilling proposal regarding the limitation of these methods in effectively conducting robust estimates of marine mammal distribution and density; these should not be seen as achievable objectives in either case.

Because of the limited duration and sound footprint of the proposed geophysical and geotechnical surveys, aerial surveys are not explicitly included as a monitoring element for the proposed marine surveys. However, Shell is conducting systematic aerial surveys to monitor potential impacts of the Shell drilling programs in the Chukchi and Beaufort seas in 2013. Surveys planned as part of the drilling monitoring program may provide information that will help to characterize the effects of the geophysical and geotechnical surveys on marine mammals in the area, although primarily for the Beaufort rather than the Chukchi operations based on the spatial overlap between the different programs in these areas. The panel concurs with this approach and does not feel that a dedicated aerial survey program should be required for the marine surveys. We refer to our comments (above) on the proposed exploratory drilling program regarding aerial surveys. We note that the increased integration of objectives and data-sharing for projects known to be overlapping in time and space is an important and encouraging development.

Acoustic monitoring will consist of source characterization, with the objective of providing empirical measurements to validate the modeling and take estimates conducted for this proposal. These are relatively standard at this point and Shell has demonstrated capabilities to conduct these adequately to provide the requisite information. As part of their overall program to monitor areas in the Chukchi, Shell is also participating and leading efforts to deploy a net array of sensors. The panel has provided some comments on this in previous reports and also has some comments in the exploratory drilling report for 2013. Here we reiterate comments made there and in discussions that the acoustic information from the net array should be integrated to the greatest extent possible to assess the aggregate known activities, at least those from Shell operations but more broadly as possibly, to assess patterns of marine mammal vocal activities and how that might be used to investigate potentially broader impacts from overlapping/interacting activities.

II. Are there technical modifications to the proposed monitoring techniques and methodologies proposed by the applicant that should be considered to better accomplish their stated objectives?

The panel feels that the proposed methods for visual monitoring are adequate and appropriate as the primary means of assessing the acute near-field impacts of the proposed marine surveys. Again, as discussed at the meeting and in the exploratory drilling monitoring plan, there should be realistic expectations regarding the limitations of these surveys to provide scientific-level measurements of distribution and density, but in terms of meeting the monitoring requirements, we find the proposed methods adequate and appreciate the improvements and modifications (e.g., in terms of PSO training, field data collection methods) made over the past few years.

As noted above, the panel agrees with the approach of not including aerial surveys explicitly for the proposed marine surveys, but refers to our comments on the broader aerial surveys in the exploratory drilling monitoring report. In these we note the encouraging new developments in the application of high-resolution photography and video and encourage continued cross-methodological comparisons between automated and human observers. Similarly, we find the limited additional acoustic monitoring for source characterization to be sufficient and refer to comments made elsewhere on the Chukchi net array.

III. Are there techniques not proposed by the applicant (i.e., additional monitoring techniques or methodologies) that should be considered for inclusion in the applicant's monitoring program to better accomplish their stated objectives?

The panel has none to suggest that are specific to the proposed marine surveys. As noted above, there is a need to continue progress made in the use of photographic methods in aerial surveys and an overarching need for considering multiple activities in the interpretation of data from the Chukchi net arrays.

IV. What is the best way for an applicant to present their data and results (formatting, metrics, graphics, etc.) in the required reports that are to be submitted to NMFS (i.e., 90-day report and comprehensive report)?

We refer to comments made in this regard in previous reports and in the exploratory drilling report, the main points of which have to do with integration across activities and summary information on a master timeline of activities and observations.