

On 19 June 2007, representatives from an IAGC member company and IAGC President Chip Gill met with MMS Gulf of Mexico Region staff to discuss the marine mammal mitigations stipulated in NTL 2007-G02 and how they apply to wide-azimuth surveys. Below is a letter from the IAGC member company to MMS requesting clarification regarding implementation of the NTL with MMS's official response highlighted in yellow:

As I outlined during the meeting, we have identified three primary operational situations where we would like clarification from MMS on how we may proceed with our operations while remaining compliant with the stipulated mitigations. These situations involve use of the mitigation source, short periods of silence at night or during times of impaired visibility, and the transfer of a mitigation sound field from one source vessel to another.

A. Use of the Mitigation Source

It is our understanding that the concept of a mitigation source was put forward as a means for allowing airgun arrays to be ramped-up at night (*this is incorrect; it was never intended to allow night-time ramp-up. In the first NTL (as in all versions since), PAM was offered as a means to ramp-up after dark or in times of reduced visibility*) and/or during times of impaired visibility given that a standard visual clearance of the exclusion zone and day-time ramp-up of the full array proceeded any step down in the sound field level to no less than 160 dB (re 1 uPa rms). The assumption behind the use of a minimum mitigation sound field is that once an airgun array has been ramped up to full level animals will avoid the area around the array even if the sound level is reduced to 160 dB. With this understanding, we considered the use of the mitigation source in the following two operational situations.

1. Line changes

In general, our approach to line changes is to turn off our airguns after the last shot on a survey line and then reinitiate the visual observation and ramp-up prior to the first shot on the next survey line. We consider this approach as being environmentally responsible in that we are attempting to minimize the cumulative sound emissions during the course of a survey. This approach works well during daylight hours but becomes problematic during late afternoon / early evening when the line change time will mean the first shot on the next line will occur during darkness. During these late in the day line changes we have opted to turn off the airguns at the end of a survey line and then at some time into the turn conduct a final daylight visual observation and ramp-up of the full array followed by a reduction to the sound level produced by the mitigation source so that we can then ramp-up the full array when we are on the next survey line after dark. The alternatives are to keep the full array or the mitigation source active throughout a day-to-night line change.

From the NTL 2007-G02:

“You may reduce the source level of the airgun array, using the same shot interval as the seismic survey, to maintain a minimum source level of 160 dB re 1 μ Pa-m (rms) for the duration of certain activities. By maintaining the minimum source level, you will not be required to conduct the 30-minute visual clearance of the exclusion zone before ramping back up to full output. Activities that are appropriate for maintaining the minimum source level are: (1) all turns between transect lines, when a survey using the full array is being conducted immediately prior to the turn and will be resumed immediately after the turn; and (2) unscheduled, unavoidable maintenance of the airgun array that requires the interruption of a survey to shut down the array.”

As stated in the above paragraph, in order to avoid the 30-minute visual clearance prior to ramp up, the full array is reduced to the mitigation gun, for the duration of the turn.

This is the correct scenario:

At the end of line, the main array is shut off

- ***The mitigation gun is turned on immediately after the main array is turned off***
- ***The mitigation gun is continuously shot until the vessel reaches the new line***
- ***The main array is ramped up to full power from the mitigation gun***

In recognition of good environmental stewardship, MMS strongly encourages the cessation of all shooting, including the mitigation gun, when appropriate. Such an example would be when a turn is initiated that will be completed, and the full survey resumed, in daylight. This would involve the same process as the initial start of a survey: 30 minute visual clearance and standard ramp up of the array.

Please note that the exception to the above is the use of a passive acoustic monitoring (PAM) system on the vessel. As stated in the NTL, ramp ups after dark or in other times of low visibility are permissible if a PAM system is used for clearance and monitoring. The NTL contains guidelines for PAM usage.

2. Preparation for night-time operations following a downtime period. There are situations when one or more of the source vessels in a wide azimuth operation may be down for period of time due to technical problems or adverse weather conditions. If it is anticipated that the downtime condition will be remedied in an ensuing night-time period we would like to establish our mitigation sound field via a late-in-the-day visual observation / ramp-up followed by a reduction in the sound field to the mitigation source in anticipation of operations recommencing after dark.

This is not permissible under the current NTL.

B. Short Periods of Silence

1. Interruptions in Radio Communications

The commands to fire any of the sources in a wide azimuth configuration are sent from a master vessel to each source vessel via a radio network. If for any reason there is an interruption in the network connection between the master vessel and a source vessel the source will not fire at its scheduled time and place. An interruption in radio communications can lead to a sequence of several missed shots on any one source vessel. On a survey using four (4) sources the cycle time for any one source can be on the order of 1 minute, so a sequence of several missed shot commands can lead to periods of silence lasting several minutes.

If MMS can provide a maximum silent time window then we can look at an automatic intervention that will fire the shot or the mitigation source from the local gun controller without waiting for re-establishment of the radio link.

There is no silent time allowed during night-time operations as per the NTL. Any short periods of silent time during the daylight hours must occur with visual clearance from the observers of appropriate safety zone (see following comments after 2.).

2. Diversion Around Obstacles

During a wide azimuth operation sources are navigated to shoot at predetermined shot locations. If, for any reason, a source vessel has to deviated from its intended path we inhibit the fire command to that source if it is too far away from the desired shot location. Depending on the duration and path of the course deviation several successive shots can be missed which can lead to periods of silence lasting several minutes.

If MMS can provide a maximum silent time window then we can look at an automatic intervention that will fire the shot or the mitigation source from the local gun controller without waiting for the vessel to be back on the programmed shot track.

There is no silent time allowed during night-time operations as per the NTL, however if this occurs during daytime the following would apply:

“In recognition of occasional, short periods of the cessation of airgun firing for a variety of reasons, periods of airgun silence not exceeding 20 minutes in duration will not require ramp-up for the resumption of seismic operations if: (1) visual surveys are continued diligently throughout the silent period (requiring daylight and reasonable sighting conditions), and (2) no whales, other marine mammals, or sea turtles are observed in the exclusion zone. If whales, other marine mammals, or sea turtles are observed in the exclusion zone during the short silent period, resumption of seismic survey operations must be preceded by ramp-up.”

3. Noise Files

The recording of noise files is a standard procedure on land and marine seismic surveys. The purpose is to "listen" to the noise in the recording environment in the absence of the signal from the seismic source. On marine surveys these files are generally recorded at the start and end of each survey line. Typically, three (3) to five (5) successive files, without firing a source, are recorded just before the first shotpoint and just after the last shotpoint on each survey line. Recording these files requires maybe one to two minutes ***(this disagrees with earlier emails that requested silent periods of longer duration)*** of silence for each sequence. At the moment, we are not recording noise files at night because of a strict interpretation of the NTL implying that we are not allow any quiet periods when we cannot visually monitor the exclusion zone.

We request that the current NTL be modified with a general provision allowing short periods of silence during night-time operations. One approach may be to base the allowable period as some function of the distance a source travels along line. For example at a speed just under 5 knots a source vessel will travel 500m (the length of the exclusion zone) in about 3.5 minutes.

There is no silent time allowed during night-time operations as per the NTL. This NTL expires on February 28, 2010, however we fully expect to modify this as a result of the MMPA rulemaking before that date.

C. Transferring Night-Time Mitigation

1. Ramping-Up a Source After a Period of Downtime

In an operation using multiple source vessels it is quite possible for one of those vessels to go quiet because of some sort of technical fault. In those situations where the downtime fault can be corrected in a few hours time, we would like to have the other source vessels level down to the mitigation source. When the quiet vessel is ready to resume operations it can come inside the exclusion zone of one of the other source vessels and ramp-up its airguns. It would then leave that exclusion zone, take up its survey station, and the other vessels would then ramp-up their arrays. Given that source-only vessels can easily move in and out of each other's exclusion zones we do not see how this operation produces any additional acoustic risk compared to a single vessel ramping up from its own mitigation source.

As per the NTL, Exclusion zone means the area at and below the sea surface within a radius of 500 meters surrounding the center of an airgun array and the area within the immediate vicinity of the survey vessel. Each survey vessel must maintain its own unique exclusion zone.

2. Swapping Source Vessels In some instances we may want to replace an active source vessel with a spare vessel. In that case we would like the active vessel to level down to its mitigation source, have the spare vessel come into the first vessel's exclusion zone to ramp-up its airguns, and then have the first vessel go quiet and leave the area. Alternatively, the active vessel can maintain its full source while the spare vessel initiates its mitigation source once it is within the exclusion zone of the active source. The active source can then go quiet and the spare vessel can proceed to ramp-up its array.

While we understand the need to replace a vessel, this would need to occur during daylight hours. The new vessel would need to complete the full ramp-up procedure including a 30-minute visual

clearance while the original source vessel goes silent. At no time should two vessels both be firing guns in the same exclusion zone.

D. Passive Acoustic Monitoring (PAM)

During our meeting on June 19 you pointed out that the current NTL provides a provision for night-time ramp-ups if a PAM system is used to acoustically monitor the exclusion zone ***(This has been in place since 2003 and at that time MMS noted that PAM was experimental and encouraged industry to develop usable systems)***. Given that MMS has conceded that the use of PAM systems is still in the experimental stage, we propose that we equip one of our service vessels with a PAM system. In the event one of the source vessels has to go quiet, the PAM equipped service vessel can be positioned in the exclusion zone of the quiet source vessel and once an "all clear" condition is agreed, the source vessel can then ramp-up its airguns. If MMS is amenable to this type of procedure we would then ask for further guidance on how an "all clear" condition can be defined and measured.

In order to take advantage of the benefits of PAM as per the NTL, PAM must be on all source vessels.

Hopefully, you can help us find a way to allow short periods of silence during night-time operations to allow the recording of noise files and/or allow enough time for an intervention if fire commands are lost to a source due to radio drop-outs or shot-line course deviations.

Thank you again for your time on the 19th and your further consideration of these issues.

Sincerely,

IAGC Member Company