-----Original Message-----
From: Rotterman, Lisa
Sent: Sunday, February 26, 2006 12:56 PM
To: Stang, Paul
Subject: RE: Bowheads at 20 km - from Ken Hollingshead

Paul:

A) Migrating bowheads are very responsive to deep seismic noise. Feeding bowheads also respond behaviorally, but tend not to avoid seismic at as great of distances. That is what the data say. We have not refuted that and have no defensible basis to. There is variability in response. No big surprise with that statement. This is true for all species: context, age, sex, reproductive status, past experience with that noise and maybe other types of noise, etc. may all matter. Even at the same received level of sound there is likely to be some variability in response. But the bottom line is that this is a very responsive species and the most vulnerable segment of the population (females with calves) may be the most responsive. This at least has been shown to be the case in humpbacks in some situations, and in other species of marine mammals and mammals. This avoidance at distance cannot be deemed "low risk of impact". It can only be called "low risk of hearing damage". There are different kinds of impacts. If most, or even a sizable fraction, of the population is forced to avoid an important feeding or resting area, for example, this may have an adverse impact on individuals, and depending who they are, how important the area is to them, and where else they can go for the same use, potentially to the population of the whales, not just the whalers. It is not a benign action to remove whole segments of habitat from some large portion of the population for a large percentage of the time they have to use that habitat.

This is not a policy question-this is a scientific question. THIS IS A QUESTION IN BASIC AND CETACEAN ECOLOGY AND BEHAVIOR. Who does the agency want weighing in on this question?

2) Sound propagation varies depending on a lot of properties of the environment, not just depth, and different sound frequencies propagate differently. The discussion below is overly simplistic.

3) Sound propagation for a given site needs to be measured BEFORE THEY START THE SURVEY and not at the portion of the overall survey area where seismic sound is likely to propagate the most poorly. I recommend they be required to measure at least 2 locations that are pre-determined by NMFS, using a NMFS acoustic expert protocol and with someone not affiliated with industry (e.g., a NMFS or NSB) observer on board when the measurements are made. Did MMS, in the meeting Ken refers to, argue that such tests were not needed? What is the history behind his comment?

These discussions really need someone in them who knows this topic. In the Alaska region, that would be me, Cleve or Chuck.

Lisa

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--Original Message-----
From: Stang, Paul
Sent: Friday, February 24, 2006 9:30 AM
To: Rotterman, Lisa
Subject: FW: Bowheads at 20 km - from Ken Hollingshead

Lisa,

After our 9:30 AM session, please read from the bottom up then let's talk.

Thanks, Paul

-----Original Message-----
From: Wall, Rance
Sent: Friday, February 24, 2006 9:04 AM
To: Cranswick, Deborah; Goll, John; Stang, Paul
Cc: Banet, Susan; Sloan, Pete
Subject: RE: Bowheads at 20 km - from Ken Hollingshead

The big difference is the depth of water. The sound will not carry as far in general in the deeper water. This is RE's point about not comparing the

2006 surveys w/ the past OBC activities (very shallow water). The old 2d seismic surveys used even bigger guns & are much more applicable (a past Chukchi Sea survey had arrays over 6000 cubic inches). That is what we have been trying to tell everyone. In addition, newer guns continue to focus the sound down more effectively.
Field measurements will be the definitive guide.

-----Original Message-----
From: Cranswick, Deborah
Sent: Friday, February 24, 2006 8:53 AM
To: Goll, John; Wall, Rance; Stang, Paul
Subject: RE: Bowheads at 20 km - from Ken Hollingshead

The expected range in the PEA is 1,800 to 4,000 cubic inches. As Ken states, this is significantly larger than the 1,500 cubic inches in the workshop statement.

I believe both Shell and ConocoPhillips are proposing arrays of greater than 3,000 cubic inches.

-----Original Message-----
From: Goll, John
Sent: Friday, February 24, 2006 8:32 AM
To: Cranswick, Deborah; Wall, Rance; Stang, Paul
Subject: RE: Bowheads at 20 km - from Ken Hollingshead

No, you will still have whales inside that zone. Other studies have shown that.

The bigger issue is the larger arrays. It was not our scenario, correct?

jg

John Goll
RD, MMS Alaska
907-334-5200

-----Original Message-----
From: Cranswick, Deborah
Sent: Friday, February 24, 2006 7:59 AM
To: Goll, John; Wall, Rance; Stang, Paul
Subject: FW: Bowheads at 20 km - from Ken Hollingshead

From below: "all bowhead whales will avoid an area within 20km of an active seismic source, while deflection may begin at distances up to 35km"

If the whales are avoiding the area doesn't than mean low risk of impacts to the animals (but potential adverse impact to hunting)? If they are avoiding the area at 120 dB anyway, why do we need the exclusion zone? Is that a "just in case" measure then?

-----Original Message-----
From: Ken Hollingshead [mailto:Ken.Hollingshead@noaa.gov]
Sent: Friday, February 24, 2006 5:48 AM

To: Crayton, Wayne; Cranswick, Deborah
Cc: Brad Smith; Wilson, Judy; Robyn Angliss
Subject: Bowheads at 20 km

FYI on the 20 km issue discussed several days ago: At the 2001 Arctic Open-Water Noise Peer Review Workshop held at the National Marine Mammal Laboratory Seattle, Washington, on 5-7 June 2001, the following statement and agreement was made:

"Tom Albert noted that the evidence to support the conclusion that bowhead whales are typically excluded from a zone 20km from active seismic programs is generally accepted by all parties, and asked that something be put "on the record" that all parties agree with the conclusion. The following agreement was proposed by Richardson, circulated to all parties the evening of 5 June, and formalized on 6
June: "In general, we support the methods and results published in Richardson et al. (1999) concerning avoidance of seismic sounds by bowhead whale. To summarize: Monitoring studies of 3-D seismic exploration (560-1500in3 in configuration of 8-16 airguns) in the nearshore Beaufort Sea during 1996-1998 have demonstrated that nearly all bowhead whales will avoid an area within 20km of an active seismic source, while deflection may begin at distances up to 35km. Sound levels received by bowhead whales at 20km ranged from 117-135 dB re.
1mPa rms and 107-126 dB re. 1mPa rms at 30km. The received sound levels at 20-30km are considerably lower levels than have previously been shown to elicit avoidance in bowhead or other baleen whales exposed to seismic pulses."

The concern that NMFS has is that Shell and Conoco Phillips are using arrays significantly larger than 1500 cubic inches, so the Level B harassment zone is likely to be significantly greater unless the array is configured differently than the earlier arrays. Field tests would allow us to estimate bowhead zone of harassment.

Ken

------ End of Forwarded Message