JAG 3 Report - Dissolved Oxygen – Press Call Sept 7

FTS DEPT OF COMMERCE

Moderator: Jennifer Austin
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Coordinator: Welcome and thank you for standing by. At this time all lines are in a listen only mode. After the presentation we will conduct a question and answer session. Today's conference is being recorded. If you have any objections you may disconnect at this time.

I would now like to turn the meeting over to your host, Ms. Jennifer Austin.

Jennifer Austin: Thank you (Sherry). This is Jennifer Austin with the NOAA Communications Office. And thank you all for joining us today. We're here to discuss the most recent report from the Federal Joint Analysis Group about dissolved oxygen in the Gulf of Mexico.

So we're going to open with Dr. Steve Murawski who is the Chief Science Advisor for the NOAA Fisheries Department and also the Head of the Joint Analysis Group. And we're also joined by Dr. Greg Wilson, a science advisor at EPA's Office of Emergency Management.

And they will both be available to answer questions. So I will turn it over to Steve.

Steve Murawski: Yes, good afternoon everybody and thanks for joining our call. Today we're discussing the third in a series of analytical reports that are emanating from the federal joint analysis group or the JAG. And this report is specifically about dissolved oxygen levels in the Gulf of Mexico.

As you know, there is and has been great concern regarding the potential impacts of subsurface hydrocarbons on the oxygen levels as they could have set off hypoxic events leading to dead zones in the subsurface.

This has been a long term concern of many people that have been looking at the subsurface analysis. The JAG has played a crucial role in analyzing the vast amount of data that have been collected as part of the response and ongoing research efforts related to this incident.

The report presents the most comprehensive dissolved oxygen data set yet analyzed and released to date. The report is based on four months of data from the first week of May to the 9th of August.

It shows oxygen levels have dropped by about 20% from their long term average in this area of the Gulf of Mexico where both federal and independent scientists have previously reported the presence of subsurface oil. In particular, this lands from 3300 to 4300 feet.

To date the decrease in oxygen has not been significant enough to cause hypoxia at a depth that is the dead zone nor is it likely to going forward. These dissolved oxygen levels are measured in a fairly substantial area, about 100 kilometers or 60 miles from the well head - up to the well head.

The oxygen levels have stabilized and are not low enough to be classified as dead zones. In fact they would have to decrease another 70% in order to be classified a dead zone. That's an area of very low oxygen classified generally as 1 milliliter per liter or about 1.4 parts per million.

And in most cases most forms of life cannot exist in these low oxygenated waters. So that's why there's considerable concern about this, because at those depths you've got a biological community that doesn't grow very fast and it doesn't reproduce at a very high rate.

Dead zones are commonly observed in the near shore waters of the Western and Northern Gulf of Mexico in summer but normally in this deep water layer. And that's one of the reasons why we're concerned about it.

There are indications that the microbial community is biodegrading oil which is indicative of the consumption of oxygen. But that oxygen is being replenished by mixing of oxygen from the more highly oxygenated water surrounding the plume coming from the well head.

And this is one reason why the oxygen levels have not dropped to a greater degree. Had we only had this water mass without it being suspended in a much larger mass both top bottom and to the sides then the oxygen level would have likely been depleted much quicker.

These conclusions that we've got are based on data from 419 sampling locations conducted between May 8 and August 9 from nine ships including four NOAA vessels and five academic and contracted vessels. So they're the most comprehensive data set yet released.

As I said, we've been monitoring dissolved oxygens. Since the beginning of the spill while it's a relief not to see dead zones as a result of the oil droplets that remain below the surface, there's lots of work to be done to understand their long term impacts on the ecosystem.

Federal government - our academic partners remain vigilant and are monitoring programs throughout the Gulf as we strive to improve our understanding of the full impacts of the spill.

And as many of you may know we're starting a ramped up effort to account for oil and oil degradation products in the Gulf. Today I'm joined by Dr. Greg Wilson who is the science advisor from EPA's Office of Emergency Management who is a member of the joint analysis group.

And we're both happy to take your questions at this point.

Coordinator: Thank you. We will now begin the question and answer session. To ask your question press star 1. Please record your first and last name and media affiliation. To withdraw your request press star 2. Once again, to ask your question press star 1. One moment please for our first question.

Our first question comes from (Richard Harris) of NTL Public Radio.

(Richard Harris): Hi. It's (Richard Harris) from NPR. I am curious about a couple of things. One of which is can you give us a brief update of how much monitoring is out there right now? And what that means in terms of understanding.

I mean sometimes we're getting oxygen numbers, sometimes we're getting hydrocarbon figures. Is there some way - is there some point where all of this

will be integrated together so we can directly get some answers about how much oil is left in (sub C)? Thanks.

Steve Murawski: Good question (Richard). Yeah - this, as I said before, this is the third in a series of reports that the joint analysis group has been issuing. The first report had a chemistry data and some (florometry).

The second one was primarily (florometric) data which are a relatively synoptic tool to look for the presence of oil and oil related compounds in the water. The third one specifically focuses on oxygen.

I can say that even though we're not integrating all of the pieces together in this report they - we continue to push data out on the Web site.

So for example, there's a substantial amount of chemistry data that NOAA and EPA put out about a week and a half ago which summarizes the chemistry data not only from these studies but also the studies that (Woods Hall) group had put together as well.

So we continue to work it. The joint analysis group is trying to pull these things together as fast as we can. That will be - the integration of all of these data are - is the difficult thing because there is so much data coming in on all of these parameters.

But we thought at this point because the oxygen information are an integrator of the environment, that is they indicate the presence of oil and oil breakdown, that it would be important for us to summarize every piece of information that we've got on oxygen.

Coordinator: Our next question comes from (Mark Shlepstein).

(Mark Shlepstein): Hi. This is (Mark Shlepstein) with the Times speaking in New Orleans. I'm curious, how much of the results of this report, the conclusions of this report are based on the data from the nine cruises. And how much is based on conclusions reached from modeling?

Steve Murawski: Well this is primarily an empirical report. So it's - virtually all the conclusions are based on the data in hand.

That being said, we did use some calculations about what it would potentially mean downstream, you know, for, you know, I said before that we did some calculations about if in fact there was no incursion of oxygen rich water, you know, how long it might take, you know, for the oxygen levels to go down.

And so that - those are essentially models that were put together for that one. And they basically indicated that, you know, in the absence of being refreshed from high oxygen water from its surrounding area that this region would have been depleted of oxygen within a few weeks.

But the vast majority of this is basically the data that we've got.

Coordinator: Our next question comes from (Mark Marino) of Christian Science.

(Mark Marino): Hi. It's (Mark Marino) with the Christian Science Monitor. Thank you for taking my call. I wanted to find out what is the effect - what kind of effect - I know this - we're talking about the oil and the effect it's having on the ocean.

What about the effect of the oxygen levels on oil that's on the beaches, particularly oil that might be under the beaches? Can you talk a little bit about that?

Steve Murawski: Greg, do you want to take that one?

Greg Wilson: Yeah, well I think with this report, you know, the data mainly looks at what we did out in the deep sea there. I think we - so you have surface - when you look at the surface and the mixing that can go on with the atmosphere certainly there's a potential for a greater opportunity of re-aeration.

That being said, I think any time when you get into a mixed layer and you want to look at how that oxygen is transported through the layer and also to look at, you know, and sediments and things of that nature where you could potentially have, you know, oxygen at lower levels there.

But mainly this report centered on the data collected from the deep sea where we're monitoring there.

Coordinator: Our next question from (Christine Stapleton) of Palm Beach Post.

(Christine Stapleton): Hi. Thank you for taking my call. You say that these data come from samples that were done at 419 stations and that those range - those at the well head and 60 miles out. But we have no way of knowing from this report what percentage - how you figured that out.

Did you just like average all of them? What percentage of the analysis was done on, you know, the tests done right near these sites or 60 miles out?

I mean is it really accurate to make a conclusion when we don't know what percentage of the results you're using come from 60 miles out or right on the well head?

Steve Murawski: Good point. So if you have a copy of the report and you certainly can download it from the Web site now, you can actually see there is a plot of the number of the stations versus the distance to the well head.

And so you can see that there certainly were a substantial fraction of these that were within about 20 kilometers or about 12 miles. But especially more recently these are going out to about 60 miles and that's because the signal near the well head is pretty much gone.

And so we're chasing this signal a much farther distance away.

(Christine Stapleton): So these findings are basically made - are most of the findings the tests that you're looking at, from 60 miles out or are they - are you looking at most of the data from close to the well? Are you saying that this report is based on samples that were taken, you know, much further away from the well head?

Steve Murawski: No, no, it basically is continuous from about a kilometer and a half which is about, you know, a half a mile all the way out to about 60 miles. And the majority of data occur within about 12 miles. And that's because that's where we saw the signal strongest for most of the period of time.

But that over time we've started to look farther and farther afield. So what I would say is the majority of data again, they're spread out, you know, fairly uniformly. But again, because of the time domain most of the sampling is occurring within about 12 miles.

And you can actually see in Figure 44 from this report what the distribution of each of those samples are relative to the total.

Coordinator: Our next question comes from (Seth Bornstein) from Associated Press.

(Seth Bornstein): Yes, thank you for doing this. It's just a two part to continue. When you look at this I guess you're looking at dissolved oxygen as the set, you know, is a dual edged sword here.

Are you - have you sort of hit the sweet spot where you don't have enough dissolved oxygen to have dead zones but you have enough to show that there is significant degradation?

And the second part of this is how - what does this tell us overall about this degradation rate compared to the August 4 oil budget? Is this similar to the - does this confirm that? Because as you know that oil budget was much criticized by outside scientists.

Steve Murawski: Well you've hit a very important set of questions there (Seth). In terms of hitting a sweet spot the whole theory of using dispersants was that you would, you know, make the particles small enough that they could be readily consumed by bacteria. And that apparently is happening.

Now part of this was dispersed by the dispersants themselves and part of this was dispersed by the physical action of the oil blowing out of the well head in kind of an explosive blowout and making very fine particles which are essentially neutrally buoyant.

That being the case it looks like we have had biological degradation leading to a drop or as we're calling it, a sag in the oxygen levels. But it has not been so sufficient to actually result in hypoxic conditions. And so has it hit a sweet spot? Yes. Was it by design? Partly.

One of the things that Greg can comment on a little bit is that there was a control level that was set at 2 milligrams per liter or 1.4 milliliters per liter that no dispersants would be used afterwards. If in fact it looked like we were heading towards any hypoxic event. And that triggered a need to be pulled.

Greg Wilson: Yeah. Yeah Steve, I mean just to confirm what Steve was saying is we did have as part of one of our shutdown criteria that dissolved oxygen level.

And I think Steve articulated the point well that, you know, along to this process here with the use of dispersants we wanted to make sure that we did stave off that level. And I think that to date those data look pretty good above the 2 point milligram per liter level.

Steve Murawski: Now - so the second part of your question is, you know, how does this relate to biodegradation, some of the previous results, etc. And I think these results actually comport fairly well with some of the earlier reports that some of the academics had published.

The full report indicated that they had seen some oxygen sag but generally I don't - I think they concluded that there wasn't information that would indicate, you know, a hypoxic event as well.

And so I think, you know, because we're seeing the oxygen sag that we're seeing that means that there's some level of degradation.

One of the appendices to this report is a report that (Terry Hazen) had put together at (Lawrence Berkley) prior to his publication that came out in Science Magazine.

He had been working on these studies about biodegradation and had sent a memorandum to the national incident commander previous to that being published because he wanted to inform the response even before those final results were out there.

So we actually copied (Terry)'s memo so that you can see that some of the earlier conclusions that the federal agencies had about the level of biodegradation was actually supported by studies that we had in hand. But we wanted to honor the confidentiality issue of that being in prepublication.

Coordinator: Our next question comes from (Janet Roth) from Science News.

(Janet Roth): Yeah, a couple of questions here. You said that levels have stabilized far above or at least well above the hypoxic level. Sort of what's the range and what was the lowest depression in oxygen you measured?

Steve Murawski: Yeah.

(Janet Roth): And the second thing is do you have any evidence that the plumes are gone yet? Or is there still enough oil out there that continuing biodegradation and oxygen use is ongoing?

Steve Murawski: Okay. A number of parts to your question. In terms of the - what we call the climatological mean, which would be, you know, when we go back to the World Ocean database we looked at, you know, how variable and what was the mean out there.

And so that's around - the long term climatological mean for this region is around 4.8 milliliters per liter. And that's - the confidence intervals are about plus or minus .2, right? So it's a fairly narrow range.

When we look at all the samples I think the lowest observation we had was around 2.6 milliliters per liter. But that was just, you know, one sample and there is one sample around 3. Most of the samples have been above 3.0 milliliters per liter.

And the mean of the minimums for all - in this zone is around 3.8, right? So even the lowest observation in all of these observations, was substantially above the threshold. So I forgot the second part of your question.

Jennifer Austin: The second half there Steve, was whether or not we have other data about whether the plume still exists or...

Steve Murawski: Oh, okay.

Jennifer Austin: ...we have that they're degrading.

Steve Murawski: Right. So this - the data reported in this document go out through August 9. Of course now we're at September 7. So what's happened is we continue to monitor the region. We're tracking the solution of the plume.

You know, what's happening is it's both being dispersed laterally by the ocean currents and it's also being degraded by microbes and so what we're seeing is up - very low concentrations, even lower than were observed when there was an act of - much lower than observed when there was an active well.

And so we're down in the parts per billion to parts per trillion in looking for a signal.

Coordinator: Our next question comes from (Kim Shipman) of Bloomberg News.

(Kim Shipman): ...asked. Thanks.

Coordinator: (Kim), your line is open.

(Kim Shipman): Yeah. My question was asked. Thank you.

Coordinator: Our next question comes from (Dorothy Kendrick) of Louisiana Public Broadcasting.

(Dorothy Kendrick): Good afternoon. (Dorothy Kendrick), Louisiana Public Broadcasting. I'm just curious, Admiral Allen told us a couple of weeks ago that once all of the debris or the leftovers were removed from the ocean floor that this would become a top priority for him.

I've been anxious to know what all of this oil is - the impact it's going to have on those fishermen, especially the oysterman, the shrimpers and I know that the season for shrimping is underway.

And no one can clearly tell us a long term impact, whether these men will be able to make their livelihoods from this industry in the next year to next ten years. How long before it gets back to normal? Is there anything in any studies out there surrounding that?

Steve Murawski: Well let me just say this. This particular study comments more on the dissolved oxygen levels down at 3300 to 4300 feet. Very few fisheries exist in those offshore areas. Areas you're referring to obviously are primarily within state waters and they're for shellfish and other species.

That being said, there is a very aggressive monitoring program looking at those waters both in terms of the presence of oil and dispersants and oil products in the water as well as the seafood itself.

And there's a protocol that state in the case of Louisiana, the State of Louisiana and FDA with NOAA spearheading the work in the federal waters offshore.

And so there have been a series of openings over time which are all predicated on the science coming back indicating PAH levels are below the agreed upon cutoff levels. And so we will actively keep, you know, with that program but only open up areas where the science says that the fish are safe to consume.

Coordinator: Our next question comes from (Andy Miller) of ABC News.

(Andy Miller): Hi, thank you. My question is pretty similar to the previous one just asked. I understand that these are measurements of pretty extreme depth. But is there just sort of some sort of plain way to characterize this and what these results might mean for the long term ability of the ecology there to recover?

Steve Murawski: Well I think one of the earlier questions said, you know, did we hit a sweet spot here. And I think in some sense that's true.

That for whatever reason and, you know, we're learning a lot about the fate of subsurface oil from this particular event and we will continue to monitor it as a response action.

And, you know, for the near term here it's, you know, contingent on us to learn everything we can about this because, you know, the premise to your question is of course that it's not only there but it's potentially, you know,

what are the potential ecological ramifications of this even at low levels, to the marine life that occupies these depths.

And that's a second level issue, the so-called natural resources damage assessment.

And we will continue with the natural resource damage assessment to try to understand the impact of the release of the substantial amount of oil that's there and the degradation products, both the dispersants, the oil itself and the oil components and the most toxic being the PAHs.

Coordinator: We do have time for one more question. (Paul Dawson) of Green Wire, your line is open.

(Paul Dawson): Hi. Thanks for doing this. I just have two quick questions. First, were you surprised by the mixing that kind of underlies the just low sag in oxygen levels? And I also know there were some problems with the methods being used in measuring oxygen initially and you suggested Winkler titrations.

And could you just flesh out a bit more about what happened and what method was used finally?

Steve Murawski: Greg, do you want to take those two?

Greg Wilson: Yeah. I think, you know, first the second one first is the Winkler titrations there. Certainly we did go back and I think some of the - in the report if you read it, there is some data there with the Winkler titrations that seem to correlate with some of the cast.

And can you refresh me on the first part of that question? The first part?

Jennifer Austin: I think we're all set here. I'm not sure what the other half of the question was there?

Greg Wilson: Steve, did you - I'm sorry.

(Paul Dawson): I was just wondering if you were surprised by the mixing that happened in the subsurface?

Greg Wilson: Oh yeah, thanks. I'm sorry. I think that that was - I don't know if it was surprise but certainly that was part of the equation so to say, is the amount of biodegradation versus the transport and getting some of the mixing back in there.

So I think as Steve said, it's something that we're learning a lot about, that mixing down there and some of the oxygen there. But certainly going in we wanted to keep our eyes wide open so to say, on those oxygen levels.

Jennifer Austin: Okay. Thank you guys very much. I think that wraps up our call for today. I want to remind people that you can find the full report is posted on NOAA.gov in the science data admission section.

So you can go there to download the report and also see some of the figures and other things that they were mentioning. And if you have any follow up questions you can give our office a call at (202) 482-6090. Thank you all for joining us today and that concludes our call.

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