Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Reactors Near Yellowstone 2.206 Petition
Tom Lakosh - Petitioner

Docket Number: G20090007

Location: (telephone conference)

Date: Thursday, March 12, 2009

Work Order No.: NRC-2716 Pages 1-35

NEAL R. GROSS AND CO., INC.
Court Reporters and Transcribers
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

PETITION REVIEW BOARD

+ + + + +

DISCUSSION WITH PETITIONER

_____

In the Matter of: :

REACTORS NEAR YELLOWSTONE : 2.206 Petition G20090007

PETITIONER: TOM LAKOSH :

_____:

Thursday,

March 12, 2009

1:00 p.m.

BEFORE:

TOM BLOUNT, Petition Review Board Chairman

APPEARANCES:

On Behalf of the Nuclear Regulatory Commission:

JENNY LONGO, ESQ.

Of:Office of the General Counsel

Mail Stop - O-15 D21

US Nuclear Regulatory Commission

Washington, DC 20555-0001

ALSO PRESENT:

TOM LAKOSH, Petitioner

TANYA MENSAH, PRB Coordinator

FRED LYON, Petition Manager

ANDREW MURPHY, The Office of Research's Structural, Geotechnical, and Seismic Engineering Branch

BRITTAIN HILL, The Office of Nuclear Material Safety and Safeguards' Technical Review Directorate

STAN GARDOCKI, The Office of Nuclear Reactor Regulation's Balance of Plant Branch

MICHAEL WATERS, The Office of Nuclear Reactor Regulation's Balance of Plant Branch

MICHAEL MARKLEY, The Office of Nuclear Reactor Regulation's Plant Licensing Branch

P-R-O-C-E-E-D-I-N-G-S

1:08 p.m.

MR. LYON: On the record. I would like to thank everyone for attending this meeting. My name is Fred Lyon. I'm the Columbia Generating Station Project Manager. We're here today to allow the Petitioner, Mr. Tom Lakosh, to address the Petition Review Board regarding 2.206 Petition dated December 30 and 31, 2008 that was sent to us via email. I'm the Petition Manager for the Petition. The Petition Review Board Manager is Tom Blount.

As part of the Petition Review Board's review of this Petition, Mr. Lakosh has requested this opportunity to address the PRB.

This meeting is scheduled from 1:00-2:00 p.m. Eastern Time. The meeting is being recorded by the NRC Operations Center and will be transcribed by a court reporter. The transcript will become a supplement to the Petition. The transcript will also be made publicly available.

I'd like to open this meeting with introductions. As we go around the room, please be sure to clearly state your name, your position and the office that you work for within the NRC for the record. And as I've said, I'm Fred Lyon, the Petition

Manager.

MR. MURPHY: Andrew Murphy, the Office of Research, Senior Technical Advisor for Earth Sciences.

CHAIRMAN BLOUNT: Tom Blount, Petition Review Board Chairman. I work in the Office of Nuclear Reactor Regulation.

MS. MENSAH: Tanya Mensah, the 2.206 Coordinator. I work in the Office of Nuclear Reactor Regulation.

MR. GARDOCKI: Stanley Gardocki, Reactor Systems Engineer working for Nuclear Reactor Regulation's Balance of Plant Branch, a division of Safety Systems.

MR. WATERS: Michael Waters, Acting Branch Chief, Balance of Plant Branch, Office of Nuclear Reactor Regulation.

MS. LONGO: Jenny Longo, Senior Attorney, Office of the General Counsel.

MR. HILL: I'm Brittain Hill. I'm the Senior Advisor for Repository Science in the Office of Nuclear Material Safety and Safeguards and I'm a geologist.

MR. LYON: Okay. That completes introductions of those here at Headquarters. Are there any NRC participants from the regional office or

otherwise on the phone?

MR. MARKLEY: This is Mike Markley. I'm the Branch Chief of Plant Licensing Branch 4, Division of Operator Reactor Licensing, Office of Nuclear Reactor Regulation.

MR. LYON: Thank you, Mike.

Mr. Lakosh, would you please introduce yourself for the record?

MR. LAKOSH: Yes. My name is Tom Lakosh. I'm a concerned citizen residing in Anchorage, Alaska. I would like to first inquire whether a particular communication has been provided by Mr. Lyon. I was copied to him on Wednesday, February 4, 2009.

MR. LYON: Would you ask that question again just in a couple of minutes, Mr. Lakosh? If you would hold that question.

MR. LAKOSH: Yes.

MR. LYON: First, are there any other members of the public on the phone?

(No verbal response.)

Hearing none, I need to emphasize that we each need to speak clearly and loudly to make sure that the court reporter can accurately transcribe the meeting. If you do have something that you would like

to say please first state your name for the record. And I'll turn it over now to PRB Chairman Tom Blount.

CHAIRMAN BLOUNT: Good afternoon. Welcome to this meeting regarding the 2.206 Petition submitted by Mr. Lakosh.

I'd like to first share some background on our process. Section 2.206 of Title 10 of the Code of Federal Regulations describes the petition process, the primary mechanism for the public to request enforcement action by the NRC in a public process. This process permits anyone to petition NRC to take enforcement-type action related to NRC licensees or licensed activities. Depending on the results of its evaluation, NRC could modify, suspend or revoke an NRC-issued license or take any other appropriate enforcement action to resolve a problem. The NRC staff's guidance for the disposition of 2.206 petition requests is in Management Directive 8.11 which is publicly available.

The purpose of today's meeting is to give the Petitioner an opportunity to provide any additional explanation or support for the Petition before the Petition Board Review Board's initial consideration and recommendation.

a. This meeting is not a hearing, nor is

it an opportunity for the Petitioner to question or examine the PRB on the merits or the issues presented in the Petition request.

b. No decisions regarding the merits of this petition will be made at this meeting.

c. Following this meeting, the Petition Review Board will conduct its internal deliberations. The outcome of this internal meeting will be discussed with the Petitioner.

d. The Petition Review Board typically consists of a Chairman, usually a manager at the senior executive service level at the NRC. It has a Petition Manager and a PRB Coordinator. Other members of the Board are determined by the NRC staff based on the content of the information in the Petition request.

e. At this time, I would like to introduce the Board. I am Tom Blount, the Petition Review Board Chairman. Fred Lyon is the Petition Manager for the Petition under discussion today. Tanya Mensah is the Office's PRB Coordinator.

Our technical staff includes Stan Gardocki and Mike Waters from the Office of Nuclear Reactor Regulation's Balance of Plant Branch, Brittain Hill from the Office of Nuclear Material Safety and

Safeguards' Technical Review Directorate, Andy Murphy from the Office of Research's Structural, Geotechnical and Seismic Engineering Branch, Jeff Clark and George Replogle from NRC Region IV's Division of Reactor Projects, but aren't on the phone currently.

We also obtain advice from our Office of General Counsel represented by Jenny Longo.

As described in our process, the NRC staff may ask clarifying questions in order to better understand the Petitioner's presentation and to reach a reasoned decision whether to accept or reject the Petitioner's requests for review under the 2.206 process.

I would like to summarize the scope of the Petition under consideration and the NRC activities to date.

a. On December 30, 2008, as supplemented December 31, 2008, Mr. Lakosh submitted to the NRC a Petition under 2.206 regarding reactors near Yellowstone National Park.

b. In his Petition request, Mr. Lakosh identified the following areas of concern. Mr. Lakosh requests that the NRC: (1) devise a plant for immediate systematic shutdown and cooling of all reactors that may be downwind of a major Yellowstone

caldera eruption. With respect to this request, the NRC staff determined that the nearest plant to Yellowstone is Columbia which is about 400 miles upwind of the park and the nearest plants downwind of the park would include Fort Calhoun, Diablo Canyon, Cooper and San Onofre, all of which are between about 800-860 miles away from the park; and (2) issue an order to all U.S. operating reactors detailing the threat and requiring immediate acquisition of sufficient temporary water storage, water filtration systems and pumps with spare parts to accommodate the loss of direct access to surface water for a period of no less than three months.

As a basis for this request, Mr. Lakosh states that the earthquakes at Yellowstone Lake continue in a pattern suggesting that a highly pressurized chimney has developed between the surface and a depth of 7.2 km. If the worst case scenario ensues, the Petitioner is concerned that dozens of plants will not have access to clean surface or reserve cooling water. The Petitioner is also concerned that water pumps will not survive for long with the significant ash contamination in feedwater and there should be a plan to dissipate latent heat in reactor cores and spent fuel storage given a fairly

short pump lifetime after ash fall.

c. Allow me to discuss the NRC activities to date. On February 24, the Petitioner requested to address the PRB prior to its initial meeting and requested time to prepare supplemental information for the Board's consideration.

As a reminder for the phone participants, please identify yourself if you make any remarks as this will help us in the preparation of the meeting transcript that will be made publicly available. Thank you.

Mr. Lakosh, I'll turn it over to you to allow you to provide any information you believe the PRB should consider as part of your Petition.

MR. LAKOSH: Thank you very much. This is Tom Lakosh. I must apologize at the outset here for not providing supplemental information and concerns which I had intended to provide to you as support. I had a serious family medical problem with my elderly mother that I'm still trying to rectify here over the last two weeks.

But basically what I had intended to do is expand these concerns to other volcanic sources, most notably the Long Valley Volcano and volcano caldera in California. There may even be other localized

volcanic hazards associated with maybe in particular, Mount Hood and Mount St. Helens and that there may be additional concerns beyond water if we did have a catastrophic eruption of either Long Valley or Yellowstone. Fortunately, the seismic activity at Yellowstone, they're having recently experienced another volcanic sector in the facility of Anchorage in from Mount Redoubt volcano.

I've also recognize that there are essentially two levels of risk and probability that should be addressed by the NRC. One might be angst of the long-term probability of a risk of volcanic eruptions either localized or severe from a volcanic caldera such as Yellowstone or Long Valley.

And the other is measures that would be taken when that risk substantially was an acute risk as evidenced by the Mount Redoubt since an increase of seismic levels that precipitated an orange air craft warning and watch warning for volcanic eruptions.

So essentially I would hope that the Board would take two views on this actions that may be required due to oversight and licensing of the volcanic hazards that would likely be assessed on a strictly statistical probability measure and the other that would be in place when that level of risk changed

due to two circumstances where volcanic activity was anticipated and that might present a risk in the reactors.

AS you likely have found out in your investigations to date, the reach of volcanic ash from the aforementioned volcanos was indeed quite wide, covering feet of ash, many feet of ashes, as far away as Texas and east of the Mississippi, but that was a measure of the local wind conditions at the time and actually change in concentration and direction and reach given the atmospheric conditions at the time of eruption.

Basically, I didn't touch my primary concerns in that it actually affect the operation of any mechanical device. It affects anything open to the air, any fluid that has sustained ash content. Actually rubbing compound in your cooling water or oil for any mechanical devices is likely to cause failure of that device when required operation. I might give as an example the Beluga gas-fired turbine here in Alaska in 1990 when Redoubt erupted. They had to shut down that facility because that went on a little longer and it has required extensive R&R after that incident.

So I assume that that would be a threat to

the facility if surface waters were contaminated in open reserve cooling ponds for ultimate latent heat dissipation is impacted by ash falling on those open ponds and surface waters or cooling waters are drawn. The ash fall would likely not only impact directly during the atmospheric incident, but subsequently when precipitation brought ash simulation back into the water ways that provide cooling water and/or reserve cooling water. And in addition if you have a catastrophic eruption, there might be a broad range of societal disruptions that may preclude plant personnel from attending to their duties that may impair their abilities to obtain food, water and other necessary elements of everyday living that could affect the operation of the plant both by the absence of personnel and the absence of expendable parts and items for continued operation of the facility.

And so what I would hope that would be possible is to provide supplementation of these matters when my ability to prepare them is no longer constrained by my immediate family needs. But in particular I would like to reference the problem that we're faced with on probability of assessment of this matter and it -- each element I sent to the PDR resource in order to obtain information regarding

prior NRC investigations of the geologic -- presented by ash fall which apparently does not address according to the research done at that facility. They could not find any reference in any NRC documentation to date of any investigation of ash fall, the probability thereof or the mitigation of adverse impact to plant operation. And this might also -- facilities that are licensed by the NRC potentially at the INRL or AFPER facilities that you may want to consider as well.

The email and I don't know if Mr. Lyon has sent this to the panel, but essentially the important parts that I wanted to stress to the Board is the communication I had with Jay Lowenstern, the manager of Yellowstone Volcano Observatory, where I discussed the very issue of probability, the methodology for assessing probability of eruption. And to make a long story short, to date the general probability is strictly statistical but the USGS is attempting to obtain a better methodology to assess probability based on assessment of geologic conditions on site in a continuing review mode and to some extent they do it in their warning system where they have orange and red warning systems that are based on acute symptoms of eruption.

But part of this is that Dr. Lowenstern said that it would be possible to have an eruption occurring in a period of as little as a week, in other words, from in essence to erupt a phase in as little as a week and that if that were the case "we'd be screwed" and that it was advisable to make plans for large facilities like nuclear power plants. So that's the general issue that I'm hoping that the Board will require an investigation up here because apparently from correspondence with the PER Resource Facility there has been no investigation to date or assessment to date of the hazard.

I have subsequently to the notice that there was no documentation available submitted a FOIA to make a formal confirmation and I might notice that I was informed by Karen -- at the facility that she was instructed to cease further investigation of the question posed to her by Mr. Lyon and I'm highly concerned about that seems to infer potential bias and to preclude a scientific analysis of the question posed.

And so I would like to take questions at this time and further supplement my testimony if possible.

CHAIRMAN BLOUNT: Mr. Lakosh, this is Tom

Blount. The question I do have is I guess I'm trying to understand. Do you have information on what the probability of a volcanic eruption occurring is?

MR. LAKOSH: I did collect a wide range of documents regarding Long Valley's annual amount.

CHAIRMAN BLOUNT: Okay.

MR. LAKOSH: And there have been a lot of guesses primarily based on statistical information rather than actual geologic processes. Like I mentioned, there are really two phases of assessment of probability. One of them is based totally on the statistical function of time between eruption and clearly here we have 140,000 years since the last major catastrophic eruption of Yellowstone. There have been other nonviolent eruptions of I think about a dozen or so nonviolent eruptions at Yellowstone that merely produced lave and fallen ash out in the vicinity. But the last major catastrophic eruption at Yellowstone was 140,000 years ago and I think something like 160,000 years ago at Long Valley.

But there is the second method of assessment is the geologic symptoms of impending eruption which is not an exact science at all and particularly where they don't have monitoring facilities to make proper and full assessments and

that has to do with symptoms like ground deformation, temperature changes in groundwater and hydrothermal water, gas emission and both Long Valley and Yellowstone have those types of symptoms.

In fact, if you go to the University possibly one of the more telling evaluations is if you go to the University of Utah website on this. You can see that if you go to their site showing eruptive or earthquake events over the last year or so you will notice that there are several clusters of earthquakes in areas that have been sequestered by chief scientist, Dr. Smith, there is a symptom of weaker geologic layers being pressured from below by magma. Essentially some of these are known vent columns from prior eruptions. Some of them are unknown.

Their seismic system there is not based close enough to give any fine resolution of either the magma chamber or the fractured geologic strata above magma chamber. They can't tell any degree of resolution of the magma chamber. So they don't really know when this stuff is coming. They look for more acute signs of an eminently pending eruption. So they have a very difficult time doing any type of sound scientific analysis of the symptoms of eruption with any certainty in predicting the anticipated event.

In fact, because we're dealing in the case of Long Valley and Yellowstone for volcanos they have very little information to guide their decision making on the process because like I said the last event happened hundreds of thousands of years ago with these two particular volcanos and the last super volcano or eruption on the planet happened 74,000 years. So nobody was here to measure or record the events and their precursor symptoms. So we have a definite lack of sound scientific analysis to give us proper warning.

And as in this email, it was recognized that we might have as little as a week there for measures to secure these facilities. So while most of my research into this issue and the licensing process it's clear that NRC's decision was largely based on statistical probability. But that is clearly insufficient in providing a timely response if and when you get acute symptoms of eminent eruption and in fact there's a high probability there that you may not have time to take mitigating measures in the event that you did symptoms occur.

So I would ask that at least making the analysis of what systems were susceptible, examining what type of time line to pursue in order to mitigate

adverse effects and at least planning for those mitigating measures that should be instituted once achieved symptoms occur. But like I said, you do really -- The state of the geologic science in this matter is not entirely sound. They do a lot of guessing here and are backed on a strict statistical evaluation which really isn't appropriate given the type of catastrophe that could potentially occur with several facilities at once losing cooling water and with the ability to transport equipment to mitigate the adverse or loss of coolant water once such an event has occurred. We're talking about impairment of water ways, habitation, land, truck and rail transportation because all of these require motors that are going to be susceptible to ash contamination and failure.

That's why I was suggesting given the nature of the symptoms that were occurring at the time that immediate measures be put in place and these be available prior to eruption because there could be impairment of an entire transportation system after the event occurs. It's a big problem, but even USGS recognized that major facilities like this should have good planning in place because we may have as little as a week notice before one of these, you know, Long

Valley or Yellowstone go off for the wider area of effected facilities and indeed you may have localized strata volcanos that may provide similar activity locally, Crogden, Idaho.

MR. HILL: Mr. Lakosh, this is Brittain Hill. I'd like to just clarify something with you if I may. You earlier were talking about Cascade volcanos as being a potential source of hazard and you've brought that up again just a moment ago. And this is a new bit of information from the original concern about super volcano eruptions in Long Valley and Yellowstone.

MR. LAKOSH: Yes. Well, I've been worried about Redoubt here. I had to go buy my own floors and air filters and so forth and complain about the Drift River Oil Terminal Facility directly in the lava path of that volcano. So it's --

MR. HILL: I just want to make sure I understand what you're asking of us. You're asking us to consider all potentially active volcanos such as in the Cascade Mountain range in addition to Long Valley and Yellowstone super volcanos for ash.

MR. LAKOSH: Yes.

MR. HILL: Or is your -- really focused on the super volcano eruptions that go very long

distances away from the volcano?

MR. LAKOSH: There are two measures here. The way I would assess is both by probability and the degree of hazard associated with that probability. Clearly, you have a higher risk occurring from a super volcano effecting multiple plants simultaneously. But you also -- I am now recognizing that -- also localized this with a higher probability but a lower hazard resulting therefrom, although one we had going down is sort of a hazard. I'm generally stating that the risk, well, the hazard from volcanic ash must be assessed and it apparently hasn't been done to date.

And so that's essentially what I'm asking you guys to take a look at is how much ash is going to cause a problem. What critical components of facilities are going to be affected? How do we mitigate those and how do we institute response paths based either on a statistical probability or an acute risk probability once the acute symptoms of eruption show that eruption is eminent. You have a couple different problems there to assess.

But I think that pretty much covers the range of my concerns. I'm not an engineer. I did study a little in a year and a half, you know, read the literature on this. I would be happy to submit

this to you the research that I've done to date in an effort to assist your efforts.

But like I said, I have an acute family problem at this time that I'm desperately trying to deal with. I'm disabled myself by arthritis in both hips. So it's really tough for me to try and juggle these balls together, but I would certainly like to cooperate with your experts in these matters given the seriousness and consequences that may result from a lack of proper research and order mitigative actions and I think the reason why it's appropriate that it be dealt with this 2.206 is because this should have been part of the analysis in each of these licensing procedures to date but was overlooked as a potential geologic hazard and acceptance of ultimate heat sink capability.

And those had to be combined in a manner that properly assess the risk and mitigating measures that might have to be undertaken. And that's why I think it's appropriate to deal with this either at a 2.206 level or a 2.802 revision of regulation. We have existing facilities that have overlooked this risk and hazard and in licensing to date it's should be considered in licensing processes going forward and the hazard I think is clearly recognized in a broad

range of facilities that are otherwise subject to local strata volcano activity and it could be like for instance after the 1990 eruption of Mount Redoubt lahar that produced a flow greater than Mississippi River through the valley immediately adjacent to the facility. They built a diversion dike around that facility.

MS. LONGO: Mr. Lakosh, I'm going to ask if you could -- This is Jenny Longo speaking. I have a question for you and I'm sorry to interrupt you. I was looking for a good place, but I want to make sure that I get this question on the record. You'll have to forgive me. I'm not an engineer. I'm just an attorney and so I want to make sure I understand what you're asking us to do and I'm getting the idea that you're asking for more than measures to ensure safe shutdown. But are you asking that we ensure continued safe operation?

MR. LAKOSH: No. Well, yes and no. From my limited understanding of nuclear engineering is that the problem is not that you can't shut down. The problem is related to heat decay of approximately seven percent of your thermal output that remains in the reactor core and you have at some facilities so much stored spent nuclear fuel that there may be a

heat dissipation problem there as well.

So the problem is not shutting down. The problem is dissipation of latent heat decay both in the core and in spent fuel storage. And all of the pumps that pump that water are going to be susceptible.

Now you might also -- It would be nice to have the facility up and running again once the eminent threat of contamination had passed at which civilization is going to need power even after the incident even if it is wholly catastrophic or even just the local conditions. So you may have to do protective measures to keep ash out of other devices at the facility so that they can be turned back on again. But they'll still always have problems with dissipation of latent heat decay in each of these facilities.

Now that's what the ultimate heat sink regulation is supposed to address is the 30 days to have your ability to remove that latent heat decay. Well, if you have an open pond full of ash and you try and pump that reserve water to replace blow-down steam you may have a problem not only with the pumps but then subsequent operations of the core because your primary loop is now going to have ash sediment in it.

And it will gum up the whole works. You'll have to pull the whole thing apart and clean out all the ash, etc., etc., etc.

In a pinch, I'm sure you would pump contaminated water if you had to blow down a lot of steam to remove the latent heat decay. But the point is that you may not have enough water. You may cause localized melting of sediment built to the level of the fuel rods. You may have other problems with subsequent operations at the facility even after the latent heat decay is sufficiently dissipated to preclude melting of the cladding. So, yes, you have a bunch of problems there above and beyond the conditions of the plant.

CHAIRMAN BLOUNT: Mr. Lakosh.

MR. LAKOSH: Yes.

CHAIRMAN BLOUNT: We appreciate the information. Is there anyone else here at Headquarters have any questions for Mr. Lakosh?

(No verbal response.)

Anyone else on the phone have any additional questions for Mr. Lakosh?

(No verbal response.)

Mr. Lakosh, do you have any closing remarks or comments?

MR. LAKOSH: Yes. I understand that I'm not to ask questions in this process, but I would like to get this additional information to you. I'm sure you could find it on the various websites associated with volcanos and the USGS evaluation thereof and regarding the range of ash fall, the depth of ash fall, the level of contamination, the predictive capability, the surveys, the bathymetric surveys, etc., of Yellowstone Lake, the geologic activity in the vicinity. If you have a persistent staff willing to invest this, I'm sure you can find just about everything I did. I primarily did it by internet research, but I did contact Dr. Smith and Dr. Lowenstern and I found them valuable resources in these assessment.

I did contact the lead volcanologist at USGS. He's back up here in Alaska now. But the primary issues I think I've given a broad brush to. I think if you follow those leads you will come to the same conclusions that I have is that USGS proper execution of diagnostics of eruption and the statistical probability is an insufficient measure of risk and hazard and the need to have some level of planning particularly with acute warning signs within an eruption whether it be Long Valley, Yellowstone or

strata volcanos particularly in the Cascade range are or should be of deep concern to the NRC because it hasn't been properly assessed in any licensing feature or in any subsequent research.

In fact, the only reference to volcanic ash that I could find that I or the PDR Resource folks could find in their searching of the databases and microfiche was in fact in reference to the Nevada disposal site and the potential for the volcano under that dispersing the sourced waste. And there was some study of radioactive content and the ash fallout. But that's really the only references to ash fall that we could find. There was no assessment of threat to facilities or what mitigating measures should be taken to ensure proper cutdown and continued cooling of facilities.

And it could go far beyond that. Like I said, this could be a matter of not being able to keep personnel available. If the personnel does not have a place to stay, can't get the work done and can't feed their families, you've got a real problem above and beyond cooling and that -- I understand I'm asking you to think about the end of civilization. But unfortunately that's what we're posed here and helpful geologic systems that have shown ground deformation

and have shown active volcanic, not volcanic swarms, earthquake swarms that are quite troubling and with the lack of scientific monitoring that accurately assesses key threats and eruptive events.

We're really just getting out of the trees on this one and there needs to be at least some planning for mitigation efforts upon notice of eminent threats if the USGS ever gets its act together on this.

MR. MARKLEY: Mr. Lakosh, this is Mike Markley. Did I hear you correctly to say that USGS doesn't have the capability to evaluate this?

MR. LAKOSH: Yes. Well, here's what's going on. Nobody's been around to see what a super volcano does and I asked Mr. Myers, the volcanologist at USGS, what would be the most analogous volcanic eruption that would show similar signs. The volcano he mentioned an incident in Colombia that happened in the recent history, I think, last year and he said that that volcanic eruption took three weeks from quiescence to eruption. So they can given the general idea if they see a lot of signs, but they're not entirely sure what signs are appropriate to eruption for a super volcano because nobody has seen one go off.

CHAIRMAN BLOUNT: Mr. Lakosh, Tom Blount, PRB Chairman. I just want to let you know we have about eight minutes left.

MR. LAKOSH: Yes. Sure. But that's the problem and they are not using the state-of-the-art seismic technology to make an evaluation of movement in the magma chamber or the structural defects of all systems and track range and the strata of the magma chamber. They can use active seismic tomography. They can use magnetotelluric monitoring to discern whether there is actually hydrothermal activity or a magma flow. But they don't have those data out at Yellowstone. Their seismographs are spaced so far apart they have very little resolution like a couple kilometer resolution at the depth of the magma chamber.

They have, the USGS has, resources to do active seismic tomography. They've done it out at the Madrid Fault and they could get that equipment up there to do it. They could do more bathymetric surveys that they never did during these events. They had previously done very exacting bathymetric surveys of the lake bottom where these earthquake swarms were occurring. They didn't go back there to see if there was deformation on the lake bottom. Their dock is

closed up for the winter and so they wouldn't send out the woman who did, the team who did, that bathymetric survey a couple years ago to see what deformation had occurred. They didn't send out active seismic tomography units which I requested.

They really don't have instruments in place to do an active state-of-the-art geologic assessment that oil companies do every day every year. And they're constrained by their funding. You hear Congressmen and Senators complaining about volcano monitoring. This is the action we could all ignore where hurricanes can't.

But in fact you could have a worldwide devastating end of civilization in Yellowstone and although it hasn't happened in 64,000 years, we've got all of the symptoms that would otherwise be applied to any other volcano as going eminent kinds of eruptions. But Yellowstone is a funny place. It has the swarms sometimes. None like this one I might add. The prior swarms of this number and magnitude and concentration for all prior were previous at best away from the main magma chambers.

This series of events happened over the shallowest part of the magma chamber in the highest thermal activity site in the entire area. It went

from the surface all the way down to the magma chambers. That's the earthquake. So this is a fractured column above the shallowest part of the magma chamber in the hottest area of the park and that's what definitely concerned me. I had this notion a couple years ago that this might cause a problem, but it really didn't get me off my feet to ask you guys to take action until I saw that these particular symptoms were very troubling.

CHAIRMAN BLOUNT: Mr. Lakosh, this is Tom Blount again. So at this point, have you provided us all of the additional information that you had sent in or is there something that you want to send in?

MR. LAKOSH: No, sir, I haven't. I said I have this immediate family health problem that I'm trying to deal with. I could send it to you. You could find it yourself. I don't know if you want to wait for me to try and get this to you or if you want to go ahead and do the investigation yourself. In any event, if you ask me questions, I will do my best to get you answers to the questions, you know, put you in touch with the USGS folks that are on, you know, have done these studies before, are actively monitoring the volcano and otherwise to provide any assistance I can given my own disability and the problems I'm having

with health in my family.

MS. LONGO: Mr. Lakosh, this is Jenny Longo speaking again. Can you tell us when you would like to be able to give us the information just so we know? I mean we'll wait for it for a reasonable time. We're not going to wait a couple years. But it would be helpful if you would tell when you think you could do it.

MR. LAKOSH: Well, let me give you a short to what's going on here. My 88-year-old mother in Concord, California fell down and had gotten put in a rehabilitation facility. I'm trying to get her up here. I have to give her care. I have go down to California to finish her business. This might take months. I wouldn't suggest waiting to start your investigation. I would at best think that I could send some of your stuff. I would like to be in touch with your staff at that time and confer to see whether or not they had already accumulated the information that I have.

MS. LONGO: Mr. Lakosh, this is Jenny Longo again. I'm sorry to interrupt you, but I think there's a fundamental misunderstanding of this process. The 2.206 process you are asking for enforcement type action and what we are trying to

determine is whether to accept your request within the 2.206 process and in order to do that we need to see all the information you want us to see.

We aren't going to make a determination on whether to actually act on your request until after we decide to accept it. If we accept it, then we will get to the merits of it. But we can't even decide whether to go into the process, whether your request belongs in the 2.206 process or somewhere else, until you provide us with all the information that you think we ought to see in order to come to that determination. So I want to give us a time when you think that you can provide us with any of the additional information you would like to give us.

MR. LAKOSH: The process for being able to do that is very fluid at this time. But I might actually have enough expertise in the room and I think I presented a quandary to you guys and you could make a preliminary assessment.

MS. LONGO: Mr. Lakosh, we have to follow our process and we have to consider whatever information you want us to consider before we decide whether we're in the 2.206 or somewhere else. And we're willing to give you certainly a reasonable amount of time in view of your current situation.

I'm asking you to tell us when you think you would be able to do it. I'm not trying to pressure you and say, "Do it tomorrow or else." I'm asking you. Give us your reasonable estimate.

MR. LAKOSH: Probably a month at least until I can have the time to properly put all the stuff together and get it emailed to you guys. But like I said, you guys recognize that there is need to do an evaluation here. Please --

MS. LONGO: Mr. Lakosh, we'll give two months to give us any additional data. Okay?

MR. LAKOSH: Sounds great. Thank you very much.

MS. LONGO: Okay.

CHAIRMAN BLOUNT: Given that, we appreciate if we've reached closure on getting additional information. I'd like to take this opportunity to bring this meeting to a close.

MR. LAKOSH: May I make one last comment please?

CHAIRMAN BLOUNT: Please go right ahead. One last comment.

MR. LAKOSH: Yes, this is an issue of major importance and a hazard to this country. Please don't wait on one individual to be able to provide you

with that information to make a preliminary assessment to further investigate.

CHAIRMAN BLOUNT: And we appreciate your comments. Thank you very much and with that I'd like to bring this meeting to a close. Thank you all for your time and attention. Off the record.

(Whereupon, at 2:02 p.m., the above-entitled matter was concluded.)