

Community Advisory Council
April 8, 2010
Action Items/Notes

Final

These notes are in the following order:

1. Attendance
2. Correspondence and Handouts
3. Administrative Items
4. Update on BGRR, Siva Kumar, Regulatory Affairs Manager, Environmental Restoration Projects
5. Update on Groundwater, William Dorsch, Groundwater Protection Group
6. Agenda Setting
7. Community Comment
8. NASA Research Proposal Discussion

1. Attendance

Members/Alternates Present:
See Attached Sheets.

Others Present:

J. Amabile, S. Aronson, M. Bebon, F. Carlson, J. D'Ascoli, N. Detweiler, B. Dorsch, D. Feldman, L. Garber, K. Geiger, P. Genzer, D. Gibbs, N. Gittell, T. Green, M. Holland, B. Howe, S. Johnson, S. Kumar, B. Lee, D. Lowenstein, M. Lynch, M. Maraviglia, R. McKay, D. Paquette, V. Racaniello, A. Rapiejko, J. Sattler, I. Smith,

2. Correspondence and Handouts

Items one through four were mailed with a cover letter dated April 2, 2010. Items five through eight were available as handouts at the meeting.

1. Draft agenda for April 8
2. Draft notes for March 11
3. Copy of a Press Release concerning BP Solar manufacturing
4. Copy of a *Newsday* article on NASA research
5. Copy of presentation – Update on BGRR, Siva Kumar, Regulatory Affairs Manager, Environmental Restoration Projects
6. Copy of Groundwater presentation – William Dorsch, Groundwater Protection Group
7. Copy of ARRA Newsletter
8. Copy of PCRM “Response to NASA’s Claims Regarding Squirrel Monkey Radiation Experiments Proposed by Jack Bergman, PhD”

3. Administrative Items

The meeting began at 6:40 p.m. Reed Hodgkin reviewed the ground rules and the agenda. Those in attendance introduced themselves.

Member Guthy asked for information regarding articles she has been seeing recently about a lawsuit concerning BNL employees with cancer.

Jeanne D'Ascoli, liaison to the CAC, said she will get someone to present the information to the CAC.

Member Giacomaro asked about an article he saw that spoke about the closing of the solar panel plant in Maryland that was supposed to be supplying the panels for the BP Solar Project. He asked if BP will still be able to use American made parts for the proposed solar array at BNL.

Reed said if there is time tonight, we will discuss it, if not, we will get it on a future agenda.

Member Shea said she has seen a series of articles on nanotechnology and would like to share the information with the CAC.

D'Ascoli told the CAC that Joe Gibbons, former member, recently passed away. She also reminded them that there will be a memorial event for Bob Conklin on April 12 at 11:00. Sherry Johnson has more information if anyone needs it.

Approval of Minutes

Reed asked for corrections, additions, or deletions to the March 11, 2010 draft notes. Member Henagan said that on page 15, the notes say his answer to the question; "Can you look up and get the information", was inaudible. He would like it to say that his answer is "yes", he will try to find the information. The notes were approved as amended with four abstentions.

4. Update on BGRR, Siva Kumar, Regulatory Affairs Manager, Environmental Restoration Projects

Siva Kumar explained the status of the graphite pile removal at the BGRR (Brookhaven Graphite Research Reactor). He said that graphite removal began on February 4 and the first shipment was made on February 24. He gave details of the pile and explained that removal is done remotely in a contamination control enclosure. Radiation measurements are taken and a fixative is applied for dust and contamination control. He showed two short videos showing an excavator picking up the graphite blocks and loading them into a supersack. He said each scoop picks up about 1,000 pounds of graphite.

Member Esposito asked about the size of the graphite blocks.

Kumar said there are 60,000 blocks and the average length is 30 inches.

Member Chaudhry asked why some of the blocks are different sizes and asked if that creates voids when the graphite is loaded.

Kumar said some of the blocks break, which is actually a good thing because the pieces then are smaller and easier to pick up with the equipment. There is no attempt to fill the voids. Some dust is created, so a mixture of paint and water is sprayed onto the graphite blocks to contain it. In addition, the air flow is directed downwards, so any dust settles down. The graphite is loaded into the supersacks, which have the capacity of 144 cubic feet and can handle up to 12,000 pounds. The average weight is 6,000 to 7,000 pounds per supersack. The supersacks are then transferred to metal shipping containers. It is expected that there will be about 250 boxes that will be shipped to the Nevada Test Site. As of today, 206 boxes have been filled. Of that, 165 have already been shipped and 136 have reached the disposal facility so far. The trip takes about four days.

Member Esposito asked how long the process has taken so far.

Kumar said it has been 42 days. There are two shifts, working ten hours each.

Member Esposito asked if this project is running ahead of schedule.

Fred Carlson, BNL ERP, said the removal process is running right on schedule.

Kumar explained that some of the blocks have higher radiation levels, so those are shipped in shielded multi-use type A containers (SMAC). It is expected that the graphite removal will be completed in early May.

Member Talbot asked if there was any higher than expected personnel exposure.

Kumar said there has been no overexposure, radioactive material intake, or personnel contamination so far.

Member Heil asked for an explanation of the procedure once they reach the Nevada Test Site.

Kumar said the containers are buried.

Carlson said a 30 foot trench is dug and the boxes are buried there. The boxes are numbered so they can keep track of them.

Member Giacomaro asked if there is any cost savings since this is being completed ahead of schedule.

Kumar said there is no significant financial savings.

Member Sweet said it seems that there will be a lot left to clean up after the removal is done.

Kumar said the air quality inside the contamination control enclosure is extremely good because of all the measures taken to control dust. The residue that is left behind will be vacuumed up after a fixative is applied to the bottom of the pile.

Member Bush asked if there is any way in the future that the material might be dug up and used as an energy source.

Kumar said not for the graphite, but it might be possible for spent fuel.

Member Mannhaupt asked what the boxes are made of and if they could break down under the soil. Will the boxes outlive the material inside them?

Kumar said the Nevada Test Site is a contaminated area. It is controlled and monitored.

Member Anker asked if they use the same fixative that is used for asbestos.

Kumar said a latex-based paint and water mixture is used as a coating.

Member Chaudhry asked if the Nevada Test Site keeps track of where everything that is buried there came from.

John Sattler, DOE, said he has worked with the people at the Nevada Test Site and they keep a log of exactly where each container came from and every area is monitored.

Member Sprintzen asked if there is any idea of the longevity of the boxes and the radioactivity in the graphite within them.

Sattler said the boxes are made of steel. The whole area is controlled and overseen by the State of Nevada as well as the Department of Energy. Determinations were made using the worst case scenarios and performance assessments are done.

5. Update on Groundwater, William Dorsch, Groundwater Protection Group

Bill Dorsch gave the CAC an update on groundwater with a review of the treatment system/plume status, performance, and proposed modifications. He said there are 16 groundwater treatment systems currently in operation, 13 treating VOCs (Volatile Organic Compounds), 2 treating Sr-90 (Strontium-90), and 1 at the HFBR (High Flux Beam Reactor) pump and recharge. He showed maps detailing the progress that has been made from 1997-2008.

Member Esposito asked if the southern boundary of the plume is advancing.

Dorsch said it is remaining stable.

Reed said, realizing that the map is small, if anyone would like a bigger copy, let us know and we will get full size copies to you.

Member Chaudhry asked how you know you aren't pulling out the same water and re-treating it.

Dorsch said there are two main recharge basins onsite. These are both up-gradient of the plumes.

Member Biss asked how much of the contamination goes into the river.

Dorsch said the upper limit is about 120 feet below ground level. It goes down into the aquifer, not the river for the most part. Groundwater flows from north to south. Overall the contaminated plumes have shrunk over time. There is a network of treatment systems along the boundary that prevent additional VOCs from migrating offsite.

Member Esposito said there has been downward migration. She asked if wells were put at the southern end of each plume.

Dorsch said yes, they are being cut off and treated there. In some areas, the concentrations are now below drinking water standards, so those systems have been shut down and placed on standby. We continue to sample the wells to look for rebounding. There is one area with higher levels of VOCs which was south of the extraction wells prior to them being turned on. It is beyond the capture zone and cannot be pulled back. The area is fairly deep and the model tells us that if we let this attenuate, it will meet drinking water standards by 2030.

Member Esposito asked what the concentrations are in this area and does leaving it there conform to the Record of Decision (ROD).

Dorsch said the levels are between 50 and 60 ppb and the area is about 200 feet below ground level. The ROD states that we are required to meet drinking water standards in the aquifer by 2060 and we will easily achieve that.

Member Esposito said she thought this was a 30 year ROD.

Bob Howe said the Explanation of Significant Differences states 65 years.

Dorsch said it is in the upper glacial aquifer that the ROD states drinking water standards by 2030. This is a different cleanup goal. This whole area is hooked up to public water so we don't have that risk.

Member Talbot said there is one area on the map that appears to have made negative progress since 1997.

Dorsch said there are gaps in the monitoring network, so sometimes we are estimating where the plume is until it reaches the next well. In 2007 we observed higher than expected concentrations of carbon tetrachloride at the airport. We did additional characterizations and found over 100 ppb of carbon tetrachloride where we expected non-detectable levels. We installed an additional extraction well and are capturing this plume. It is not migrating further south.

Member Guthy said there is another plume that appears to have gotten larger.

Dorsch said sometimes they stretch out in the aquifer.

Member Guthy asked if it becomes more diluted as it stretches out.

Dorsch said the peak concentrations in the late 90s were 6 ppb, and now are about 1½ ppb. Over time there is dilution and dispersion of the plume.

Member Esposito asked how the Sr-90 cleanup was going. Will it be completed before 70 years?

Dorsch said it is going better than expected. Sr-90 moves very slowly. It's possible to complete cleanup before the 70-year time frame. We are on track to beat some of our schedules.

Member Esposito asked if the migration rate will increase due to the extraction wells.

Dorsch said if they remain on, yes, but they are currently scheduled to be shut off in 2012. Once they are turned off, it will return to its natural conditions and there won't be acceleration as you get closer to the extraction wells. We will be evaluating it.

Member Giacomaro asked how deep the Sr-90 contamination is now and if it will go deeper into the aquifer.

Dorsch said it is about 100 to 120 feet below ground surface now. It will go deeper, but at a much slower rate than VOCs.

Member Mannhaupt asked when this characterization study will be done and ready to be presented to the CAC.

Dorsch said the data collection will be finished next month. It will probably be ready in the fall.

Reed said the CAC is requesting that you return as soon as it is available.

Dorsch said there are plans to excavate an area near Bldg. 96 this year because of PCE (tetrachloroethylene) concentrations that were found in the soil above groundwater.

Member Giacomaro asked if this area is exposed to the weather.

Dorsch said there is a temporary tarp over the area.

Member Anker asked if vapor intrusion is an issue. She also said there is new technology out there, have you looked into that.

Dorsch said vapor intrusion is not an issue and part of our Five-Year Review is to look at emerging technology.

Member Peskin said there is too much on the agenda. He asked for a more realistic agenda in the future.

Reed said yes, thank you.

Member Mannhaupt asked if all the slides of this presentation are online so they can be enlarged.

Dorsch said yes, most are in the groundwater report.

Member Graves asked if any of the standards have changed.

Dorsch said that is looked at in the Five-Year Review.

Member Garber asked if there are any plans to convert the wells to an exchange type processing well.

Dorsch said there are no plans right now.

Member Garber said he was surprised that in this day and age there would be a finding of Freon. He asked if there could be a buried canister.

Dorsch said they have been looking into that possibility.

Member Bush asked if the ROD for Sr-90 calls for a longer time for cleanup.

Dorsch said Sr-90 takes longer to remove. It moves much slower.

Member Esposito asked if there will be a public input component to the modifications and proposed changes.

Dorsch said it will be through the regulatory agencies.

Member Esposito asked if the CAC will be able to comment.

Dorsch said yes.

Member Giacomaro asked when the Five-Year Review is scheduled.

Dorsch said the draft is due to the EPA (Environmental Protection Agency) in February of next year.

Member Anker said in trying to locate some unknown sources, can BNL use advanced technology. What about a metal detector or ultrasound.

Dorsch said those are used mainly for locating shallow things. Most of our plumes right now are well defined.

6. Agenda Setting

Jeanne D'Ascoli, BNL liaison to the CAC, said she agrees that there is too much on the agendas lately.

Member Esposito said SPDES (State Pollutant Discharge Elimination System) is a priority for her.

D'Ascoli said SPDES will probably be on the agenda for next month. She said she contacted both Dr. Bergman and NASA about coming to the CAC meeting or providing information for the CAC to review. She said she contacted them later than she had hoped and NASA was unable to attend, however, they would like to respond to the CAC. She has not had a response yet from Dr. Bergman.

Member Giacomaro asked how far along the BP Solar Project is.

D'Ascoli said it is expected to begin in late summer.

Member Giacomaro then said if the CAC will have any input or effect, they need to do it soon. Will they be using solar panels that are manufactured somewhere else in the United States?

D'Ascoli said this is not an area where the CAC will have input. This is a BP Project. It was not a Laboratory decision to close down the plant in Maryland. They will be using panels that are manufactured elsewhere for this project. It doesn't make sense to include it on the agenda since CAC input will not weigh in the way it does on other topics. BP will make the decision where to purchase the solar panels.

Member Sprintzen said he feels the CAC should not take the summer off this year.

Member Esposito suggested taking off for August only. Perhaps prioritize for May, June, and July.

D'Ascoli recommended doing SPDES next month and completing the discussion on NSRL (NASA Space Radiation Laboratory) tonight or next month. Input will only be considered if it is given by the next meeting.

Member Esposito said why not just discuss it tonight.

D'Ascoli said we have some public comments tonight. We could do NSRL tonight and next month and SPDES and Peconic River next month, and then prioritize for June.

Member Henagan said we are still waiting for information from NASA so it makes sense to carry that conversation to next month when we have the full set of information.

Reed suggested making a chart and listing all the possible topics and having each member indicate their preference of importance.

Member Sweet said she would like to see nanotechnology on the agenda.

Results of the CAC prioritization of future agenda topics:

Topic	Number of votes
SPDES (May)	9

BP Solar Panels	6
Renewable Energy	5
Nanotechnology	5
5-Yr Review (July)	4
NSRL Discussion (squirrel monkeys)	4
Peconic Cleanup (June/July)	4
Compensation to DOE Employees	0

7. Community Comment

Noah Gittell, Physicians Committee for Responsible Medicine (PCRM), addressed the CAC.

Gittell: I am the Research and Education Programs Coordinator for the PCRM. I said a lot last time I was here and I provided documents in the interim. I hope all of you got them and were able to glance at them. I would like to see if you have any questions, but before that, there are a few key points I would like to reiterate regarding this issue. The PCRM as well as other organizations, a former scientist who performed monkey radiation research for the U.S. Air Force, and members of Congress have pointed to the four decades of failed space radiation research using non-human primates by the U.S. Air Force and NASA as evidence that these proposed experiments (Dr. Bergman's experiments) are unnecessary and will not yield information that is applicable to human space travel. NASA's only substantive rebuttal to this is that these experiments use a different kind of radiation and a different kind of monkey. That's it. They have provided no evidence of why these experiments might succeed, when for four decades they did not provide anything that we can use for human space travel. This is, in our opinion, bad science and faulty logic. Using NASA's argument, there is nothing to stop them, after these experiments fail from trying again with a different kind of monkey and a different kind of radiation. They have thrown out the past four decades, saying that it was the wrong kind and we don't want to see these animals suffer for nothing again. NASA has recently sent out another call for proposals for more experiments, specifically targeting monkeys that will be conducted here at Brookhaven. This is bad science on top of bad science and as long as this research continues, the controversy is going to continue as well. You folks in this room have the power to stop this and say to NASA that enough is enough, this research is unnecessary, radiation research on primates is not applicable to human space travel and I urge you all to do so. I thank you for all the time and consideration you have given this so far and in the future. If you have any questions, I would love to be able to answer them for you now. If I don't know the answer, I promise to get back to you.

Member Biss: The only thing we can do is say that they shouldn't do it at BNL. That's not saying they won't do it at another facility.

Gittell: As I understand, correct me if I am wrong, but I think BNL is the only facility in the country that can come close to mimicking galactic space radiation. I should point out that the radiation being used in this experiment, which is heavy ion, heavy silicon and heavy protons is not a true representation of galactic cosmic rays. Those are compositions. Galactic cosmic rays are comprised of those, but there are many other elements that are comprised in there. While this is as close as we can come, it's not really the same thing.

Member Biss: Would you be fighting if it were a different type of animal also?

Gittell: Absolutely. The reason this is particularly interesting is because there have been these four decades of space radiation research, specifically using non-human primates, that we can

point to that have failed. They didn't produce anything that is applicable to human space travel. I know you can recommend that this not happen here. If they try to do more, we are going to come back and talk to them again and continue to fight this, because we really feel that we have a very strong case that this experiment will not...

Member Biss: What you are doing right now is fighting this particular type of monkey?

Gittell: That's true. They have not used this kind of monkey before, but the way we look at it is; if a person gets shot in the arm with a pistol, they are going to bleed. If they get shot with a rifle, they are going to bleed. We can guess what's going to happen if they get shot with a machine gun. That is the situation we have here. This isn't good science. We can continue indefinitely using different kinds of monkeys and different kinds of radiation.

Reed: In order to get to as many people as possible we need to go to our next person.

Member Graves: Can you give us the name of the researcher who worked in the field and said that the research was not valid?

Gittell: Sure, his name is Don Barnes. He worked for twelve years at Brooks Air Force Base in Texas and he is referenced in the complaint to the Office of Inspector General that should have been dispersed to all of you. There are numerous other documents, other studies that we reference in there. Specifically, it is proven that space radiation research involving non-human primates does not work. The information does not extrapolate to humans.

Member Garber: His letter is in the package.

Gittell: That's right; we did distribute the letter as well.

Member Esposito: Can you elaborate if possible on the additional request NASA put out for more space research on non-human primates?

Gittell: Sure. It's very similar to the last request that produced this grant. The proposals can include animals and can include non-animals as well. They specifically mentioned Brookhaven as where the studies will be taking place.

Member Esposito: Did these requests come after this first one?

Gittell: Yes. The second part of the proposal is not due until April 20th for these grants, but it's in the same area, space radio-biology. In Jack Bergman's submission to Brookhaven, he cited that his research will be used as a baseline for future research. It is clear that NASA is planning to continue this in one way or another. As I said, if it were stopped, they wouldn't be able to continue because they are using it as a baseline for future experiments.

Member Henagan: First of all, going back to Project X, your statement says; the extrapolation of animal data is probably more hazardous to the future benefits of nuclear medicine, not space travel. This is from your statement.

Gittell: That's a quotation that we put together?

Member Henagan: That is a quotation. This is the summary report of the U.S. Air Force. It says nothing about the effects of radiation long term. It says nuclear medicine, which is a very different type of radiation.

Gittell: There are numerous other examples in our complaint to the Office of Inspector General about the inability to extrapolate for radiation research cognitive effects.

Member Henagan: The second item is talking about this being a different form of ray. I assume that you know that infrared and ultraviolet are very different types of radiation. The effects of infrared and ultraviolet, even though they are very close in spectrum, are very different on the human body. Are they not?

Gittell: I actually don't know, but I will take your word for it.

Member Henagan: Infrared is heat, you burn yourself thermally. Ultraviolet you get sunburn. One causes cancer, one doesn't. Changing radiation forms to a radiation form that has not been studied can have significant effects. Would you agree?

Gittell: Absolutely. I welcome your opinion, however, I really think after 40 years of failed research on this that the onus would be on NASA to provide some explanation as to why they think this might be successful and they have not done that. Not to us, not to any members of the public that have written to them that we have heard from, and not to members of Congress. If they were to provide some reason why they think that this type of radiation in this experiment will extrapolate to humans when it hasn't in the past, we would love to hear that and it could very well change our perspective on this.

Member Chaudhry: All the benefits that have come to humanity so far, most of them came through research; most particularly the benefits in the field of medicine, medical healthcare, treatment of human beings that has come from research. Without research, you cannot make progress. When you do research, there are some areas that require compromise or the making of sacrifices. You don't know in advance what benefits will come out of research. Most people will agree that NASA is doing something which is wonderful. They have an obligation to lead. They want to make sure that the astronauts are protected, so in the interest of safety, they need something to do their experiments on. In the field of medicine, they have been using a lot of different animals, most particularly and most frequently, rats. Now that NASA wants to use squirrel monkeys, there is a lot of noise and hype opposing NASA. I think it's unfair.

Gittell: I'd like to respond. We don't oppose research and this series of 12 grants that NASA has awarded to study space radio-biology. This is the only one of the 12 that uses animals and we don't oppose NASA continuing to expand the boundaries of space travel. We think that this research is not ethical and we think it is going to be ineffective. We think that with Mars as the destination for human space travel so far into the future, they should continue to fund non-animals studies, which is what one of the other 12 grants is. It's to fund a 3-D cell culture model. We don't oppose research at all; we have many researchers on our staff. We oppose this particular protocol.

Member Chaudhry: Can you use a non-animal to relate to astronauts?

Gittell: Absolutely.

Reed: This feels like a dialogue with a presenter, but this is not a presenter, this is a comment from a community member, so I'd like to make sure we are keeping our discussion to brief questions that we want to ask our member of the community that has come up to make comment and save your discussion for the discussion time you will have amongst yourselves.

Member Garber: There is clearly a very impressive full court press here on this project. My question is, what other projects are you opposing with comparable vigor so we can judge what may be unique to this?

Gittell: There are a few things. Our organization is endorsing passage of the Grade A Protection Act through Congress, which is a Bill that would retire the 500 or so chimpanzees that are in federally funded research facilities to chimp sanctuaries. We are possibly the only country that still performs research on chimpanzees and the PCRM along with the Humane Society of the U.S. and other organizations would like to change that. I am also working on a project with the Department of Defense. They currently use live pigs and goats for trauma training programs despite the existence of superior non-animal methods that are used almost exclusively in the civilian world to teach the very same procedures.

Member Shea: Doing research on higher animal forms brings up all kinds of ethical questions and I understand that and am sympathetic to that. Do you have any idea how much of our DNA we share with squirrel monkeys?

Gittell: It is quite a lot. I don't have an exact number.

Member Shea: What about mice? Our DNA is probably over 95% the same as a mouse.

Gittell: I know we are primates as squirrel monkeys are, so it's probably a large number.

Member Giacomaro: I think the Department of Spain is considering eradicating any ape and chimpanzee research.

Gittell: I believe that is true.

Member Giacomaro: Can you expand or describe to me what you mean by non-animal research? How can that apply and does it apply?

Gittell: In this case, the research isn't quite there, which is why NASA is funding an alternative. I am not an expert on the non-animal alternatives unfortunately, but I can send you some information about the grant that they are funding, which is a 3-D tissue model. I am not a scientist, but I work with a lot of scientist, so I have picked up a lot. But I haven't picked up that quite yet. If you want to give me your information, I will have one of our scientists get back to you.

Member Chaudhry: I would like a copy of that too.

Reed: Could you send that to the CAC? I am sure everyone would like to see that.

Member Mannhaupt: You said there are 12 grants on space radio-biology and Bergman's one with the monkeys was sent to NASA. NASA did not request it?

Gittell: In their request for proposals, they requested anything in the field of space radio-biology – animals, non-animals – not just studies focusing on the central nervous system, but also studies focusing on cancer and things like that. He submitted it to NASA.

Member Mannhaupt: He submitted it to NASA and NASA just had a request for proposals, whether it was animals or not and this is all regarding a Mars project or space radio-biology?

Gittell: Deep space missions are what they asked for, because we know enough about low level Earth missions already.

Ian Smith, representing People for the Ethical Treatment of Animals addressed the CAC next. He said that you might recall I was here last month as well. Before I start, I'd like to say that

while I may not be able to follow everything that preceded the meeting so far, I did glean the fact that your time is very valuable and that your agendas are usually bursting so I want to really thank you for sharing your time with me. Noah alluded to the four decades of research that have come before now that has been accurately described as a universal failure. That's not to say we didn't learn anything from that research. What we have learned is that the animals that participated suffer immensely. The foreseeable consequences for this experiment include skin damage, brain damage, malignant tumors, blindness, premature aging, and premature death. Those are the foreseeable consequences and this information was not related to the Brookhaven IACUC (Institutional Animal Care & Use Committee) when they gave their conditional approval on this experiment in January. It is very difficult to know how the ethical merit of this experiment was assessed when that information was not completely forthcoming from McLean Hospital and Dr. Bergman. I wanted to emphasize that and possibly take any questions that you might have.

Member Henagan: I have a quick one. You mention the possible effects on animals. Isn't the purpose of this study to discover those possible effects on the animals?

Smith: So the suspicion is that there could be a danger, right. Yes.

Member Henagan: So this experiment is to confirm whether that danger exists, correct?

Smith: Yes, we are kind of agreeing in the sense that it's an extremely costly experiment for the animals. The science is at best questionable, we may not agree on that. But, we can agree that it is likely it will cause severe suffering for the animals and the experimenters have not been completely forthcoming about the harm that is foreseeable when they issued their initial proposal that the Brookhaven IACUC looked at. It didn't detail the possible harm. The other thing I'd like to elaborate on is that the consequences to the animals from the radiation exposure are only a portion of the suffering that they will experience. The conditions of confinement and the fact that they will be socially isolated throughout the experiment for years will pose incredible harm on them. Harvard researchers have studied this issue and have found that 90% of primates that are single housed experience intense stress induced abnormal behavior that takes the form usually of self-biting, self-mutilation, frantic cage circling, things like that on top of what the experiment and the radiation itself will be causing. So it's important when evaluating the experiment that we are completely forthright about the suffering that we are choosing to inflict on others.

Member Guthy: How effective is the robotic testing in the written material that was given to us? Do you know anything about how accurate or efficient the information would be if they tested on those robots rather than on live animals?

Smith: You are referring to the phantoms. I couldn't really speak to that question, but I think the track record using animals has proven to be pretty dismal. I don't think that if there is an open question about a particular alternative, that the default should be using an animal.

Reed: That is a question for NASA.

Member Shea: These are social animals and the fact that they will be isolated, it seems to me would have an effect on the health of these animals so it wouldn't be comparable to humans in space because even though they are isolated in a way, there certainly is going to be more than one person with them and they have other ways to communicate. I have a problem with that.

Smith: Yes, I think it's similar to when humans experience severe social isolation; they develop a host of problems. It weakens their immune system, for example, so it makes them susceptible to a host of illnesses.

Member Henagan: There was a comment made last month by a BNL person with regard to that. It was said that these animals are not single isolated. Even in the beam line, there are groups of animals being exposed, but they are not being single isolated. They are being housed in groups of four that was the statement made last month. Can we get clarification of that?

Smith: My understanding was that they will be in different treatment groups, but the housing is single housing.

Member Anker: There are two issues for me. The ethical issue because they are living creatures that feel pain is a huge issue. The other issue is what the realistic expectation of this experiment is. What is the financial cost? You are saying it is not paying off, is that what you are suggesting?

Smith: Dr. Bergman's award is for \$1.75M and the suggestion is that we think that would be better spent toward more productive research. Reallocate those scarce research dollars to something more promising and something that is not so ethically problematic.

Member Anker: Is that type of research available today? Where are we in that type of alternative?

Smith: It sounds like they are currently being developed and worked on.

Member Anker: So you are saying to invest the dollars into that kind of technology versus older technology using older research that has not been cost effective.

Smith: Yes, that's right.

Member Sprintzen: In the proposal is there an argument made explaining why the kind of information that is being sought cannot be sought any other way?

Smith: The argument has been that they are using a different animal with a different type of radiation. Any number of combinations, they could presumably cycle through them.

Member Sprintzen: I am interested in the question of whether they made an argument that explains why they believe that this kind of information cannot be achieved someplace else not using animals.

Ian Smith deferred to Noah Gittell

Gittell: I think if NASA felt that they had to use animals, they would have asked specifically for only animal studies. In the call for proposals, they said you can use animals, non-animals, whatever you want and in the 12 that they funded, only one uses animals. The proposal makes the argument that squirrel monkeys would be effective mostly because there is a lot of information on the cognition of squirrel monkeys. What that really cites is the Investigator's own research.

Member Sprintzen: What I want to know is whether they made an argument that explains why he can only get the information using these animals.

Gittell: That is not in his proposal.

The CAC thanked Ian Smith for his comments.

8. NASA Research Proposal Discussion

Reed: I'd like the CAC to think about key questions you'd like to ask NASA or others. You had some Action Items from last month and all those Action Items were in your packet this month except for two. One was the question asking if someone from McLean Hospital could come in and talk to you and Jeanne explained that to you earlier, the other is what the funding consequences are if this work is not done here at BNL. Derek Lowenstein, Associate Chair - Collider Accelerator Division, has an answer for you on that question.

Lowenstein: NASA would have to spend \$27,000 at BNL for this experiment.

Member Mannhaupt: Wait a minute, the researcher gets \$1.75M, does his work here and BNL gets only \$27,000?

Reed: The bulk of the work is done elsewhere. Only a small amount is done here. The monkeys are brought here, irradiated and then taken back to a facility in Massachusetts where they are monitored for years.

Member Mannhaupt: This is a no-brainer people.

Reed: Do you want to have your discussion this evening, or do you want to have the discussion among yourselves at your next meeting?

Member Peskin: I think the bulk of the discussion would have to take place when we have enough time and we are fresh. There is one thing I was hoping to do tonight now that we have this information. There are questions in my mind about the sorts of questions that Brookhaven asks when it's deciding whether to perform this experiment or not. Just because there is a superior scientific proposal, there are still ethical questions, I believe. Have those questions been satisfied?

Member Mannhaupt: I think we should have our discussion now.

Member Henagan: I would like to wait because NASA is getting us additional information, either a person to come or information to be sent to us. We have not heard that side of the argument yet, so it makes sense to hold for that information and the full knowledge of both sides of the argument.

Member Esposito: I think we should have part of it now, go until 9:30 and stop, hold over the other part until next month when we have additional information. Historically animal experiments were conducted here at BNL which have stopped. How long has it been, why did they stop, there is history to this. That's where we got the radiation pits from. I think it's a good question, how does BNL make these determinations and what kind of ethical review do they go through. That is something we would want to know, regardless of this current experiment.

Reed: We may be able to do that this evening. What I'd like to do is, as you have key questions that you want answered next month, would you bring them to the front so we can have a focused discussion next month with NASA and others.

Member Esposito: Are we going to see if we can come to a consensus? What is our goal?

Reed: In the discussion with Dr. Aronson last month, he indicated that the Laboratory was open to any advice that you would like to provide. If it turns out that we can go to a CAC recommendation, that's great, if not, we will do a poll where everyone's input is provided. Is there anyone here that can explain Brookhaven's process for evaluating proposals of this sort?

Dr. Aronson, Laboratory Director, responded: We had a talk last month from Steve Vigdor. He went through the process in detail. It requires a number of reviews by a committee that looks at whether we are respecting the appropriate protocols in the treatment of animals, reviews that look at whether the science that is being proposed makes sense to do with Brookhaven's facilities, whether it fits in with what we can provide, subsequent reviews that look at various aspects of the safety and so forth. Then there are also a number of other things that come into the decision-making process, which ultimately rests with me and the advice that I get from the Policy Council, which is Brookhaven's Senior Management team and that includes public comment and other input that we get. We have received some input from the public. I am hoping to get input from the CAC, whether it's in the form of consensus or a variety of opinions, conversations with other stakeholders that have an interest in the Lab, DOE and others. In the end, I will assemble all this information, present it to the Policy Council and then they will make a recommendation to me and I will make a decision.

Member Esposito: How do you evaluate or value the ethical component in your decision-making process?

Member Mannhaupt: As of last month, it was still going through the process and the ethics are part of that which hasn't been processed yet.

Aronson: That's correct. The CAC wanted to have input so what we are doing here is pacing the decision making process. There isn't a specific way. Everything is taken into consideration and influenced by public opinion, that's where the ethics comes in.

Member Guthy: Is there a timeline as to when a decision has to be made?

Aronson: These experiments, even if approved, wouldn't run for at least a year. We have time to follow the process, but the truth is we are inventing the process as we go along. I don't want to shut out any input. We can be patient and hear from a group that understands what the Lab does and appears to have opinions. I am anxious to hear what the CAC has to say.

Member Mannhaupt: Can we clarify one point of the entire proposal on BNL's end? The monkeys come for one week, are irradiated, go away and they are not coming back to BNL.

Aronson: That is my understanding.

Member Graves: I feel there is a basic disconnect in some of the descriptions. Last month, it was stated there was research on rats that had been done. There were some subtle neurological changes that seemed to indicate there was a need for further research. Subtle neurological changes is not the same as massive tissue damage, blindness, tumors, so I would look for some party, perhaps McLean, who can give us an unbiased idea of what it is that they are looking for in this experiment and what the suffering of the animals will be. We heard plucked from the wild, but they are not plucked from the wild. We heard single isolated, but we are not sure if they are single isolated. To me, there are a lot of points that need to be clarified, or at least factually answered. It seems like we have two opposing views without any middle ground.

Reed: Those are good questions for either NASA or McLean, whoever understands the protocol clearly.

Member Biss: Most of our questions were answered in the paperwork we received from the group that was talking to us tonight. How about the other side? We have heard nothing from

them. Are we going to get information from them? They are saying this research has been done and nothing has come out of it, is that true? There has to be another side to that argument.

Reed: So what's the compelling argument that there will be benefit from this research?

Member Talbot: There is a major difference in radiation doses. Single dose of 3 rem is substantially different from 3 rem given over an 18 month period. Yet this experiment is going to be single dose and somehow NASA or Dr. Bergman is expecting to extrapolate that impact to relate to a multi-year space journey. I am very confused about that.

Reed: So the question for McLean or NASA would be how does a single dose event represent or not represent a long period of exposure for the same total rem.

Member Mannhaupt: We can wait to hear from the other side, but if we have asked McLean and NASA to be available to answer questions and they are not going to be available before next month, we have to make some sort of recommendation to Brookhaven National Lab. These other groups came to us recognizing the fact that we are the CAC and we do give input to BNL. I don't want to see any animal hurt under any circumstance, but I am also of a mind to understand why we do these things. Whether or not it is appropriate for BNL to do this, I don't know. I follow the money and \$27,000 isn't enough to make everybody crazy here. If Dr. Bergman can quantify his proposal, that should be done. If not, why are we even looking at it? If the researcher can't even quantify to NASA and NASA say to us that he is the only one who can do this and X is the result, then it has to be a consideration, but if you can't quantify your own proposal and the agency involved in your proposal can't say, nowhere else on the planet is this going to be done, we have to go forward, then we have to give it serious consideration.

Reed: So the compelling outcome and the compelling reason why it must be done this way.

Member Heil: If Dr. Bergman doesn't respond to us is there a way of getting his curriculum vitae or is he a renowned researcher, has his past work been substantial that his track record is that of serious research. If we can't speak to him for whatever reason, can we get his history somehow to some extent?

Member Mannhaupt: The CAC asked McLean, Bergman, and NASA questions. They should all answer. We should have those emails and they should respond.

Gittell: We found the information at the National Library of Medicine.

Member Bush: Are there any anticipated benefits from this study other than its contribution to manned space travel?

Reed: So the question to NASA or McLean is, are there dual purpose benefits to this that go beyond the primary benefit.

Member Henagan: What is the state of technology with alternate types of research? I am in the pharmaceutical field and we have no viable non-animal models for certain systems. We are not to that state in my field. The neurological system is very complex, so we deal with animal models still. I have served on an animal ethics board and if anyone would like some information on the process and guidelines we follow with regard to the ethic aspect, I am available.

Reed: So that question can go to NASA and McLean.

Member Sprintzen: I want to see an argument that says that as far as they know, there is no other way to obtain this information.

Member Henagan: That was one of the questions that had to be answered on the animal ethics board that I served on.

Reed: Remember that this is a NASA research program, not a BNL research program so the ethics at BNL you would expect to be about using BNL machines, the ethics as a whole are probably a NASA investigation of ethics, and that may be available from NASA.

Member Garber: What are the anticipated health impacts for the astronauts traveling to Mars because presumably what the monkeys will be subjected to is really something that will try to simulate what the astronauts are going to get? Does NASA feel that the cancers, etc. are going to be all the astronauts are going to get? Then the problem is, how are we going to get astronauts? I also believe in the importance of the rate dependence, or what can be tolerated.

Reed: So the question is, are there other issues of representativeness for this research regarding the exposure and effects that will actually occur to the astronauts. I remind you that this study is not really about cancers, but about whether cognitive function will be lost or not in astronauts.

Member Guthy: According to a letter sent to Dr. Aronson the effects of space radiation on non-human primates and their applicability to humans and the availability and validity of more effective and humane research methods, which include sophisticated human simulators such as Desire and Matroshka. Human tissue models, computation models, and analysis of clinical data collected from human astronauts. That's the only thing I have seen so far not involving animals.

Member Mannhaupt: I want to say thank you to PETA and PCRM for coming and recognizing that the CAC has some sort of weight or control that we can make a recommendation of this level to Brookhaven National Lab and its science policies. I want to say thank you to BNL for doing this because this is a step in another direction of the recommendations we usually make to Brookhaven. Also, if McLean Hospital and NASA can't give the CAC the same respect by answering us before the next meeting, I say kill the project.

Member Henagan: Just for clarification, NASA was contacted very late, so they have not been able to respond, but I agree with you, they need to respond.

Member Esposito: This discussion illustrates the willingness of BNL to have input on this and the dramatic transformation that has occurred within the Laboratory over the last decade. I think this discussion is not about ethics at NASA because we are not going to influence them. This is a question of ethics for BNL. This is a question about how the Laboratory is used and what is the justification or the non-justification. For me, this isn't about the science, it's about the ethics of how this facility is used to grow and shape and advance as a culture and a society. That's an important part of what BNL is about and does for Long Island and our Nation.

Member Mannhaupt: I agree.

Member Sweet: I think NASA needs to answer the question of the projected time for a deep space manned mission.

Member Henagan: We'll know on April 15.

Member Esposito: How are we going to afford it?

Reed: That's extremely valid because we have had discussions about what we think NASA and the Nation are going to do. NASA should be able to speak to the policy correctly.

Member Henagan: If anyone is interested in the history of the evolution of the ethics of animal experimentation, there is an excellent book that is also neutral. It's called The Butterfly and the Scalpel. It was required reading on the ethics board and I highly recommend it.

Member Giacomaro: The research is about the animals, but we keep referring back to projects to go to deep space. From what I have seen, there are already things completed for space travel to protect human beings, so why do we need the research.

Reed: Ok, we will pass that question on to NASA also. As you leave, if you have not indicated your preference for upcoming agendas, please mark it on the board.

ACTION ITEM: Contact NASA, McLean Hospital, and Dr. Bergman for responses to the CAC's questions.

The meeting adjourned at 9:45 p.m.

				Jan	Feb (cancelled)	Mar	Apr	May	June	July
P = Present	2010	Affiliation	First Name	Last Name						
ABCO	(Garber added on 4/10/02)	Member	Don	Garber	P		P	P		
ABCO		Alternate								
Brookhaven Retired Employees Association	(Peskin replaced Campbell 09/09)	Member	Arnie	Peskin			P	P		

				Jan	Feb (cancelled)	Mar	Apr	May	June	July
P = Present	2010	Affiliation	First Name	Last Name						
		Brookhaven Retired Employees Association (L. Jacobson new alternate as of 4/99)(A. Peskin 5/04)(Franz 12/09)	Alternate	Eena-Mai	Franz				P	
		CHEC (Community Health & Environment Coalition (added 10/04)	Member	Sarah	Anker	P		P	P	
		(added 12/08) (R. Andrejkovics removed 9/09)	Alternate							
		Citizens Campaign for the Environment	Member	Adrienne	Esposito	P		P	P	
		Citizens Campaign for the Environment (Ottney added 4/02-taken off 1/05 Mahoney put on)(7/06 add Kasey Jacobs)(K. Jacobs off 1/08)	Alternate							
		Colonial Woods Whispering Pines (added 06/09)	Member	Christine	Birben	P		P	P	
		Colonial Woods Whispering Pines (added 09/09)	Alternate	Joan	Milner					
		E. Yaphank Civic Association	Member	Michael	Giacomaro	P		P	P	
		E. Yaphank Civic Association (J. Minasi new alternate as of 3/99) (M. Triber 11/05) (Munson 6/06) (Feinman 2/09)	Alternate	Bob	Feinman	P		P	P	
		Educator (changed 7/2006)	Member	Adam	Martin					
		Educator (B. Martin - 9/01)	Alternate	Bruce	Martin					
		Educator (A. Martin new alternate 2/00) (Adam to college 8/01)(add. alternate 9/02) (changed 7/2006)(Bush 5/09)	Alternate	Greg	Bush			P	P	
		Fire Rescue and Emergency Services	Member	Joe	Williams				P	
		Fire Rescue and Emergency Services	Alternate	Don	Lynch					
		Fire Rescue and Emergency Services	Alternate	James	McLoughlin					
		Friends of Brookhaven (E.Kaplan changed to become member 7/1/01)	Member	Ed	Kaplan			P		
		Friends of Brookhaven (E.Kaplan changed to become member 7/1/01)(Schwartz added 11/18/02)	Alternate	Steve	Schwartz					
		Health Care	Member	Jane	Corrarino					
		Health Care	Alternate							
		Huntington Breast Cancer Coalition	Member	Mary Joan	Shea			P	P	
		Huntington Breast Cancer Coalition	Alternate	Scott	Carlin					
		Intl. Brotherhood of Electrical Workers/Local 2230 (S.Krsnak replaced M. Walker 1/11/07)	Member	Scott	Krsnak				P	
		IBEW/Local 2230	Alternate	Philip	Pizzo					
		L.I. Pine Barrens Society	Member	Richard	Amper	P				
		L.I. Pine Barrens Society (added P. Loris 6/05)(Alayeva off 6/08) (Itriyeva 02/09) (Motschenbacher 6/09)	Alternate	Beth	Motschenbacher			P	P	
		L.I. Pine Barrens Society	Alternate	Susie	Husted					
		L.I. Progressive Coalition	Member	David	Sprintzen	P			P	
		L.I. Progressive Coalition	Alternate	None	None					
		Lake Panamoka Civic Association (Biss as of 4/02)	Member	Rita	Biss	P		P	P	
		Lake Panamoka Civic Association (Rita Biss new alternate as of 3/99) (Gibbons off 1/10)	Alternate							
		Long Island Association (Groneman replace 10/05)	Member							
		Long Island Association	Alternate	William	Evanzia					
		Longwood Alliance	Member	Tom	Talbot	P		P	P	
		Longwood Alliance	Alternate	Kevin	Crowley					
		Longwood Central School Dist. (switched 11/02)(Castro replaced Henigin 6/09)	Member	Maria	Castro	P		P	P	

P = Present	2010	Affiliation			Jan	Feb (cancelled)	Mar	Apr	May	June	July
			First Name	Last Name							
		Longwood Central School Dist.	Alternate	Allan	Gerstenlauer						
		NEAR	Member	Jean	Mannhaupt			P	P		
		NEAR (prospect taken off ¾) (Blumer added 10/04)	Alternate	Karen	Blumer			P			
		NSLS User	Member	Jean	Jordan-Sweet	P			P		
		NSLS User	Alternate	Peter	Stephens						
		Ridge Civic Association	Member	Pat	Henagan	P		P	P		
		Science & Technology (added 1/13/05)	Member	Iqbal	Chaudhry			P	P		
		Town of Brookhaven (Graves made member 6/06)	Member	Anthony	Graves	P		P	P		
		Town of Brookhaven	Alternate	None	None						
		Town of Brookhaven, Senior Citizens	Member	James	Heil	P		P	P		
		Town of Brookhaven, Senior Citizens (open slot as of 4/99)	Alternate								
		Town of Riverhead	Member								
		Town of Riverhead (K. Skinner alternate as of 4/99)	Alternate	Kim	Skinner						
		Wading River Civic Association	Member	Helga	Guthy	P		P	P		
		Wading River Civic Association	Alternate	Sid	Bail						