

**Community Advisory Council
June 14, 2012
Action Items/Notes**

Final

These notes are in the following order:

1. Attendance
2. Correspondence and Handouts
3. Administrative Items
4. BGRR Closeout & Transition
5. Agenda Setting
6. Fukushima
7. Community Comment

1. Attendance

Members/Alternates Present: See Attached Sheets.

Others Present: M. Bebon, C. Bevington, S. Bogart, P. Bond, J. Carter, J. D'Ascoli, N. Detweiler, L. Garber, T. Green, S. Hamilton, M. Holland, M. Israel, S. Johnson, L. Lyons, R. McKay, S. Musolino, A. Nunziata, S. Penn

2. Correspondence and Handouts

Items numbered one through three were mailed to Members with a cover letter dated June 7, 2012. Items numbered four through seven were available as handouts at the meeting.

1. Draft agenda for June 14, 2012
2. Draft notes for May 10, 2012
3. Meeting location change flyer
4. Brookhaven Graphite Research Reactor (BGRR) Project Completion presentation
5. Revised draft agenda
6. Map of Japan highlighting the evacuation zone
7. Map of units 1 – 6 at Japan's Fukushima power plant

3. Administrative Items

The meeting began at 6:43 p.m. Reed Hodgins, facilitator, reviewed the ground rules and the agenda. Those in attendance introduced themselves. Hodgins said that Member Madigan is designated as Karen Blumer's Alternate this evening rather than a representative of ABCO.

Response to question

Reinhold Mann, Associate Laboratory Director, returned to answer a follow-up question on animal research conducted at BNL from last month's Environment & Life Sciences presentation. He said in addition to the rodents he spoke about, the Lab also does research on baboons. There are currently nine of them housed in BNL's animal research facility.

Member Sprintzen asked what the Laboratory does with them.

Mann said they are used in our radiotracer development program for addiction research. They are good models for humans.

Member Shea asked how old they are and what happens to them after they are no longer needed.

Tim Green, Chair, Institutional Animal Care and Use Committee, said the oldest is about 20 years old. They eventually retire to another facility to live out the rest of their natural lives.

Member Chaudhry asked if they are subjected to any physical discomfort.

Mann said none of the approved experiments inflict any physical discomfort to them. They are quite comfortable.

Approval of Minutes

Hodgin asked for corrections, additions, or deletions to the May 10, 2012 draft notes. Member Martin asked for clarification on the comment from Member Chaudhry on page 3. Member Chaudhry said his comment should read, "what portion of DOE engineers are assigned as contract officers", instead of "related to contract officers". The notes were approved as amended with none opposed and two abstentions.

Hodgin said there was a modification to the CAC guidelines adding the ability to have Council Only sessions, a portion of a full meeting where guests and visitors are excused to allow the CAC to discuss and deliberate on membership or other internal council issues.

Member Shea asked who can call a Council Only session.

Member Jordan-Sweet asked if Alternates are included in Council Only sessions.

Hodgin said Alternates are included. He then said it would be added to an agenda during an agenda setting activity, the same as other agenda items. There is a section in the Guidelines that details how items are added to the agenda. It is by majority vote during quorum.

The addition to the Guidelines passed with a 75% supermajority with one opposed and no abstentions.

Member Garber said there was a meeting of the RHIC user group and a representative of DOE talked about funding. He asked for more information.

Peter Bond said it was a cautious talk. Budgets are up in the air. The future of funding for nuclear physics will be prioritized in the next six months. There will be a report in January by the special committee.

Nora Detweiler, liaison to the CAC, said she received an email from Member Murdocco from the Pine Barrens Society. He is leaving the Society and going to work for the Community Development Corporation of Long Island. He wanted to thank everyone for their kindness during his membership on the CAC.

4. BGRR Closeout and Transition, John Sattler, Federal Project Director, DOE Office of Environmental Management

John Sattler said the majority of the physical work has been completed for the closeout and transition of the BGRR. This project represents the completion of the cleanup work that was being done by DOE's Office of Environmental Management with the exception of the stack. He said the three main components were removing the graphite pile, construction of an engineered cap, and removing the bioshield. The next steps are to complete waste shipments, complete project documentation, transition to long-term surveillance and maintenance, and transfer responsibility of the facility from the Office of Environmental Management to the Office of Science.

Member Chaudhry asked if the graphite blocks will be used elsewhere.

Sattler said no, they were packaged and shipped to the Nevada National Security Site for disposal.

Member Doroski asked if the other associated materials used for cooling the reactor, the pile fan tunnel and the spent rod storage canal have been removed and disposed of.

Sattler said yes, they were remediated prior to this project.

5. Agenda Setting

Detweiler said some of the upcoming presentations will be a presentation on energy policy by Gerry Stokes, addiction research by Joanna Fowler or someone else from her group, Tim Green's cultural resources presentation giving an historical perspective of the BNL campus, a basic talk on accelerators, and tools used for nanotechnology by Emilio Mendez. She said to let her know if anything else comes up that the CAC would like to have a presentation on.

Member Jordan-Sweet asked about a presentation on Sherry Johnson's timeline.

Detweiler said we will put that on a future agenda as well.

Member Shea asked for a presentation on biology and cancer research.

Hodgin said we will add that to the list also. He said there will be a series of presentations on Fukushima over the next few meetings. The first one will be tonight and focuses on the Laboratory's role; what the Lab and DOE did to support the response to the event at Fukushima. He asked everyone to hold questions on other topics for the future presentations.

6. DOE response to radiological releases from the Fukushima Dai-ichi Nuclear Power Plant, Steve Musolino, Nonproliferation and National Security Department

Steve Musolino gave the CAC some basic information on consequence management and other background information on the DOE response to the radiological releases from the Fukushima Dai-ichi Nuclear Power Plant. He said 5 rem/yr is the US exposure limit for radiation workers. The average dose for a person from all sources is .47 rem/yr. CAT scans give more radiation. The IAEA guidance is 10 rem over 7 days during a crisis when considering whether or not to evacuate. The guidance number to prevent catastrophic conditions to people and the environment is 50 rem. There is also a 2 rem criterion for relocation in the first year after the emergency phase. He said his plane ride roundtrip to Japan exposed him to .014 rem.

He spoke about the Radiological Assistance Program (RAP), a nationwide DOE program which BNL is directly involved in. He said the real catastrophe was the earthquake and tsunami. During the magnitude 9 earthquake, the 11 reactors in that part of Japan automatically shut down. The emergency generators at the plants provided electric power to maintain the safety systems. Within an hour, the tsunami reached the coastline causing loss of backup power to units 1, 2, 3, and 4 of the Dai-ichi plant. The generator for units 5 and 6 survived because it was on higher land. This station blackout resulted in loss of cooling water and damage to the reactor cores in units 1, 2, and 3. Large radiation releases and hydrogen explosions occurred. There was concern over the spent fuel pool in unit 4. The unit 4 reactor core was completely de-fueled and was in the pool with other spent fuel elements.

The reactors achieved cold shutdown in December 2011 and the activities to stabilize the site are still ongoing. There were fixed radiation monitors around the Fukushima site, which showed the radiation releases occurred in the first week of the crisis and after that, radioactive decay. The majority of the workers were in the exposure range of 2 rem or less. There were a few hundred in the 2-5 rem range and a smaller group in the 5-10 rem range. There were only a handful of people in the 10-20 rem range. They did a spectacular job of managing radiation

exposure. The people that did get above the legal limit were still well within international guidance for operating in an emergency.

DOE turned on its emergency assets the first day of the event. On March 14th, the President deployed a limited RAP response to Japan for the protection of US personnel and US assets. There are many military bases across Japan and about 120,000 US citizens, that are either active service personnel or their dependents, live on these bases. Initially, 33 people and 17,000 pounds of equipment were sent over. On March 17th the first aerial measurements were taken over the plant. Data collected by the US and Japan were combined. There were a large number of ground-based measurements taken to validate and calibrate the measurements taken from the air. The Joint US-Japan Assessment was published in April 2011. Some of the areas that were evacuated have now been repopulated. There are big differences between this and the Chernobyl accident, which affected a much larger area.

Member Shea said it seems from your talk that everything is under control. I am most concerned about unit 4. You were saying that it is stable. The fuel rods were in water and the whole unit is very precarious. I was reading that even a moderate earthquake could take the whole thing down.

Musolino said he is trying to give a sense of what the radiological impacts on the ground are. I am not implying that the plant is stable or unstable. My intent is to give you a sense that as the crisis happened, the fuel pool was not a player in terms of releasing radioactive material. It was from the damaged reactor cores in the other units. There was a lot of hyperbole in the media that made claims about the fuel pool releasing radioactive material. The fuel was not a contributor to the footprint on the ground.

Member Shea said Japan is prone to earthquakes. I think that for us in the US, we have already had radiation from this. There have been high readings in California in cases of tuna that were tested. I believe Stony Brook University is involved in that. Do you know anything about the high readings of strontium-90 in milk in Boston?

Hodgin said we can defer that discussion for one of the follow up presenters who will have the information you are looking for.

Member Shea said she would like to get a copy of Musolino's slides. Can you put together a presentation for us?

Musolino said he will check with DOE because some of the slides are theirs. Some are available on the DOE website.

Member Chaudhry said this presentation covered monitoring of the radiation. My primary interest is in a description of incidents, how the scientists handled this and how effective they were, and what the consequences are. Is there more information available to the public?

Musolino said there are reports that the Government of Japan has made to the IAEA. They are on the Fukushima page of the IAEA.

Hodgin said we will also bring a presentation back to you in the fall on this topic.

Member Sprintzen said the numbers you gave us are for the average dosage that people would get in that area after the initial releases. What would be the likely radiation dose for the people who were living there at the time incorporating all the initial releases?

Musolino said in general when you get 40 kilometers down range the dose from the plume is relatively small. The 2 rem in the first year comes from a very low dose rate occurring over the course of 365 days. If you add in the plume dose, it's a small fraction of that.

Member Sprintzen said it was very high amount initially.

Musolino said the areas where the radiation dose was high from the plume were evacuated before the plume got there, so the high dose rates from that were not accrued by the public. It was the public that remained in place that encountered the diluted plume.

Member Sprintzen asked what kind of area and to what extent will the contamination continue to make it uninhabitable.

Musolino said Japan will have a similarity to Chernobyl in that the chemical behavior of cesium is such that it shortly binds to the soil. So it's going to wash down a few inches into the soil and stay there due to its chemical interaction to the soil. It will migrate down somewhat and there is shielding from the upper layer of soil over it, but then it will go according to the half-life. Cesium-134 has a 2- year half-life and cesium-137 has a 30-year half-life. What you see now is how it will stay into the future, it won't change much.

Member Sprintzen said there was a picture of reactor 4, but not 1, 2, and 3.

Musolino said 4 was the only reactor that had all its fuel in the fuel pool.

Member Talbot said you mentioned this is part of a 90 minute presentation; I'd like to see the whole thing. Do you do it at a Brookhaven lecture?

Musolino said he has given it before. There is a chance I will give it again in the future.

Hodgin said the next time Musolino's presentation is given to the public, we will be sure to notify the CAC.

Member Shea said the area will be radioactive for about 300 years. What about the food?

Musolino said that area will not be used for farmland. The Japanese government has safety standards like we do for managing the food basket in terms of how much added radioactive material is acceptable health wise.

Member Shea said she has read that some countries won't accept green tea anymore because of the radiation. My other concern is that they are burning some of this contaminated area. Won't that spread it around?

Musolino said he is not aware of that.

Member Garber said there were 26 different high magnitude earthquakes coming right after each other and that caused the water to ascend to unprecedented heights. This was a very strange occurrence. How frequently could that happen?

Member Sprintzen said he would like to receive a copy of the slides from tonight's presentation. It would be helpful, because, the DOE website is incomprehensible. What part of the presentation is not available to be shared and why?

Hodgin said the CAC is very interested in getting a copy of this presentation.

Action Item: Send the CAC copies of the presentation.

Member Martin said there were 25,000 fatalities from the earthquake and tsunami. Were there any fatalities from Fukushima?

Musolino said no. There were one or two workers at the plant, but that was not related to radiation injury. No one was injured or killed by radiation overexposure from the event.

Member McManus said when the tsunami hit, how much radioactive waste got into the water and where is it now? Does it have a half-life like it does in the ground or is it shorter because it's in the water and how does it affect the fish and mammals in the water?

Musolino said the tsunami did not cause the radioactive release directly. It caused the station blackout and the inability to cool the reactor. Then a day or so later when the reactors had overheated, then the releases started. The tsunami damaged other ancillary parts of the plant, where radioactive water that came from the reactor core got into other parts of the buildings and then leaked out into the environment and the sea. I don't have any information on how it affected marine life.

Hodgin said if any of the information you have shared with the CAC is not releasable to the public, can you tell us the reason?

Member Shea asked about the melt-through of units 1, 2, and 3. How will it be controlled in the future?

Musolino said he has no information on that. His expertise is in radiation safety, not hardware.

Hodgin said there will be a follow-up presentation on reactor safety and what happened and why. We will make sure that is part of that presentation.

Member Bail asked what the lessons learned were.

Musolino said we had practiced for an event like this for 30-40 years. Drills and exercises are never intended to simulate the exact response. This was very informative on how to do it for real. We generated a lot of data very fast. If there is a next time, we have to be able to cope with very large volumes of data because as soon as you finish analyzing your data and give it to a decision-maker, they ask questions and then you have to get new data. It surfaced all the realities and complexities of a large scale response that cannot be simulated in a drill. We were very prepared before and were very successful, we will be even better prepared next time.

Member Jordan-Sweet asked Musolino what cumulative radiological dose he received during this.

Musolino said there was no recordable dose to any of the DOE responders. We did monitoring of the aircraft crews. They wore TLDs. No one experienced anything unusual.

Member Shea asked if there was full cooperation of the Japanese government. What was the relationship like?

Musolino said we were an independent organization and did not work for the Japanese government. We shared information, but we were there at the direction of the President of the United States. We have a very diplomatic relationship with Japan, which dates back to the end of WWII. If this had been somewhere else, it might have played out differently. Our interactions were mainly through the Ambassador at the Embassy. We shared our data through diplomatic channels. Our role was to protect US assets and US personnel. We were not there to assess the accident for the Japanese government. Our data assisted them in their own decision-

making. The Japanese as a country is well developed with their own capabilities. I am sure it was helpful in the end for them to have us there to assist with gathering data.

Member Shea asked if there were a similar accident in the US, would it have been handled the same way.

Musolino said he can't answer that. He said the DOE's main job is to support the State Department and we would be supporting the affected states that were impacted. We would be doing all the sampling and monitoring, but on a bigger scale.

Hodgin said we can bring some of those policy questions back during one of the future presentations.

Member Chaudhry asked if they now include in the design of power plants, the possibility of a tsunami.

Musolino said he does not know.

Member Henagan said the wave was 20 feet over the break wall because of the magnitude of it. That's what took down the generators.

Hodgin asked if the group would like more information.

They said they would.

7. Community Comment

Member McManus asked what is happening with the tritium plume.

D'Ascoli said there will be a training class for all new members to update them; part of that class will be some environmental history on the plumes.

Detweiler said information was included in the new member welcome packets. The class will be offered over the summer.

Member Sprintzen said he would like a refresher course. Maybe the class could be given in the fall for everyone.

Detweiler said the class will be offered to all existing members that wish to attend also. We would love to have everyone there to share their experiences.

Hodgin reminded the CAC that the next meeting will be in September

The meeting adjourned at 8:59 p.m.

Agenda Topics
February 10, 2011 Poll

Homeland Security – 9
Nanotechnology Developments & Standards – 7 (3/10/2011 - E. Mendez)
Science & Politics – 7
Overview of BNL Land Use Plan – 6
Sustainability – 6
Photovoltaics – 6 (3/10/2011 - E. Mendez and R. Lofaro)
PET/MRI Research – 6
LISE Tour Prior to Completion – 6 (11/18/11 – ribbon cutting)
Business/Lab Integration of New Technologies – 6 (4/14/11 – Walter Copan)
Nano Patterning – 5
Natural Resources Management Plan – 5 (12/8/11 – Tim Green)
Nuclear Non-Proliferation – 4 (3/8/12 – Carol Kessler)
Nuclear Safety – 4
Catalysis & Super Conducting Magnets – 3
Cosmology – 3
Accelerate Long Island (as information becomes available) - 3
Safety Progress – 2
CRADAS – 2
Radio Isotopes – 2
Nuclear Stewardship - 1
Technology Transfer – 0 (4/14/11 – W. Copan)

P = Present	2012	Affiliation		First Name	Last Name	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
		ABCO (Garber - 04/02)	Member	Don	Garber	P	P	P	P	P	P						
		ABCO (Madigan -10/10)	Alternate	Michael	Madigan	P		P	P	P	P						
		American Physical Society	Member	Margaret	Malloy	P	P	P			P						
		American Physical Society	Alternate														
		Brookhaven Retired Employees Association (Peskin - 09/09)	Member	Arnie	Peskin		P	P	P	P							
		Brookhaven Retired Employees Association (Franz - 12/09)	Alternate	Eena-Mai	Franz	P	P	P		P	P						
		Citizens Campaign for the Environment	Member	Adrienne	Esposito	P	P	P	P	P							
		Citizens Campaign for the Environment	Alternate														
		Colonial Woods Whispering Pines (Birben - 06/09)	Member	Christine	Birben	P	P	P	P	P	P						
		Colonial Woods Whispering Pines (Rehbein -11/10)	Alternate	Eric	Rehbein	P	P	P	P	P	P						
		Coram Civic Association (Ziems - 06/12)	Member	Paul	Ziems						P						
		Coram Civic Association (Meade – 06/12)	Alternate	Kathy	Meade												
		E. Yaphank Civic Association	Member	Michael	Giacomaro	P	P	P		P							
		E. Yaphank Civic Association (Feinman - 02/09)	Alternate	Bob	Feinman	P		P	P	P	P						
		Emeritus (changed 3/8/12)	Member	Jean	Mannhaupt												
		Friends of Brookhaven (Kaplan - 07/01)	Member	Ed	Kaplan			P									
		Friends of Brookhaven (Schwartz - 11/02)	Alternate	Steve	Schwartz	P				P							
		Huntington Breast Cancer Coalition	Member	Mary Joan	Shea	P				P	P						
		Huntington Breast Cancer Coalition	Alternate	Scott	Carlin												
		IBEW/Local 2230 (Krsnak 01/07)	Member	Scott	Krsnak	P	P		P	P							
		IBEW/Local 2230	Alternate														
		Individual (changed 3/12)	Member	Karen	Blumer	P		P		P							
		(added 6/12)	Alternate	Michael	Madigan						P						
		Individual – (changed 3/12)	Member	Greg	Bush	P		P									
			Alternate	Adam	Martin	P											
			Alternate	Bruce	Martin	P				P	P						
		Individual – (changed 3/12)	Member	Jane	Corrarino		P			P							
			Alternate														
		Individual – (changed 3/12)	Member	Iqbal	Chaudhry		P	P		P	P						
		L.I. Pine Barrens Society	Member	Richard	Amper												
		L.I. Pine Barrens Society (Murdocco - 04/11, deleted 6/12)	Alternate			P	P	P									

P = Present	2012	Affiliation	First Name	Last Name	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
		L.I. Progressive Coalition	Member	David	Sprintzen	P	P	P	P	P	P					
		L.I. Progressive Coalition	Alternate													
		Lake Panamoka Civic Association (Biss - 04/02)	Member	Rita	Biss		P	P	P	P						
		Lake Panamoka Civic Association (Grandal - 10/10)	Alternate	Bonita	Grandal		P			P	P					
		Longwood Alliance	Member	Tom	Talbot			P	P	P	P					
		Longwood Alliance	Alternate	Kevin	Crowley											
		Longwood Central School Dist. (Castro -06/09)	Member	Maria	Castro		P									
		Longwood Central School Dist.	Alternate	Allan	Gerstenlauer											
		Mastic Park Civic Association (Sicignano – 6/12)	Member	John	Sicignano											
		Mastic Park Civic Association	Alternate	Clara	McManus						P					
		NSLS User	Member	Jean	Jordan-Sweet		P	P	P	P	P					
		NSLS User (Ravel -02/11)	Alternate	Bruce	Ravel	P		P		P	P					
		Ridge Civic Association	Member	Pat	Henagan		P	P	P		P					
		Ridge Civic Association	Alternate													
		Town of Brookhaven (Graves - 06/06)	Member	Anthony	Graves											
		Town of Brookhaven	Alternate													
		Town of Brookhaven, Senior Citizens Office	Member	James	Heil	P	P	P	P	P	P					
		Town of Brookhaven, Senior Citizens Office	Alternate													
		Town of Riverhead (Doroski - 04/11)	Member	Isidore	Doroski		P			P	P					
		Town of Riverhead (Hulme - 04/11)	Alternate	Suzanne	Hulme	P	P	P								
		Wading River Civic Association	Member	Helga	Guthy	P	P	P	P	P						
		Wading River Civic Association	Alternate	Sid	Bail						P					