

NUCLEAR ADVISORY COUNCIL MEETING
Gressette Building, Room # 209
October 13, 2016
1:00 – 4:00

Call to Order – Approval of Minutes James Little

Attendees: Steve Byrne, Carolyn Hudson, James Little, Vincent Van Brunt, and Tom Young

It was noted the July 14, 2016 minutes are approved with the recommended changes of Steve Byrne on pages 1 and 2 of minutes to reflect:

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Mr. Byrne: ... Just about the entire construction work force rolled over from CBI to FLUOR so they are all FLUOR employees. It is probably the first time that I have ever seen construction craft cheer when a management team was introduced. The construction craft view this as a positive move.

Captain Cross: How about the NRC inspectors, when do you get them for the new builds?

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Mr. Byrnes: ... Their guaranteed substantial completion date for us contractually is August 2019 for the first unit and 12 months later for the second.

Mr. Byrnes: ... We have converted three other coal plants to natural gas; one in North Augusta and two here at the dam at Lake Murray in Columbia.

Mr. Byrnes: ... The thing that Fluor brings that others didn't is a tie to the state. ... We have had a lot of business with them recently in our fossil hydro group to include putting in scrubbers.

Westinghouse Fuels Update, Michele Dewitt, Interim Senior Vice President, Westinghouse Nuclear Fuel (Slides available here <http://admin.sc.gov/node/1543>)

Question from Council:

Ms. Dewitt: Began by introducing Mr. Bruce Phillips, Interim Vice President at the Columbia Westinghouse Site.

Dr. Van Brunt: Is there any radiation monitoring in this scrubber?

Ms. Dewitt: Previously no; as part of our future corrective action we are doing gamma scanning.

Dr. Van Brunt: Do you know the isotonic content of uranium that was removed?

Mr. Phillips: The entire plant is licensed at below five weight percent.

Dr. Van Brunt: What fraction is 235?

Mr. Phillips: Less than 5%. Our nominal is 4%.

Dr. Van Brunt: So the max is going to be of the 87 is 5% of that.

Mr. Phillips: Yes

Dr. Van Brunt: Wouldn't this have normally been caught with the evaluation of your MOC procedures and what kind of a schedule do you run your HAZOPS on; because, you are usually talking about a three year schedule so I was wondering if your schedule was different? Management of change should have caught what was going on here so where was the hole in the management of change procedures?

Mr. Phillips: Management of change being configuration control?

Dr. Van Brunt: No, management of change as in one of the requirements of the fourteen points for basic safety.

Ms. Dewitt: To my understanding and understanding from the root cause, the failure was downstream of the scrubber when we were making some changes in equipment in the ventilation system. Understanding what the impact was as it went on. So what seemed to be the fundamental common issue in a few of the failed barriers was around assumptions and challenging assumptions. People had some general assumptions that something would behave a certain way, or not, or behave as it always had instead of saying what's the worst case scenario or do I need to make more verification of that assumption. So the change processes and the reviews of procedures were all happening. It was the figuring which it was happening and the challenge and the conservative bias.

Dr. Van Brunt: But that should have been caught with the management of change. A standard management of change documentation should have caught that.

Mr. Little: One way of framing this also is root causes and direct causes was the change made downstream that caused the excess accumulation. Direct cause in what we are saying is you made these changes to the plant; and then you answered these are the assumptions that someone said the effects would be benign.

Ms. Dewitt: So in the root cause, that was what was said - we were not managing change appropriately.

Dr. Van Brunt: There is a standard way of doing this it is OSHA 1910.119. There is actually a formal way of doing this.

Mr. Phillips: Correct

Dr. Van Blunt: So how different was your procedure versus the formal way of doing this?

Mr. Phillips: I don't know how different, I know that this scrubber was put in place in 2002. When we changed from the old scrubbers and HEPA filter systems that configuration that's part of this root cause we are talking even back as early as 2002. When we changed the process from the old scrubber and HEPA systems to this scrubber system in 2002 we had configuration control procedures that we followed but now looking back we said we had made a mistake there. I can't answer specifically how our procedures differ from the OSHA procedures; I would say they are in-line. But that was in 2002.

Dr. Van Brunt: But 2002 was way after the OSHA procedure went into effect in the 1990s.

Mr. Phillips: Correct

Ms. Dewitt: So can I take that as an action?

Dr. Van Brunt: So was there any analysis of looking at your procedures versus the industry standard? That's a management issue of how are your safety procedures different from chemical industry or basically anyone else?

Ms. Dewitt: I think that's a very good question. Thank you for that question. I am going to ask that myself now. We will get back with you if we could with a response.

Senator Young: It is my understanding that there is a Federal investigation that has been going on.

Ms. Dewitt: The Nuclear Regulatory Commission?

Senator Young: Yes.

Ms. Dewitt: Yes the Nuclear Regulatory Commission.

Senator Young: Has that been completed?

Ms. Dewitt: Yes, the Nuclear Regulatory Commission following their protocol that they do when we made this report; an augmented inspection team is what they call it. They come and do an inspection and from that they have identified some deviations from requirements and we did have a public meeting on that several weeks ago. We are waiting their final report. They shared in that meeting some initial feedback and we're waiting on their final report and from that there will be some enforcement

process. So as of yet we haven't received that final report. They told us they thought in October sometime but we have not seen it yet. And then out of that there could come some enforcement.

Senator Young: Is there anything substantially different in what they preliminarily reported?

Ms. Dewitt: No, their report is very close to what we've said in the root cause and it is completely in line with what we are doing in recovery and our corrective actions.

Senator Young: After the final report comes out is that something you can provide to us?

Ms. Dewitt: It is public information.

Senator Young: Yes, but I am not going to be looking every day to see when it is posted.

Ms. Dewitt: Sure we can provide that.

Senator Young: You can send to the staff and then they can distribute to the committee.

Ms. Dewitt: Yes.

Senator Young: And then the other question I had on that second bullet, on page 4, it says, "area of operations stopped and the U.S. NRC notified". One of the press articles I read before the meeting today, it was noted in the article there was a delay or about a 30 day period between the time this was determined and the time the NRC was notified. Why was there such a gap in time between the time it was discovered and the time the U.S. NRC was notified?

Ms. Dewitt: It mentions here that in May during this clean-out is when we first found material. What occurred was the material was found but it was not recognized both how much uranium was actually in that material and secondly what the relationship was to the safety analysis limits for that. So over time when that material was analyzed I would say it was not done with expediency in the analysis. So by the time that material was analyzed, and then it was communicated and shared with the part of the organization that had the knowledge specifically about the safety evaluation; only then were the two pieces of information together to say we had an exceedance and then that was when the report was made.

Senator Young: Was there already a shut-down in that time or was there people working and potentially exposed to this higher level before the knowledge of the material and the knowledge of the safety limit were identified?

Ms. Dewitt: So was it shut-down? No, it was operating. I think there was a shut down for some additional cleaning for a period of time but in general it was operating.

Mr. Phillips: We restarted early June and on July the 13th or 14th that's where the two pieces of information was connected and then we notified the NRC. So when we realized we had a problem we contacted the NRC.

Mr. Little: The material had already been removed from the scrubber during the maintenance salvage.

Mr. Phillips: That is correct.

Mr. Little: So you didn't have a period where this was still on the roof. You removed this material, did this chemical analysis, and said what do we got in here, what is the uranium content. When that analysis finally came back it took some time to get the criticality safety evaluation. We might have exceeded that limitation so let's notify the NRC; but, there was no material left in the scrubber after the maintenance salvage.

Ms. Dewitt: No, that's not the case.

Mr. Phillips: Yes, the inlet transition piece had been cleaned. The scrubber body had not been cleaned. The scrubber body had been partially cleaned. But we had not taken all the tellerette packing out and gotten to the floor of the scrubber. The inlet transition has a max limit and the scrubber body has a max limit. The inlet transition is the piece that we found that we had exceeded the max limit. That was the first thing we had found.

Mr. Little: That material was removed?

Mr. Phillips: That was removed.

Dr. Van Brunt: What about the bottom?

Mr. Phillips: That was removed on July 28th.

Dr. Van Brunt: And the tellerettes are made out of what?

Mr. Phillips: Plastic. They are there to increase the surface area of the water as it flows through the scrubber.

Dr. Van Brunt: What about radiation monitoring on one side of the HEPA filter?

Mr. Phillips: Yes, we checked the HEPA filters.

Dr. Van Brunt: Now with your design changes do you have a radiation monitor there?

Mr. Phillips: We are having our portable monitors go and check specific areas of the scrubber once it restarts as part of the restart. So we will have trending of the gamma readings.

Dr. Hudson: I know radiation is the main concern, but, did any ammonia or fluorine get out during this time?

Mr. Phillips: No ma'am.

Dr. Hudson: So how do you continue to clean up the plumes outside or has that been put aside for now? The stuff in the ground water unrelated to this.

Mr. Little: Are you talking about the ground water monitoring?

Dr. Hudson: Yes, the ground water monitoring.

Mr. Phillips: Yes ma'am.

Dr. Van Brunt: Did any of your workers get close to their exposure limits?

Mr. Phillips: No sir.

Dr. Van Brunt: How come you haven't told the public that no one even came close to this exposure?

Ms. Dewitt: That may be a better way that we should word it. So thank you for that. We have said there has been no safety impact to employees.

Dr. Van Brunt: Yes, but that is sort of vague and an exposure limit is one of those things that we can agree to and if you say no one even got close to an exposure limit then it's clear.

Mr. Phillips: That's a good way to put it, but no one came close to an exposure limit.

Dr. Van Brunt: Thank you.

Dr. Van Brunt: One of the things that came out of BP Texas City is an understanding at least by the Chemical Safety Board that culture; this is 2005, played a significant role. The entire notion of Risk Based Process Safety as an approach follows that incident. I was wondering whether there was any liaison to the rest of Westinghouse to look at what was going on with particularly the chemical industry, the Center for Chemical Process Safety (CCPS).

Mr. Phillips: We do process hazards analysis and we constantly look at operating experience inside our industry and outside of our industry. Our main method is the different ways to do the process hazards analyses. Obviously I didn't answer your question.

Dr. Van Brunt: Yes, either you are aware of what is going on in the chemical industry or you haven't.

Mr. Phillips: We follow RMP, we follow process safety management.

Dr. Van Brunt: Yes, this follows all of that.

Mr. Phillips: Any chemicals that we have on site that are required, that meet that regulation; yes sir, we follow those regulations. We have procedures.

Dr. Van Brunt: IEC 61508 and IEC 61511 are the national standards.

Mr. Phillips: I do not know the numbers off the top of my head.

Dr. Van Brunt: Ok, you are providing fuel to many other countries and so I was just wondering if you knew what -

Ms. Dewitt: I think unfortunately, I am sorry we just don't happen to have that. I don't personally have that knowledge but I can check. I can tell you that obviously we comply with all requirements. I think the question of how we implemented more recent lesson learned that is something we can come back and give you an answer on; but absolutely we are complying with all the requirements.

Dr. Van Brunt: Thank you.

Barnwell Extended Care Update, Allyn Powell, ORS, Nuclear Programs Manager
(Slides available here <http://admin.sc.gov/node/1543>)

Question from Council:

Senator Young: On page 7, the Decommissioning Trust Fund (DTF), it indicates that is \$0.00 as of this year, is that correct?

Ms. Powell: Yes, it is \$0.00 as of 2016. I think the last expenditure was made out of it was February or March 2016. The decommissioning of the small portion of the site expenditure is remaining to be paid out of the Extend Care Maintenance Fund at the end when we reach that point and statute does allow that. It was just because of a statute requiring the DTF be completely exhausted before we start paying out of the Extended Care Maintenance Fund but that had to be done.

Senator Young: Do you know if there is any discussion about changing the amount that Chem-Nuclear remits per cubic foot of waste since it was last updated in 1986?

Ms. Powell: I know the context of the two studies was discussed in 2002 and in 2008. Because of the findings that were in the studies the amounts were not adjusted at that time. We have some limited ability to update the 2008 study. Now that we have a portion of the site that is fully closed and we see what our actual expenses are over the next couple of years it would probably be a good idea to take a closer look at that.

Senator Young: Who does that? Does the General Assembly do that or does somebody from your office do that?

Ms. Powell: It would be a combination of DHEC, SFAA and our office that would do that.

Senator Young: What would prompt you to do that? Would someone have to request that you do that like this Committee?

Ms. Powell: A request that we do another study?

Senator Young: No, to look and see if whether or not the \$2.80 – I just know a lot of stuff has changed in costs since 1986 because of inflation. The cost of the extended care maintenance of this site is substantial more than it was in dollar amounts in 2016 versus what it was in 1986.

Ms. Powell: Yes sir that was the purpose of the 2002 and 2008 studies that sort of examine the adequacy of the fund to see if the amount of the fund needed to be increased or adjusted. At the time of the studies it was concluded the amount and interest it was retaining were going to be adequate. So, there would need to be another study probably to prompt us to do that again. We don't like to do them often as they are on the expensive side. It has been 2008 so probably around 2018 would be a good time to look at that. I can certainly talk to Mr. Dukes Scott about that. It is actually something I have been talking about with him for about a year now. The site in 2013, they finished all the decommissioning activities and closed portions of the site, is only paying institutional costs. By around 2018 we will have around five years of good data of what it actually costs when the site is closed. I think that would give us a very good study.

Senator Young: If we wanted to inquire further about this we could talk with you and Mr. Dukes Scott?

Ms. Powell: Sure, we would be happy to talk with you about it. I would be happy to go over the URS study with you or provide you with a copy of it. We have a calculator where we can do limited permutations of that but it's limited. I will also say the assumptions in the study if you would look at the assumptions versus what our actual expenses have been the studies assumptions have been high.

Senator Young: Ok, thank you.

Mr. Byrne: The 2017 numbers on slide 8 for the Extended Care Maintenance Fund are projections I would assume?

Ms. Powell: No that's to date through September.

Mr. Byrne: So this is fiscal years, we are not projecting significant shortfalls; it's just a partial year.

Ms. Powell: Yes.

Mr. Byrne: Can the Extended Care Maintenance Fund be touched by the General Assembly should they need funds for some reason, can they take money out of this fund?

Ms. Powell: They have attempted to do that in the past. The Extended care Maintenance Fund is a little different than the Decommissioning Trust Fund in the way the trust agreement is set up. I will say that the last time that happened was around 2002 and there was such an outcry that I think a lot of people still remembers.

Mr. Byrne: You don't show any disbursement, at least on this chart, until 2016 there was some. I wouldn't call a disbursement, but it was money that the Legislature took.

Ms. Powell: They repaid it.

Mr. Byrne: They did repay it but the money was taken out in the 01/2002 time frame.

Ms. Powell: Yes, it was in 2002.

Mr. Byrne: When was it paid back – the following year?

Ms. Powell: I believe it was 2004. I would have to double check that but I believe it was in 2004.

Mr. Byrne: But the way this care fund is set up the Legislature could, if they ran into a money crunch in the state, take money from this fund.

Ms. Powell: As with many other Trust Funds they are not legally prevented by proviso. Attempting to do something I think the last time they did that there were a number of legal questions that were raised that were never fully answered because they paid it back.

SCDHEC, Shelly Wilson, DHEC, Permitting and Federal Facilities Liaison
No Slides Used

Question from Council:

Mr. Little: I have heard this dispute resolution process discussion before - we are elevating it. So what altitude are we at right now?

Ms. Wilson: At the bottom level. So it's the initial management level for clean up at DHEC and at EPA and at the site. They will continue to talk unless one of the parties does not think they are making progress. If that happens, it can be elevated. The next level would be at the Bureau Chief level which is a higher management level at DHEC and a corresponding level at EPA and another level at the site. Again, if that isn't resolved it would go up to the highest level which is our DHEC Director and the EPA overall Administrator and the Secretary of Energy.

Mr. Little: So how active do these discussions happen?

Ms. Wilson: It is not prescribed. We have had two discussions, one yesterday and the other I believe was one or two months before. In the past three months we have had two.

Mr. Little: Thank you.

SRS Budget Update, John Lopez, Director, Office of Integration and Planning, DOE-Savannah River
(Slides available here <http://admin.sc.gov/node/1543>)

Question from Council:

Dr. Van Brunt: Are there any costs associated with possibly changing contractor?

Mr. Lopez: Yes, there is a transition cost when we bring a new contractor in, we always have a transition cost. I believe we have set aside about \$5M in FY-17 to transition to a new contractor.

Dr. Van Brunt: So where is this shown?

Mr. Lopez: That is part of this for FY 2007 645 (NOTE: shown on slide 3 – PBS 14C).

Dr. Van Brunt: Any word on when we will know who the new contractor is or the continuation is?

Mr. Lopez: I believe the schedule for that is for the March time frame for the announcement to come out on who the next contractor is. So we are currently evaluating the proposals right now, then in the March/April time frame we will make a decision.

Dr. Van Brunt: Thank you.

Mr. Little: You mentioned earlier on combining the two PBSs into one (NOTE: footnote 1 on slide 3); you said it is more efficient, does that give you more flexibility as far as not being able to move money?

Mr. Lopez: Absolutely. Currently if I want to move money from PBS 12 to PBS 11C I have to go to OMB and ask permission to do that. Now since it is all in one PBS I don't have to do that. That is Pat McGuire's organization and it gives him a lot better flexibility on how he can spend the money within the nuclear materials program. As you can see the House did not go along with that. They still have it as separate PBSs. The Senate did go along with the new structure. We are hopeful that when the final spending bill is passed we go with the Senate version or President's version that allows us to combine those PBSs.

Senator Young: Where does the Community and Regulatory support money go?

Mr. Powell: Primarily it goes to payment in-lieu-of taxes. We don't pay real estate property taxes so Aiken, Barnwell and Allendale counties get the majority of that. Also, there is money in there that funds DHEC and EPA resources as well. I believe \$8M to \$9M goes to payment in-lieu-of taxes.

Dr. Van Brunt: Is there revenue from trees?

Mr. Powell: Yes, the Forest Service manages the tree forestation production at the site. They use that to offset their costs of their operations at site. They maintain all the secondary roads at the site and also all the control burns. They use the revenue from the tree harvesting to help offset their costs. The Forest Service is under a different appropriation and they get their money through a different appropriation.

Dr. Van Brunt: Thank you.

Pu Blend Down at Savannah River Site, Patrick McGuire, Assistant Manager for Nuclear materials in National Laboratory, DOE

(Slides available here <http://admin.sc.gov/node/1543>)

Question from Council:

Senator Young: You said it is called non-MOXable plutonium, is that what you said?

Mr. McGuire: That is true. We currently have it in the K-area facility and I don't want to talk about overall quantities or anything like that. We have material that is suitable for Mixed Oxide Fuel (MOX) as is; so it could go if MOX was up and ready. We have a portion of the plutonium material that is suitable for MOX. We have another portion of the material that requires some type of processing and that's what we are doing in our HB line facility where the National Nuclear Security Administration (NNSA) has invested nominally \$20M to process and produce plutonium oxide material that would then be suitable for MOX. Some of the material that we have in K-area needs to be processed and then it can be shipped to MOX. There are some materials, up to about 6 metric tons, that's not suitable for MOX. So even if MOX was operating today the Office of Environmental Management still needs to disposition this material that just is not suitable for MOX. It has impurities, or would not be cost effective to process it to produce MOX quality feed material.

Senator Young: So this is not an alternative to MOX; this is a way to disposition plutonium that MOX would not be able to address if MOX was operational?

Mr. McGuire: That is correct. This could also be an alternative. You may have heard from the National Nuclear Security Administration called a diluent disposed alternative. What NNSA calls diluent disposed if, I don't want to get into too much MOX discussion because that's not what I am here to talk about, it could be used as an alternative for MOX if that decision is made. It would be very similar to this process that we are using for our non-MOXable plutonium. You could use the same process using the same type of glove boxes, the same mechanical mixing, and things of that nature to disposition MOXable material if that decision is made. Regardless whether MOX goes forward or not we need to disposition the non-MOXable material and that's what the environmental impact statement allowed us to do to begin down blending and position this material in a condition to be ready to be shipped out of this state and to WIPP.

Senator Young: How long will it be once it is put into the containers to where it can be shipped and how long will it be before it is shipped to WIPP?

Mr. McGuire: I am not really going to speculate on when WIPP will reopen. They are going through their extensive recovery actions and they are in the process of starting an operational readiness review. When that date is I cannot comment on that. It will be open when it is ready to be opened. But this material will then go into the queue of all the material within Department of Energy (DOE) that needs to go to MOX. Shelly talked about the legacy transuranic waste that we have at the Savannah River Site, 600 cubic meters that will go into the queue, and the material that Idaho has. Headquarters will identify the priority and time of when that material goes to the Waste Isolation Pilot Plant (WIPP). It is going to be a complex wide decision making process when this material goes in as compared to others. I can't comment on when that's going to be, is it going to be first, is it going to be last, that is a decision headquarters will make.

Senator Young: Mr. Chairman, I just want to put on the record that a request was made of the NNSA to attend this hearing today and give a presentation on MOX. It is actually on our agenda and it is

indicated as a TBD item. The request was made both Karen Patterson, Chair of this committee, and me, I think over two months ago. We were informed in the past couple of weeks that they would not be attending. I just wanted to put that into the minutes.

Mr. Little: Just let me add to that. I spoke with Karen Patterson about this before when she briefed me before I came here and the explanation was due to the flux in our friends across the water in Russia with the whole treaty agreement. They said we are just not ready to talk.

Senator Young: I want to add to that in that I don't think they ever solidly committed to coming if I remember even before that happened. So I just wanted to make sure that's clear for the record.

Mr. Little: I add this down blend activity is pretty tedious. I did the math and 6 tons is a lot of years to do this can-by-can.

Mr. McGuire: Yes.

Mr. Little: So I don't think you can do all the plutonium this way.

Mr. McGuire: It will take quite a while. Yes sir we have additional capacity with the glove box. Half a ton a year for 6 tons is twelve years. The other thing is we have space within K-area to install additional boxes if that decision is made with additional ventilation systems to support this. Obviously that would take a capital investment and again that is something the department would have to consider as to how much do we want to invest, at what rate do we want to get it out of this state. So we are basically saying we have the technology available, it is proven on how to disposition plutonium, and you are right this would take quite a long time at this current capacity.

Mr. Little: Thank you.

Senator Young: I do want to also say that the NNSA has reached out and indicated to me that they are willing to have a conference call to answer questions that I personally may have at a date to be determined in the near future.

Mr. Byrne: Based on a previous discussion we had on the scrubbers, what kind of ventilation systems are on the glove boxes and do you have scrubbers associated with them?

Mr. McGuire: We do not have scrubbers; we have a HEPA filter ventilation system. Again, this is a dry processing so there are no chemicals. So it's just a HEPA system ventilation system safety significant – that's what we have.

Mr. Byrne: Thank you.

Dr. Van Brunt: But we have great monitoring.

Mr. McGuire: Yes sir.

Dr. Van Brunt: I wanted to make that clear. You show on slide 10 you mentioned (the K-Area Plutonium Inner Blend Can Mixer) you do it 10 to 15 times. Do you know how that number or range was determined?

Mr. McGuire: Yes sir. We basically took a surrogate of both inert material and the plutonium. Basically we had 150 grams of yellow sand and we mixed it with 1,000 grams of black sand, put it in the mixer, turned it 10 times as it uniformly mixed and we did that several times to basically establish a base-line that says 10 to 15 times is what it takes to get a very homogeneous mixture. That's one of the reasons we pulverize or size reduce any clumps to make sure it is a very homogeneous mixture consistent with the inert material so that when we mix it 10 times; and that's also why we load the blend cans only to a certain amount so we can get enough air space, we are able to get that effective mixing. So we tested it and determined through surrogate material what the appropriate number of cranks was needed to have it well mixed and homogeneous.

Dr. Van Brunt: The number for liquid/liquid systems where you have two layered liquids the patents are eleven.

Mr. McGuire: I did not know that so thank you for sharing.

Dr. Van Brunt: It is very consistent with what your power experimentally.

SRNS Update, Stuart MacVean, SRNS President and CEO
(Slides available here <http://admin.sc.gov/node/1543>)

Question from Council:

Dr. Van Brunt: On the repackaging and certification for WIPP anything associated with the new shipping requirements that you see as an issue?

Mr. McVean: We have not completed the full review of what the implications of the new requirements are to the waste streams that we have already certified. We are going through that process now. We have not come up with anything that we think would damage the current certification that we've got on those containers but we really need to get the WIPP Design Authority in here; let them take a look over our shoulders to make sure they agree with the outcome. We are not through the entire population, we are working on it now. That new set of criteria came out, I want to say early August, so we are a couple of months into the review.

Dr. Van Brunt: Ok, so you haven't found anything yet.

Mr. McVean: No we have not found anything yet, at least from our stand point of view.

Dr. Van Brunt: Thank you.

Public Comments, Tom Clements, Director, Savannah River Site Watch

Good afternoon, my name is Tom Clements, I am the Director of the small non-profit organization called Savannah River Site Watch. I just wanted to make comment on a number of issues, a couple of which were discussed today. To expound a little bit the Canadian liquid high level waste, this is a byproduct of medical isotope production, in the Canada Chalk-River Labs. My organization was part of the lawsuit that was brought to the filing requested that the judge order Department of Energy prepare an Environmental Impact Statement (EIS) on the shipment. No EIS was done; a supplemental analysis was prepared in secret with no opportunity for the public to comment. A lot of people along the shipment route, both in Canada and the United States, were concerned about the shipment. Representative Brian Higgins, who represents the Buffalo, New York area and Senator Kirsten Gillibrand have gotten involved too and they have requested that an EIS be done. But for me a big part of requesting that EIS was that the option of down blending the hydrogen enriched liquid waste and the tank in which it is stored be considered. DOE has not analyzed the option to denature that material in-place and then solidify it so the Canadians manage it. It was quite ironic and this was mentioned in the court filings that DOE and NNSA did allow the Indonesians to apply the same down blending procedure to a much smaller amount of liquid high level waste that was left over from medical isotope production and they have completed that operation in Indonesia. So, as I have been saying for years now DOE needs to analyze the data down blending option and hopefully the judge will require that as a part of the EIS process. You will be aware that there was a move by some entities to bring graphite spent fuel from Germany from the Arbeitsgemeinschaft Versuchsreaktor (AVR) and Thorium High-Temperature Reactor (THTR) reactors. We talked about this many times before. The final environmental assessment prepared by DOE; the release of that has once again been delayed – no surprise there. The Citizens Advisory Board of the Savannah River Site took a position in July that the material not be imported while the option to import the material or export the material from Germany is still on the table over there. There has been quite a big discussion about the viability of the US option and I just obtained a big packet of information in German from the technical agency of North Rhine Westphalia (NRW), the state in which all this material was stored and they are raising a lot of technical questions about the shipment to the United States as well as legal. I am still of the opinion that it is illegal to export this spent nuclear fuel to the Savannah River Site. We will see how that plays out and if DOE ever issues the final environment assessment on continuing to do research in the processing of material.

Two more issues. First as you may have seen in the media an entity called the Spent Fuel Reprocessing Group sent a letter to the Nuclear Regulatory Commission, I think it was dated June or July; I don't have it with me, saying that they were going to submit a proposal to store spent nuclear fuel from nuclear

reactors in the state of South Carolina at the old Barnwell Reprocessing Site. The letter also said that the intent was basically to reprocess this spent nuclear fuel. The person who proposed this has mentioned reprocessing in television interviews. So a number of groups including the South Carolina Chapter of the Sierra Club, League of Women Voters, my organization – the Savannah River Site Watch, came out against this idea. Shuffling spent fuel around within the state of South Carolina doesn't do anything to get the material out of the state. There is absolutely no funding for a reprocessing plant, no demand for reprocessing, there is no demand for mixed oxide fuel which would come from any plutonium separated from spent nuclear fuel from South Carolina reactors and reprocessing as we know as we can see from Savannah River Site leaves behind a huge mess a large volume of high level nuclear waste. The components of this coming to the media have not explained how the high level nuclear waste would have to be contained in tanks if it ever got to the point it was any reprocessing and how that material would be removed from the state of South Carolina. So I don't think this proposal is going to go anywhere. I wrote the NRC yesterday and gave them some of my concerns about it and I received a couple of responses from them today. Documents on that are posted on srswatch.org. Now on the MOX project, to conclude, as we all know the MOX program is a complete disaster. I have been raising red flag after red flag after red flag with this advisory council over the years. Now I don't know what the records reflect but you're expressing concern over to DOE about how this project was running off the rails. But it has been quite apparent for a long time that the costs were sky rocketing. NNSA released a report with an analysis about the Corps of Engineers a little over a month ago saying that the cost of the project was in their opinion, in construction only in the MOX plant, was about \$17B and they included information in that report that the contractor itself says that the cost is \$10B for construction. I went back, reviewed the appropriated figures, and about \$5B had been spent and what do we have? We have a facility according to DOE that is 28% complete and according to figures provided to DOE by contractor the construction, just the construction, is 48% complete and this does not include start up and operation. Personally I think the facility cannot ever be completed. I think the design is faulty. There are so many construction problems that are going to have to be corrected. I personally can't see it and people who still advocate to the media and other places that the project must go forward have presented no funding viability for the project. They have not said how the construction and design problems could be overcome, how the facility could be started up, how it could be funding at a billion dollar level for over 20 years of operation. So I keep seeing a lot of statements in support for MOX from politicians, particularly Lindsey Graham. But they never say the project can be carried out. Initially the construction was about \$1.7B according to what year you pick. Now if it is \$17B according to NNSA it simply is never going to get completed. We have heard about the down blending option and DOE is looking at a larger facility than Mr. McGuire talked about and there may be some decision coming down on that soon. I felt all along that the immobilization of the plutonium and high level waste was the way to go but DOE killed that option back in 2002. I think we can see the folly of this program. It's been protected from accountability by certain politicians, particularly Senator Graham, for far too long. We need an investigation into waste, fraud, and abuse and mismanagement of DOE and NNSA, Shaw who was replaced by CB&I and now it's CB&I AREVA MOX Services, and some of the main contractors including the HVAC contractor Superior Air Handling. There needs to be an investigation down the line as to how this project ran into the ditch and the politicians in DC need to step aside and allow this to happen and unfortunately it has not happened yet but I hope that's going to happen in the near future

as we try to determine how this thing went so far off the rails and we are left with a little bit of a down blending for a plutonium disposition program. It is shameful it should have never happened like this and we need to have those investigations to go forward. So I will leave it at that and if anyone has any questions I would be glad to answer.

Senator Young: I am sure you are aware of this but this panel doesn't have the ability to investigate the MOX project.

Mr. Clements: No I don't think you do but congressional agencies: GAO, OMB, and congressional panels itself. I think you can influence it. I know Senator Graham made a comment about why hasn't anybody been in jail over this but I think it goes far deeper than what he was commenting about and there are a lot of contractors; I hear stuff all the time about the contractors and installation problems but I think there is a lot to investigate. We need to use this as a learning session for why a big project like this failed and why DOE cannot manage projects. I would mention I think DOE is nibbling around the edges of trying to peel back some of the contracts. For me it's the workers who are going to take the brunt of this and I have the most sympathy with the 1,500 workers at the project and what's going to happen to them and I am hearing again they are leaving. I have heard one thing DOE has put into place is, and I raised a lot of concern about this, in their drug testing of the MOX workers I heard a lot of rumors that there was fake urine being used and samples that were being carried in there that they were using. I understand that DOE or NNSA that the contractor may be requiring hair follicle testing which is much more reliable. The point may be moot at this time but we will see if that happens. Somebody needs to do this investigation but it's not happening. The last time I talked with GAO they were not looking into it.

Senator Young: Mr. Chairman, we had requested NNSA come today as you heard me state earlier for the record and they did not come.

Mr. Clements: Well, I made this comment it's typical of NNSA but I would agree Mr. Putin may have thrown some things in disarray here but in the agreement with Russia I would add that Article 9.6 does say that if money is not appropriated to carry out the programs on either side then that is a reason for it not to go forward. Congress has never funded this project in the last years in a viable level. So I think Congress is actually caused NNSA to exercise Article 9.6 that it is not viable because the appropriate funds have not been there. So it is not only what Putin has done I think Congress has also basically aggravated the agreement with Russia.

Mr. Byrne: Thank you.

The next meeting of the Nuclear Advisory Council will be held on January 12, 2017.

Meeting adjourned