DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Public Meeting on Board Recommendation 2019-2, *Safety of the Savannah River Site Tritium Facilities*

October 28, 2019

1:00 p.m.

Defense Nuclear Facilities Safety Board

625 Indiana Avenue, NW

Washington, DC 20004

>> HAMILTON: Good Afternoon. My name is Bruce Hamilton. I'm the Chairman of the Defense Nuclear Facilities Safety Board. I'll reside over today's public meeting. I now call this meeting to order. I would like to introduce my colleagues on the board. To my left is Board Member Jessie Roberson. To my right, Board Member Joyce Connery. We three constitute the board. The Board's acting General Counsel, Mr. Joseph Gilman is to my far right. The purpose of today's meeting is to provide an opportunity for the Department of Energy National Nuclear Security Administration to brief the board on their reasons for rejecting board Recommendation 2019-02 regarding the safety of the Savannah River Site Tritium Facilities and to discuss with us the actions completed, underway or planned to provide adequate protection of Public Health and Safety. This afternoon's meeting was publicly announced on October 17th, 2019 on the board's public website and subsequently noticed in the Federal Register on October 22nd, 2019. This concludes our opening remarks. I will now turn to my fellow board members for the opening remarks. Ms. Roberson.

>> ROBERSON: Thank you, Mr. Chairman. And I want to thank the participants, the briefers today. While the department in its response to the draft and final recommendations didn't identify any information that we didn't consider in our deliberations, I look forward to hearing why the department believes the recommendation is unnecessary. I appreciate the department's request for this briefing and I look forward to listening to what they desire to communicate. Thank you.

>> HAMILTON: Thank you, Ms. Roberson. Ms. Connery.

>> CONNERY: First of all, I, too, want to thank Mr. McConnell, Mr. Johnson and Ms. Nelson-Jean for taking the time for this briefing. I realize you guys have important jobs, and I'm glad you took time out of your schedule to come in and discuss this with us. I don't want to make very specific or significant comments right now, as I am eager to hear what you all have to say. But I do want to say that when I read the response to the recommendation, I was disappointed. It seems to me the department with its own words and actions acknowledges the challenges faced by the tritium facility and the potential for accidents that have significant consequences. Indeed, the response outlines plans for actions it intends to specifically take to address the challenges aimed at mitigating and responding to accident scenarios with high consequences. The board has communicated over many years its concerns, and the department has reacted sometimes with action, sometimes with plans, sometimes with plans for plans. The documented safety analysis under consideration by the department has been a long time in the making, and the board feels that it falls short of the mark. We take writing recommendations very seriously, and up until not, the department has received them as such. So, to have this recommendation rejected, given the significant and consequential dose to the collocated worker is troubling. Let me be clear. I recognize that each of you have extremely difficult jobs in which you have to take many things into consideration from budget to the state requirements to production demands to the needs and safety of your workforce. I do not, for one minute, believe that any of you would willingly jeopardize the safety of the people in your charge nor those living in proximity to the site. And I do not believe that you take safety lightly. So I am eager to hear what you have to say, and hopefully you can assuage my disappointment. Thanks.

>> HAMILTON: Thank you, Ms. Connery. I have no introductory remarks as a board member. For the structure of this meeting, we will start with your briefing, during which we may want to ask some clarifying questions. After that, we will review the three sub-recommendations we have up there on a PowerPoint sequentially to make sure we haven't missed anything that you want to share with us and

also to offer any lingering questions that we may have. With that, I will now turn things over to Mr. James McConnell, the Associate Administrator for Safety and for Structure and Operations in the National Nuclear Security Administration. Mr. McConnell is also the Central Technical Authority responsible for the Safety Policy and Interpretation throughout NNSA. Also representing the Department of Energy is Mr. Thomas Johnson, the Deputy Manager for the Savannah River Operations Office and Ms. Nicole Nelson-Jean, the Manager for the Savannah River Field Office. Mr. McConnell.

>> MCCONNELL: Good afternoon, thank you very much, Chairman Hamilton, members of the board. On behalf of the Secretary and the Deputy Secretary and the Administrator, we appreciate the opportunity today to discuss safety with you and to explain our issues and our perspectives from recommendation 2019-2. Before I get into that, I want, again, as Ms. Connery said very eloquently, we're all in the same business. We very much appreciate your efforts and the work that the board does to provide us your insights, to provide us the impetus for continuous improvement. I particularly have a soft spot and appreciate the board for allowing me to spend 12 years here as a staff member, honing my skills as a safety professional. So, I count that as a very significant part of my career. As I said, we are here to talk about the safety of the Savannah River Enterprise. As the line management organization responsible and accountable for the safety of the Savannah River Site and all the Department of Energy's operations, DOE takes its obligation very seriously. As indicated in our Integrated Safety Management Directives, safe performance of work is our overriding priority to protect workers, public and the environment. Specifically, in the board's recommendation, the board communicated its conclusion that adequate protection of public health and safety and the Savannah River Tritium Enterprise is not currently assured. The department, in its response, communicated its conclusion that there is, in fact, adequate protection of the public's health and safety at the tritium facilities. Because the department does not agree with the fundamental underpinning of Recommendation 2019-2, we did not accept the recommendation. We do agree that improving the safety of tritium operations is very important and we will, throughout the rest of this briefing, explain our actions and our plans and our path forward to achieve that. Next, I'll hit a couple of key points. The board asked in its letter to the department how the decision to reject Recommendation 2019-2 relates to DOE Order 140.1, titled Interface with the Defense Nuclear Facility Safety Board. As I stated previously, DOE did not accept the recommendation due to a disagreement about the fundamental premise of adequate protection. The DOE order was not relevant in that decision. The board also asked us to comment on why we accepted Recommendation 2019-1, concerning uncontrolled hazard scenarios and 10 CFR 830 Implementation at the Pantex Plant. That recommendation states that the board finds that DOE and NNSA need to take action to ensure adequate protection from hazards associated with nuclear operations at Pantex is sustained. The department agrees with that, and therefore we accepted that recommendation. We'll discuss 2019-2 in more detail later in the year. So, that's all I'll have to say here. At that point, those were the top level items that were on your list of items to discuss that I wanted to cover. We'll now take time for my peers to discuss Savannah River in more detail subsequent to your questions.

>> HAMILTON: And thank you. Just for a point of process here, in the event that any of us has a question while you're providing information, we'll stick up a finger and I'll call on them so that we'll know that we have a question.

>> MCCONNELL: Okay.

>> NELSON-JEAN: Hello, again, my name is Nicole Nelson-Jean, manager of the Savannah River Field Office. I'm responsible for the National Nuclear Security Administration Mission Areas at Savanna River Site. I do have three of my staff here with me that I would like to introduce. Edwin Deshawn is my Assistant Manager from Mission Assurance for the Savannah River Field Office. He has over 27 years of experience performing oversight of high-hazard nuclear facilities within the Department of Energy. Tim Hancock, the Safety Basis Subject Matter Expert for the Savannah River Field Office. He has over 30 years of experience in the design and construction of chemical and nuclear facilities. And Ayesha Barnwell is the Savannah River Field Office's Safeguards and Security Specialist that also oversees our emergency preparedness program in partnership with our Environmental Management Colleagues. She has served in this capacity since 2010. We are fortunate within the Department of Energy and NNSA to have thousands of highly qualified and committed individuals like Ayesha, Tim and Edwin supporting our mission ever day at Savannah River Site. I want to begin my comments with the brief background of the National Nuclear Security Administration Mission Areas, general details about the Savannah River Site, and then specifically about the Tritium Mission at Savannah River Site. Our priorities at NNSA are to protect our nation in five different areas. Maintaining a safe, secure and effective nuclear deterrent, reducing the global nuclear security threats and strengthen the nuclear enterprise, providing safe and effective integrated nuclear propulsion systems for the United States Navy, strengthening key science, technology and engineering capabilities, and lastly, modernizing the national security infrastructure. Our work at Savannah River Site is essential for our National Security Mission. Next year marks 70 years that Savannah River Site has been at the center of supporting our nation's strategic nuclear deterrent. The site boundary for Savannah River Site is about 310 square miles. There are 11,700 dedicated employees at the site that include contractor partners and federal agencies. The department has an annual budget of about 2.1 billion dollars at the site. And the annual regional economic impact across both Georgia and South Carolina is approximately 2.6 billion dollars. The site is the only location in the United States Nuclear Security Enterprise for tritium gas transfer systems, operations that support the nuclear deterrent. In addition, SRS is the primary source for research and development in this area, as well. The tritium facilities are relatively remote to the broader population and our responsibility within the tritium enterprise has five very specific focus areas. First, we must sustain the tritium supply. We recycle tritium from reservoirs of existing warheads and extract tritium from irradiated target rods. Second, we have the responsibility of maintain the weapon stockpile by replenishing tritium in gas transfer systems to support the schedule for limited life component exchanges. Third, we support stockpile reliability by conducting surveillance of gas transfer systems to support the annual stockpile certification that's required by this nation. Fourth, because we have the benefit of having a national laboratory collocated with us, we conduct research and development that supports new gas transfer system designs to enhance gas processing in tritium facilities. And our final focus area is supplying helium 3, a decay product of tritium, for the use of the US government. Some additional information I would like to take into account as I brief you today is the recent safety record of performance site-wide and then specific within the tritium areas. First, the Savannah River Site-wide. Savannah River Nuclear Solutions is the Management and Operations contractor at Savannah River Site for all NNSA operations. SRNS as I will reference them, was awarded its 17th DOE Voluntary Protection Program Star of Excellence in 2019. They were also recognized by the National Safety Council as an industry leader every year since becoming the SRS Management and Operations Contractor in 2008. They've also received more than 130 Safety Awards since 2008. And finally, in June, SRNS employees surpassed 25 million safe work hours without a day lost due to an on-the-job injury. Now, specific to our tritium facilities. Personnel

worked 1.27 million safe personnel hours in FY 19 with a total of 4.6 million safe personnel hours since its last lost work day incident in 2015. Project management and construction services within tritium have surpassed 47 consecutive months worked without a medical treatment case. Our record, we have a recorded one total recordable case resulting in a medical treatment case and that was due to a prescription received for shoulder pain by an employee. SRTE, Savannah River Tritium Enterprise personnel performed 2453 behavior-based safety observations in 2019 alone. Behavior-based safety is a process that creates a safety partnership between management and employees that continually focuses people's attention and action on theirs and others' daily safety behavior. Over 98.4 percent of the behaviors observed were safe. SRTE held 100 safety training sessions in FY 2019 with an 89 percent participation rate. Finally, there has been no personnel radiation contamination at least four years within SRTE. So, to the purpose of our brief today, there are some important points in our response to your recommendation that I should reiterate. First, DOE NNSA Safety Programs and Policies and their effective implementation by our well-trained work force provide a reasonable assurance that adequate protection of public health and safety is provided. In addition, our commitment to safety in the tritium facilities remains unwavered and there has been no change in the conservative safety philosophy in the operation of the tritium facilities. The current tritium facilities documented safety analysis or DSA contains appropriate safety controls and the new analysis, when implemented, will only strengthen that safety posture. Safety significant controls reduce the postulated consequence of analyzed accident scenarios. The planned tritium finishing facility, which is in the president's budget request for 2020, will fundamentally improve safety at SRS by moving processes from a 1950's-era building to a new and more robust seismically qualified facility. Critical decision one for the tritium finishing facility is due this December. Finally, I would add that the department's current efforts towards continuous improvement align with the DNSFB recommendation. Therefore, the recommendation is an unnecessary duplication of effort that would detract from our continued process. The department is confident that there is reasonable assurance of adequate protection provided by our tritium facilities. Specifically, even with the department's extreme conservatism and the analytical parameters including a postulated simultaneous release of all tritium from all facilities within 20 minutes, the postulated consequence to the public remain below evaluated guideline of DOE standard 3009-94. DOE standards require that nuclear facilities perform conservative accident analysis. The updated tritium analysis is very conservative and used bounding assumptions. For example, the material at risk, which is the amount of material to be involved in a postulated accident, is assumed to be the entire inventory. This results in 100 percent oxide conversion of tritium. This occurs when tritium is oxidized in a fire and turns to water vapor or steam when it is released. Therefore, the Rincon Equivalent Man or REM postulated consequence from the release is numerically high. The postulated consequence of 6,800 REM is for the collocated worker, not the public. And is from an intentionally conservative analysis of bounding assumptions. This analysis is for a theoretical, not a realistic release. It is important to note that the real numbers involving tritium have a classification level that cannot be included in our discussions today. But it is much lower than identified in public documents. The theoretical analysis involves many bounding assumptions and does not account for non-credited controls. This theoretical release is used for two reasons. One, determine if safety controls are required, and two, provide insight for selecting the appropriate safety systems, structures and components for each design basis accident scenario. Therefore, providing adequate protection of public health and safety. In March of 2018, NNSA also developed a strategy and schedule to reduce the postulated consequences for the collocated worker. In addition, NNSA's integrated approach of safety management programs, defense in depth and credited

controls provide a robust strategy to protect the worker and public. Some examples of our safety management programs include the Radiation Protection Program, Emergency Preparedness Program, our Worker Training, Response Procedures and also the Fire Protection Program. Some examples of our defense in depth strategy include improvements in building ventilation, tritium air monitors, seismic tritium confinement system, and fire detection. These additional actions and efforts do not seem to be considered in the board's recommendation or their conclusions. I also want to detail several of the continuous improvement actions we have taken to improve safety even further. We have made procedural reductions in material at risk as much as possible without affecting our mission. This lowers the amount of material that would be involved in an energetic event. An effort has been made to move processes within our older, 1950's vintage facilities into newer, more robust facilities. This change reduces the overall risk, again, to the public and worker for major events. There has been safety modifications made to the vault firewalls and the addition of a fire damper. This also lowers, excuse me, this prevents external fires from spreading within the nuclear facility. A new hazards analysis, which was provided to the board, has been conducted along with a revision to the documented safety analysis to further emphasize identifying engineered controls over administrative controls. The department uses a hierarchy of controls, passive controls are preferred over active, preventers are preferred over mitigators and engineered controls are preferred over administrative controls. In addition, fire water enhanced surveillance requirements have also been implemented. For example, by controlling the fire water valve alignment, monitoring the static water pressure and fire water tank levels, it will increase the assurance of the availability of the fire protection system, which supports the assurance of adequate protection. We have also other near-term risk reduction efforts that include specific administrative controls. Specific administrator controls conclude incorporating vehicle barrier movements in our strategy to protect our buildings form vehicle-related impacts, a critical list program is being implemented for buildings and other structures containing tritium inventories to mitigate the radiological consequences of crane impacts or load drops. [Coughing] Excuse me. A verification of fire water is being implemented to initiate actions to obtain volume measurement from the in-service fire water storage tank. This supports the fire suppression system. The combustibles inside the vault will be controlled to prevent fires, and any subsequent release of tritium from our storage containers. Our longer-term efforts include the tritium finishing facility. Efforts toward completing this facility was funded in FY 19, and as I mentioned, is currently in the FY 2020 budget. In conclusion, DOE NNSA Safety Programs and Policies and their effective implementation by our well-trained work force give reasonable assurance that adequate protection of public health and safety is provided. Our commitment to safety in the tritium facility remains unwavered. And there has been no change in the conservative safety philosophy in the operations of our tritium facilities overall. Thank you.

>> ROBERSON: I'll start. I'll happily start.

>> HAMILTON: Ms. Roberson, has a question.

>> NELSON-JEAN: Yeah.

>> ROBERSON: Listen, I am proud of the occupational safety record of Savannah River as well, too. And I would say, and I love your reaction. The board tends to look at specifically nuclear operations and TSR violations, and con-ops, lock tag, we look at the execution more. And while I think we share a high degree of pride in even the board's contribution to the safety record, we also tend to look for those leading indicators where we don’t let that keep us from looking deeper. And that's kind of, we're not

arguing with the overall safety record. We're looking fairly deep. And that's what drive us, and it's not the first recommendation we've made at Savannah River like this. So, I'm, I mean, you're welcome to respond or push back. I just want to get that out there. It's not a debate over the safety record of the site in my view.

>> HAMILTON: Thank you. We agree that it's an admirable record. Ok.

>> MCCONNELL: I guess one of the reasons why, when we appreciate and understand the rationale that you just described, what Ms. Nelson-Jean was highlighting amongst many other things, was that the basis for our assessment of risk and conclusion that there is adequate protection is, goes beyond simply the unmitigated consequence analyses that are done as part of the development of the DSA. It goes to important programs that are not credited and don't affect the numbers that are calculated in those analyses. But then one asks, is that a good thing to do? Those safety management programs are implemented by the people who execute the disciplined work that Ms. Nelson-Jean just referred to. And so when we believe that our workers are well-trained, that our facility managers understand their responsibilities, that our emergency management folks understand their responsibility as Mr. Johnson will explain in just a few minutes, and that our medical responders are capable and understand their responsibilities, that there is a long-standing basis for confidence in those statements.

>> ROBERSON: Just to add one more point to that, we also believe a good safety record is a reflection of the actions and the decisions that have been made in the past, not in spite of them. And so, when we ask questions like, has the safety philosophy changed because of what the decisions we're seeing, that's why we think the department requirements and behavior have been a contributing factor. And we're cautious of becoming over-confident in that.

>> MCCONNELL: Let, on behalf of my peers here, let me echo that as soon as we start resting on our laurels, that is the first step towards degradation of our safety culture and our safety programs. So, while I believe we are rightfully proud of our record, we don't take it for granted and we continuously strive not only to sustain that record, but to actually improve it.

>> CONNERY: I just have a really specific question for Ms. Nelson-Jean. So, you spoke of the strategy to protect the collocated worker, which was both, I think you said there was a strategy, and then there were dates associated with that strategy that were put forward. And you said those were NNSA's plans. As far as I understand, they're contractor plans that have not yet been either approved by NNSA or incorporated into the DSA. Is there a plan to incorporate them into the DSA? Is there a plan for DOE to accept those? Or am I just misinformed?

>> NELSON-JEAN: In March, we directed SRNS, which is our M&O contract partner on the site, to come up with a strategy with specific actions and dates for that strategy. And we're working with our M&O partner to incorporate those items into our long-term plans at the facilities.

>> CONNERY: So, at this time, there is no funding attached to those, necessarily or no determination as to which of those are going to actually occur. You know, they're just a plan at this point in time that you're assessing. Is that correct?

>> NELSON-JEAN: They're actions and tasks associated with the plan that have a schedule for completion.

>> CONNERY: Correct, but those were proposed, that was a proposed schedule to NNSA, but NNSA has – Has NNSA accepted that plan and are you going to move forward with all of the actions on that strategy and that plan? That's what I'm asking.

>> NELSON-JEAN: Oh, are all nine – there were nineteen items, sorry.

>> CONNERY: Okay.

>> NELSON-JEAN: Have all 19 items been accepted? We're currently reviewing what has been submitted by the M&O.

>> CONNERY: Okay, so it hasn't been accepted but you're reviewing it.

>> NELSON-JEAN: We're currently reviewing, that's been said.

>> CONNERY: Thank you.

>> ROBERSON: My turn again? Let's see. So, I guess I kind of characterize this as, I don't see a different, a disagreement between us on the technical elements. We've seen your soon-to-be new DSA, we assume. It hasn't been approved yet, right? But we've seen that. And we evaluated it as a part of our deliberations on the final recommendation. So, to me, the key question here is, as you said earlier, the board determine the issues raised, challenge the department's ability to assure adequate protection. And we can argue over whether it's public, we may disagree, even though the, as you say, the dose numbers don't mean dose. They are decision-making level. But clearly, when it comes to the collocated worker is really where we focus on. Do we disagree that there is additional risk beyond what's expected in your own standard in 3,000, 9, 20 – yeah, the new one.

[LAUGHTER]

>> Yeah.

>> MCCONNELL: So, again, just reaffirm that we agree that continuous improvement of all aspects of safety at Savannah River is an essential element of any healthy safety culture and safety basis. We have actions that are planned. We have projects, some of the most fundamental things we can do to improve safety at Savannah River come from capital improvements, which are underway. The, and the elements of your recommendation help us as, in our efforts of continuous improvement. But as I think we agree, the board's professional technical judgement is that the conditions right now do not constitute adequate protection or is not assured, or whatever. I can't remember what the exact words were.

>> ROBERSON: Right.

>> MCCONNELL: We believe that it is. And so, because of that fundamental – if we were to have accepted the recommendation, we would have accepted the premise that there is no adequate protection. That is not what we and the senior leadership we represent have concluded, either at the time those calculations were done or now.

>> ROBERSON: Um hum.

>> MCCONNELL: So, while we take the spirit of your input for continuous improvement as useful and helpful and important to our plans going forward, we don't accept the recommendation because of the implications of adequate protection.

>> ROBERSON: So, let me just make sure I understand what you're saying. And you guys have been consistent. So, all of these other things we're talking about, they're interesting things, but you're going to authorize a safety construct that doesn't rely on them. So, you don't need them. You think you are providing adequate protection without them.

>> MCCONNELL: Maybe we are miscommunicating, then. The analysis that we're implicitly discussing is the analysis that we do for any nuclear facility as part of our approach to safety, which starts with identifying either design basis or evaluation basis accidents. We do very conservative analysis of bounding scenarios to get insight into the potential hazards and risks of the operation so that we can identify what kinds of controls and what quality and rigor we assign to those controls. The quantitative measure for that is at the maxim, this theoretical, hypothetical person called the maximally exposed off-site individual. That person is, that calculation is done. It doesn't reflect any person. But it is insight into our design and approach. That, at the site boundary, comes in at a number below our evaluation guideline. We take the same mathematical model and pull it in to 100 meters and do a calculation there. Again, it uses very conservative parameters, it assumes no self-protection. It assumes no emergency management. It assumes no medical treatment. While things like our well-trained staff simply evacuating upwind or going indoors as is their emergency management response, and I don't want to get ahead of Mr. Johnson --

>> ROBERSON: Right.

>> MCCONNELL: Is not a credited action, but is an action that professionals know will have a significant effect on things. Therefore, when we take those activities into account, the consequences are not, last think I'm going to say here, that number, 6,800 REM, it is not an estimate of any actual dose to any actual person. And it should not be used as an insight into any actual dose to any actual person. It's done for an entirely different reason, so that, it's there, it's an important part of our safety basis. It is not something that we would point to and say that undermines our assertion of adequate protection, because our conclusion of adequate protection is based for workers, qualitatively on the implementation of all of the controls that we know we have put in place, some of which we credit, some of which we don't, and all of the actions we know our well-trained work force will take. Based on that, we have two parts. We are in a remote area relative to the public, and we are below the evaluation guideline for the public. So, we have a quantitative guideline that we know we have satisfied. That dose is not an acceptable dose, but it is a validation. We conclude, therefore, our collocated workers, the industrial risk they face is not out of comparison with the accepted industrial risks that people in our country face in many different industries, and including ours, all across the country. So, because of that, two different distinct considerations, we conclude that there is reasonable assurance of adequate protection, which is why we're where we are.

>> ROBERSON: So, you just opened up a lot of stuff. But let me, I think my question was inarticulate. So, let me just go back. My question was, all of these other things that you say, not credited. You're about to sign a safety basis with credited controls. And if we just, and if you focus on the collocated worker. So, all these other things are very nice, they're complimentary, but these are not conditions of approval, right? You're going to assign a clean DSA. These are things you're doing down the road, but they are not attached to your safety basis that you're about to approve. Is that right?

>> MCCONNELL: They're contractually required. They're—

>> ROBERSON: Well, contractual. Yeah.

>> MCCONNELL: So, they're an obligation and an expectation and an enforceable activity of our M&O partner.

>> ROBERSON: Yeah. Okay. But, you don't, they are not tied to your safety basis you're about to approve. Is that right? That's my question.

>> MCCONNELL: No, they're not. And nor are they tied to any safety basis for any other similar facility anywhere else in the enterprise. That is not our model.

>> CONNERY: But your model does state that –

>> MCCONNELL: Okay.

>> CONNERY: That those numbers that you're talking about are numbers that you use to evaluate what safety controls that you use in that facility. So, when you hit numbers that are pretty high on the collocated worker dose side and more than one accident scenario, then by your own guidelines, that's when you actually have to implement credited controls and your emergency preparedness and response isn't really credited control. So, you have to have controls credited in the safety basis. I think that was the point that Ms. Roberson was going to try to make. And the other thing I would say is, in addition, when you talk about yes, you are remote from the site boundary, but there is the fact that you actually have accident scenarios that do approach the guidelines and therefore should have bene analyzed to see if there should be safety, significant or safety class systems put into place. So, we're holding you to your own standards, here. We're not trying to make continuous improvements on how you do, how you do safety. We're just saying, are you holding yourselves accountable to how you do safety?

>> MCCONNELL: Yes, well, I agree. And yes, the, I don't want, I guess at this group, perhaps we can get to this a little bit. If we had exceeded our evaluation guideline, we would have required the highest level of rigor and quality in the controls we credit. That doesn't mean that if we come in an area that is below that number but still high enough for us to be of concern, then we will not consider, and we do consider, the highest level of quality and rigor in our controls. The other reason, one of the most significant reasons to do those two different things, one at this maximally exposed off-site individual and the other for the collocated worker nominally associated with 100 meter dose, is precisely for places like Savannah River that are remote. Because, you could find yourself in a situation where if your controls were only classified based on a consequence to a very distant receptor, you would, not an issue here, but let's take our Nevada National Security Site, where there's a very long distance to the public. You could find yourself in a condition where you calculate the maximally exposed off-site individual dose, it is extremely low, and you might then conclude that no credited controlled or higher quality control is more important. The reason we do the 100 meter calculation is that even in those cases where the public is very far away, we still can come to an analytical insight that, based on the consequences of a more immediate population or receptor, we want to have high quality, high rigor, usually we would call it the second level down, something called, you know, the safety significant controls. So, it's exactly in these applications where the site boundary is distant that the two-pronged analysis becomes most important to help us figure out how to classify controls.

>> CONNERY: Well, I don't think that addressed my issue, but, so, where is your training facility located, vis-à-vis the tritium facility?

>> NELSON-JEAN: It's –

>> AUDIENCE MEMBER: It's in [inaudible] it's about a half mile from the tritium perimeter.

>> NELSON-JEAN: About a half-mile.

>> CONNERY: And you have folks who traverse the site on a regular basis doing deliveries who aren't necessarily site personnel, as well. I'm just getting to the point that I think you're trying to create an arbitrary distinction with regards to worker, collocated worker and general public, which isn't necessarily useful in this scenario of a significant accident, which is, which are the accidents that we are actually looking at here. Earthquake, fire, plume, that would affect more than folks inside the tritium fence line.

>> MCCONNELL: That's site-specific. But, one point I would, before I turn it over to Mr. Johnson, is that all those, everyone that's under the control of a facility manager or well-trained site specific people who either actually will direct folks for proper actions, if those folks don't know what their actions are in and of themselves, so, while there are people in the training facility who implicitly might not yet be fully trained on all of the other actions, the people who run the training facility are, and they direct the students. Just as the safety brief we got here today tells folks who have no experience with this building what to do.

>> HAMILTON: Okay, I think you, what I heard you say was that Mr. Johnson had some prepared remarks, also? Let me ask just one semantics question before we go to Mr. Johnson. Ms. Nelson-Jean, about three or four times you used the phrase "reasonable assurance of adequate protection". That was also in your letter. In our portion of the Atomic Energy Act, it simply says "adequate protection". Is there some semantics difference between reasonable assurance of adequate protection and just plain adequate protection? Is this from the department of redundancy department or what, I mean what is it?

>> MCCONNELL: I wouldn't, right, there are key words and tricky phrases in various parts of the Atomic Energy Act. In another part, it says no undue risk. You know, in our mind those are all the same things.

>> HAMILTON: Okay, thank you. Why don't we let Mr. Johnson talk and then we'll probably – did you have something pressing?

>> ROBERSON: One quick question, it's not, nothing's pressing. One quick question.

>> HAMILTON: Alright, Ms. Roberson, take one question and then we'll go to Mr. Johnson.

>> ROBERSON: Sorry. I want to just follow up on the extremely conservative characterization that you refer to in your lettering and you refer to in your statement in that I'm not quite sure what that means. I mean, isn't your model to do a conservative analysis? What does that mean in this case? I mean, for every factor of what I call extreme conservative, there are other factors that maybe not so. So, I'm trying, I mean, that's your model. That's how you come to design your safety construct. Is that? And if you have, like, the 20-minute, if you have a parameter that you think is so out of line, are you doing the research and analysis to refine it? Because I think you use it all over the site.

>> MCCONNELL: Great question. The analyses, as we all know, are, they are conservative analyses of bounding scenarios. That's how we come up with our list of either design-basis or evaluation-basis accidents. We intend to have them be very conservative to drive us to conservative decision-making.

>> ROBERSON: Right.

>> MCCONNELL: We use bounding scenarios when that, you know, bounding all of the tritium, bounding it all as oxide, assuming it all is released in a relatively intense period so that there is this plume that we mathematically model is, you can always pick a more, there's continuous variables could always be picked further down the road. But we have reason to believe that, even with all the uncertainty in our analyses, it is well bounded, orders of magnitude bounded by the, by what would happen if someone had perfect knowledge of how to actually mathematically multiply all of those probabilities. And that's so that the decision we make, the reason we do that calculation is to decide what the quality of the controls are. And so we accept the fact that we mathematically come up with 6,800 REM. That level, it clearly says, regardless of the fact that the public is below 25, everybody knows that 25 REM is our evaluation guideline, there's still a high, because it's tritium gas. It's a hard problem. And so, we accept the fact that we have to be very focused on the quality of our controls. The physical controls for containing radioactive isotope of hydrogen are challenging. That's why the Tritium Finishing Facility is a substantial investment that the department has committed to make and has planned and already started funding in order to build a new facility that will physically be more seismically robust, and have better fire protection. But even with that facility, we'll still conservatively assume that all the tritium escapes, and that it all oxidizes. So, the real risk will go down, but this calculated number won't change.

>> ROBERSON: So, let me just, and I know we want to go on. Let me just restate, because I am kind of a woman of few words, and you tell me if I got it right. We use conservative analysis so that our control set is conservative. So that the bad thing doesn’t happen. Right? Because we're living based on our best science and analysis. That's why we do it, is that not right?

>> MCCONNELL: Yes.

>> ROBERSON: Okay. That's fair enough, okay.

>> MCCONNELL: I'm trying to be a man of few words, but I'm not really good at that.

[LAUGHTER]

>> HAMILTON: Okay, let's keep going. I think Mr. Johnson had some prepared remarks, so.

>> JOHNSON: Yes, I do. Good afternoon, Mr. Chairman. I'm Thomas Johnson, Department of Energy Office of Environmental Management at Savannah River. I am the Deputy, hope you can hear me okay, the Deputy Manager there. This is my first opportunity to formally interact with the board and certainly with you, however, for Ms. Connery and for Ms. Roberson, I've had the opportunity to interact with them both at the headquarters level and also with their many visits to the site. So, it's an honor to be here and be able to speak with you today. I have with me a couple of folks from the site. I have Mr. Duane Delmore, Mark Delmore. He is our Emergency Preparedness Manager from the site and he's got experience both on the contractor side and on the federal side at Savannah River. And I also have Mr. Ed Szymanski. He is the Deputy Director for our Office of Safeguard Security and Emergency Services there on the site. Just about ten seconds about me. I have a little more than a decade of federal experience before coming over to DOE and I've been with DOE now for a little over 27 years working both at Savannah River, one of our small sites and also at headquarters. And so, I'd like to speak to you today. I know that Nicole and Jim have spoken to you regarding the first four briefing points that were in your letter to the secretary and so I would like to speak to the fifth briefing point or briefing request that you

had in the letter to the secretary. And what this is specifically in response to, the site readiness to respond to an energetic accident at our tritium facilities involving a significant number of workers with potential uptake of tritiated water vapor. So, there's several things I want to speak a little bit on what we have done to date as well as the things that we will be doing going forward. We, our current plans form the basis for the conduct of operations related to emergency planning, response and consequence mitigation with an SRS emergency plan. Its facility-specific annexes covers a spectrum of responses to incidences that have been identified through hazard survey and emergency planning hazards assessments. And the procedures are in place that establish emergency management programs standards and identify implementation actions. Through previous drills and exercises, emergency responders and support personnel have demonstrated the capability to respond to accidents at the tritium facilities on site. I said I would speak to the emergency preparedness on two fronts. First, I'd like to start with some of the things that we've already done onsite prior to receipt of the board recommendation. We have demonstrated the capability to protect the collocated worker with remoted ventilation shut-down of the 766 H Training Facility. Had a question earlier regarding its proximity to the tritium facilities. And we're able to do that from the H area control room. This was completed in May of 2018. We're established measures to utilize recalled radiological protection resources from unaffected facilities onsite to support any large-scale releases that may occur. Our fire department and RADCON conducted contaminated firefighter dress down for tritium releases during their annual live-burn training event, and this occurred in May of, excuse me, March of 2018. We've also performed evaluation response actions utilizing key hold approach, was done in October. That's completed in October of 2019. We have revised the area emergency coordinator and facility emergency coordinator training courses to include responsibilities on situational awareness of emergency events at nearby facilities and that's an ongoing effort. We've provided common operating picture training to the emergency response organization members that focus on situational awareness of emergency events at all facilities. Again, that's an ongoing effort. We've developed a 766 H site training facility emergency response plan which provides guidance on the dissemination of protective action announcements and instructions on protection of personnel during the emergency situation. That was completed in May of 2018. I believe Jim touched on that in one of his responses, as well. We also have memoranda of agreement in place with Augusta University Medical Center on the receipt of potentially contaminated patients. That was completed in November of 2018. And we've established a process for supplementing the field monitoring teams with non-field monitoring team radiological protection staff, completed in December of '18. And we've also conducted technical support room modular training to improve communication and integration of facility information and to the emergency operations center. And that was completed in November of 2018. Now, in response to the letter from the board, we have also recognized that we have the opportunity for some additional improvements or continuing improvements that are onsite, and so we took that opportunity to provide a letter of direction to our onsite M&O contractor that we share with NNSA. And let's talk about some of the specific actions or things that we've directed them to do. In the letter, you also had the five sub-recommendation things that you wanted us to take a look at. The first one was on staffing and training. We have a little more than 1500 trained emergency response organization members onsite. And of those, 212 of them are assigned to the tritium facility with 29 individuals serving as facility emergency coordinators. For new employees coming onto the site, we have what's called the General Employee Training that's provided to all personnel before they come onsite as a site employee, which provides initial training on emergency alarms, protective actions, rally points, and proper responses. And all site personnel also take a Consolidated Annual Training as an annual

refresher. And just a little bit more on that one, if you're not able to not take the Consolidated Annual Training. The way that we do that is, you will not have computer access onsite if you don't take the Consolidated Annual Training. So, I can assure you folks will, folks do comply with that because we will know pretty quickly if they have not taken the annual refresher. We also have a Facility Entry Training that's required for all personnel within specific areas such as H area or HB line and the tritium facilities. With respect to the emergency response organization members, they're required to participate in a drill at least once every 12 months to demonstrate their proficiency. And then for both GET or General Employee Training and the Consolidated Annual Training, we also include something that's known as the General Employee Radiological Training or GERT, which provides instructions to site employees on the protective actions that will be taken onsite such as remaining indoors. And as we go a little further in here, obviously for the tritium facility, that's one of the certain responses that will be conveyed to the employees in the even that there was any accident. Tritium emergency response organization personnel also receive tritium-specific training over an 18 to 24-month period, which covers Tritium Fundamental Training, Glove Box Sniffer Leak Checking, Tritium Facility Emergency Operations Notifications, Tritium Safety Basic Training, Conduct of Operations Training and Alarm Response Training. I mentioned this before, but we also have demonstrated the ability to be able to shut down the ventilation system in 766 H, which is the training facility. This was one of the facilities, Mr. Chairman, that you had a question about earlier. Lastly, we've had over 100 drills and exercises in the past 24 months that were conducted in H Area to demonstrate the ability to be able to respond to alarms, abnormal conditions and emergencies. Item, sub-item number two was on accountability. We have procedures in place to perform accountability within the facilities, if required to do so. The accountability has been demonstrated during the various drills and exercises that we've conducted, and then also for the Savannah River Fire Department, they also perform accountability for all first responders. Okay. Fire department responses, they've responded to real-world events such as the Martin train derailment. They've also played during the multi-facility, multi-contractor site exercises. And then we have, certainly, specific procedures onsite for our fire fighters that's now part of their core training for all Savannah River Fire Department personnel and for the tritium RADCON personnel, as well. I made mention of the Martin train derailment. And this was outside of Savannah River Site, but in the area, emergency that took place. And so, we have agreements in place with the surrounding counties and being able to respond. Now those agreements work both ways where we're able to provide support to them if there is something that's outside of the site and then if there was something that was onsite, I made mention before, where we have agreements in place with the local hospitals so that we are able to, that they would be able to receive any patients that may come from the site. There was also a Grantville train derailment a few years back where there was a chlorine release that had multiple injuries, multiple fatalities and was multi-jurisdictional. And it's a little bit dated, but just an example of how we are able to coordinate with the local community in response to any particular accidents. The fire department has responded to approximately 90 to 108 drills and exercises that were specifically at the tritium facility and this would be between 2017 to late 2019 timeframe. We've got, kind of touched on it briefly, but we do have specific procedures that our firefighters are trained on for the site dealing with fire response, mass casualty incident command, care of contaminated patients, and so that, and also, like I think I mentioned before, it's a part of the core training for our fire fighters onsite. One of the other sub-bullets that you were looking for was information on the site radiological protection and medial programs onsite. We've evaluated the medical and radiological department capabilities on a smaller scale than what we're dealing with here for this particular recommendation, and we've also, for

our Radiation Emergency Assistance Center and Training Support, it's a supplement to support the area hospitals. I've touched on it a couple of times. But, what we're doing here is if there is a need to provide radiological support to the local hospitals, we have the capability to be able to do that, as well. And then we also have the Radiological Assistance Program in place. This is one where we can have the Radiological Assistance Team onsite and available to us in a two to three hour timeframe. And if we need to request additional response, we will be able to have a second team onsite within eight to twenty-four hours if need be. I did want to make mention with respect to the Medical and Radiological Protection Department, we do have the capability to perform currently 275 radio bioassay sampling in an eight hour shift. And if needed, we can move that to three eight hour shifts, if needed. And that would raise the daily sampling capability to about 550 samples in a 24-hour period, currently. And I'll speak a little bit later on what we're doing to improve on that. From a specific standpoint, we've got a little more than 140 tritium monitors onsite. These are Scintrex pieces of equipment. And then our Radiological Protection Inspectors are trained on the instrument using on-the-job training materials. And it's part of their basic qualification requirements. Okay, what was I going to say on that? As far as what we may be able to do in the future, what we're working towards, I made mention of 275 bioassay samples in the eight hour period, by 2020, we're anticipating putting in three new liquid scintillation counters, which would increase our sampling capacity to approximately 1400 samples in an eight hour period and approximately 4200 samples in a 24 hour period. To date, our largest population that we're performed the bioassays on was approximately 50 individuals, but those numbers just speak to the capabilities that we have for the site. Community support was one of the other areas that you all had some questions on. We do have the memoranda of agreement in place with all of the local hospitals. And these, we're providing some training to the local hospital as well, and that's occurred over the last 25 years, so it’s not something that we’re just starting today, but it is something that we continue to work with the area hospital to be able to support us if need be. And we also have Mutual Aid Agreements that are in place, and I kind of spoke to that a little bit before to where we are able to support folks outside of the site, as well. The other major thing I do want to make mention of, we do have the Life Flight Services. So, we do have two helicopters that are onsite and we're able to utilize those to transport injured to area hospitals if needed. And we also have the capability to use those helicopters to support off-site needs as well. We have had occasions in the past where there is a public road that runs through the site, which was mentioned earlier, so, we've had occasions where we've had to, or we've allowed utilization of the helicopter to transport non-site employees to an area hospital. Local hospitals have shown that they are able or capable of handling up to 125 contaminated/injured patients just through regular staffing and if need be, once they've activated the additional resources, they have the capability of handling 250 or more contaminated personnel. Alright, I guess –

>> CONNERY: Have you ever exercised that?

>> JOHNSON: Have they ever exercised the ability of –

>> CONNERY: Of having that many people to –

>> JOHNSON: As a part of the exercises, and I will lean to Mark if need be, but.

>> DELMORE: They have not exercised that scale.

>> JOHNSON: But, the agreements are in place for them to be able to do it. But, have not needed to up to, or have not done so up to this point. Additional planned enhancements that we have in place, we

Planning to develop a consolidated site-wide plan for responding to the large-scale tritium releases, evaluating the adequacy of training for collocated workers in response to tritium release, conduct a large scale tritium-based large consequence exercise using the Crawl, Walk, Run approach and the fire department will evaluate improvements to the Mutual Aid response capabilities as well as the feasibility of adding additional Scintrex Tritium Monitoring Capabilities. I spoke a little bit before about, for 2020, and being able to put some additional sampling equipment in operation and just to reiterate that, that was moving us from 275 samples in an eight hour shift, taking us up to about 1400. And then, in a 24-hour period, moving us from about 550 to 4200. And, we are committed to continuing efforts to improve our emergency preparedness and our Emergency Preparedness Program meets DOE directives and we believe it's adequate to continue protecting our SRS workers and the surrounding public. And I will take a break and, before.

>> MCCONNELL: Before, I just want to, we would be remiss if we didn't add that in no small part our emergency preparedness activities have improved over the last few years in response to a previous board recommendation, so, I do want to acknowledge that the board has been a driver on this particular area.

>> HAMILTON: We want to take a little break and before we do, are there any hot questions that we want to address to Mr. Johnson?

>> CONNERY: I just want to address, I just want to say one thing before we go on break, because I think this is really important. Because one of the things that you said was that we don't have all the engineered controls because we have 1950's buildings, and therefore we're very reliant on safety programs to include Emergency Management and I'm encouraged that you're starting now to have MOUs with places. You have one that you just put in place in 2018, and you noted that you had just started a remote shutdown for the training facility for the ventilation system in May of 2018. Again, this is very, very recent. I have a, I don't know, weird affinity toward emergency exercises, so I like to go to site emergency exercises, and I have been to one at Savannah River, I've been to one at Pantex, I've been to one at Lawrenceville. I like to watch to see how it's done. And just like any plan, any emergency planning effort that doesn't survive first contact with the enemy, because there's challenges in communication, there's challenges with mobility, and if you would imagine and earthquake scenario and you would imagine a significant tritium release, and mass casualty event, that would be a significant problem. And I know that some of the other sites, mass casualty, but the way is like, four or five people or more. Not, I think it sounds a little bit more daunting than it is. But even with that, it's very difficult to be able to handle those onsite when there's a lot going on. So, I appreciate the fact that you're making these plans and then you're making a plan to do a large scale event. I note that a lot of the exercises that you've done, the tritium exposure for an individual was less than five REM, so, it was basically occupational and nothing more than that. So, you've not really exercised the thing that we're most concerned about. So, the fact that the department can assert that the site safety management programs are adequate and that we have, there is no concern with adequate protection when there is not even site evacuation plan, a key component of emergency preparedness, is a little bit shocking to me. And so, I just want to just lay that, you guys, we can take a break and think about it, but that's what concerns me. And you have a situation in which there's an earthquake, and a tritium release, and you may have conflicting demands on an individual because you may be saying, okay, you need to shelter in place, or you called it something different at Savannah River, stay indoors, but at the same time, there is a fire which would necessitate them evacuating. So, there may be conflicting conversations, there may be

problems with communications, and this is, I think, of utmost importance. And without confidence in that system to say that we're not concerned about the adequate protection. And you know, of note, we have lots of recommendations that we've given to the department where they said, we believe we have adequate protection, but we are accepting your recommendation anyway. So, I will say at this point, my disappointment stands.

>> MCCONNELL: And we'll, and I don't want to drag this out much longer if we're going on a break, but a couple of times there, you said, no concern about adequate protection. Let me correct that, at least from our perspective. While we assert we currently have adequate protection, we continuously work on opportunities to improve safety, because, for example, this is a potentially high consequence event. And so, while we still believe we have adequate protection when we did that analysis and as we sit here today, we also have continuing efforts and significant resources directed to improving that.

>> HAMILTON: We will take a short recess and restart at 25 minutes past the hour by that clock.

>> HAMILTON: Alright, we are on the record and thank you, Mr. Johnson, for your remarks. And I'm going to open it up for any questions from my fellow board members on what he just said.

>> ROBERSON: I do have one question. I probably should have asked it before the break to allow you a chance to confer. You guys said you've done 100 exercises in the last 24 months. Right?

>> MCCONNELL: That's correct.

>> ROBERSON: Alright. How many of those were field exercises that practice a radiological release where you actually had to move more than five people?

>> DELMORE: If I had to guess without having the data in front of me, I would guess maybe –

>> MCCONNELL: I don't think we need to guess. Why don't we just take that question and we'll get you the answer back?

>> ROBERSON: Okay. And I, one more limitation, involves H area. Okay. Alright. We'll just trade off.

>> HAMILTON: We can, if you're ready to go to our follow up slides, we can do that. Unless you have some other questions.

>> ROBERSON: I'm fine. I can save any questions I have until we get to the sub-recs.

>> CONNERY: Yeah, me too. That would be easier.

>> HAMILTON: Okay, what we're going to do is put up the sub-recommendations and what we think were the key points of your answers to us and this, there they are. There's three sub-recommendations. I will just pause here for a minute and then let everybody read them so we're not trying to talk and read at the same time. So, go ahead and take a look at those.

>> HAMILTON: Okay, next slide, please. So, sub-recommendation one, we believe we extracted out of your response the key bullets. And again, I am just going to take about 30 or 40 seconds and be quiet and let you read those.

>> HAMILTON: Okay, and with that, I'm going to open it up to my fellow board members to see if you want to ask any questions on this sub-recommendation or their responses to it. And if you all have something that you want to add, please feel free to let me know.

>> CONNERY: So, I just wanted to go back to a conversation we had earlier with Ms. Nelson-Jean about the MAR reduction and I think you had characterized it as an administrative reduction. In other words, you were taking the ceiling down, but you know, without obviously affecting –

>> NELSON-JEAN: As much as possible without mission impact.

>> CONNERY: Without mission impact. But that doesn't actually reduce the material at risk, it only reduces the limit of the material at risk. Right, so I am just trying to understand, for the worst case scenario –

>> NELSON-JEAN: I want just to clarify the first part of your statement. You said it does not actually taken down the material at risk. It does actually take down the material at risk.

>> CONNERY: So, you're going below the actual. I thought you said it was an administrative move of the limit, not necessarily reduction in the materials.

>> NELSON-JEAN: I think the question is, is it a physical change in your inventory.

>> AUDIENCE MEMBER: So, so, when we're talking about MARs, it's a material at risk, and as we control that in our facilities at one given time. And what she is saying is we put mechanisms in place to reduce the MAR. So, at any given time, if there were this postulated situation, you can't reach those limits because we are strategically reducing them. And we have an automated system and work as a training team to be able to control that. And that's the procedure lines mechanism they're referring to. It does limit the amount that you can have in any [inaudible]. It does reduce it.

>> HAMILTON: Let me ask my audiovisual folks, do we need to repeat was just said or were you able to hear that?

>> AUDIOVISUAL: Repeat again.

>> HAMILTON: Repeat? So, could I ask you, Ms. Nelson-Jean, to summarize what we just heard for the recording?

>> NELSON-JEAN: Yes. I think to rephrase or restate Joyce's question, you asked was it an actual reduction to the material at risk. Through a process, through a procedure of mechanisms, we have a reduction in our material at risk, as much as possible, without affecting our mission. So, there is a reduction that is controlled through our procedural activities.

>> CONNERY: And that procedure was put in place with the new DSA or that procedure was already in place?

>> NELSON-JEAN: No, it was already in place.

>> CONNERY: And that's been in place for a couple years now?

>> AUDIENCE MEMBER: We can get you the exact date of that.

>> NELSON-JEAN: We can give you the exact date.

>> CONNERY: Okay, I'm just trying to ascertain whether this is a new attempt to reduce the consequence to the collocated worker, the worker, or if it was simply, and I'm not trying to diminish it, but it was something that you had in place, you're taking credit for now.

>> NELSON-JEAN: We can get you the exact date.

>> AUDIENCE MEMBER: We'll get you the date.

>> ROBERSON: So, let me ask my question again. Is it a change to the physical inventory that you have? I mean, we know that you made some administrative change in the current draft of the DSA.

>> AUDIENCE MEMBER: So, and I'm going to lean on my counterparts to make sure I don't say anything that's improper for this audience.

>> MCCONNELL: We've already taken the question. The physical inventory has, the actual real world inventory has gone down, but the calculation is based on a hypothetical number because of the classification of the real world number, and so we can provide you that information. So, the short answer is yes. The details, we can provide you after this meeting.

>> ROBERSON: Okay.

>> HAMILTON: Are there any more questions or comments on sub-recommendation one?

>> ROBERSON: I had one question, and I will just ask, because you guys are conferring anyway. So, what are some of the specific measures that are being implemented in the soon-to-be approved DSA that reduces, that are controls put in place to reduce worker dose consequences? If you know. If you don't –

>> NELSON-JEAN: I've identified the specific administrative controls in the near-term that we are going to complete, is that what your question is?

>> ROBERSON: No. actually, I'm focused more on actual engineering controls. Are there any? Because the SACs, I understand they enhance the controls. You have talked about –

>> NELSON-JEAN: Um hum.

>> ROBERSON: The administrative controls. Are there any other controls? Any engineer controls that you guys are considering?

>> NELSON-JEAN: Yes, we could give you a list of the engineer controls we're considering.

>> ROBERSON: Okay, but these are ones you are considering at this point, okay.

>> NELSON-JEAN: Yes. The, our final DSA, the new DSA, will be approved in December of 2019, December of this year.

>> ROBERSON: Okay.

>> CONNERY: I just want to get that straight. So, the conversation we had earlier about the actions to protect the collocated worker are not going to be implemented in this DSA but there are actions that you believe will be in this current DSA, the one that I think our staff reviewed, that will be engineered

controls. Or are they crediting parts of the facility that are already there to basically be safety controls? Again, I am trying to figure out what is actually going to be in the new DSA.

>> NELSON-JEAN: The final DSA will be approved in December of 2019, so I can't identify today what will be in the final DSA. However, the strategy that I mentioned earlier that I requested in March and I think, we received a response back in June, the 19 actions, and actually I looked back, one of those actions actually has been completed for our activities. But we are currently evaluating what we received from the M&O. We're currently evaluating that, so I can't give a final answer here on what exactly will be included until it is approved.

>> CONNERY: Okay, so the idea though, is that you're evaluating those to be included in this DSA. That sounds different than what, I, my understanding of that was different than what you said earlier. I thought it was post the DSA. But those 19 or 18 actions are, you're considering whether or not they can be included. Some of them were, I believe, more analyses rather than actual controls, however.

>> NELSON-JEAN: Yes, some are analysis. And again, one of those items has been completed. So, again, we are evaluating what's come from the M&O for our consideration. So, we are currently evaluating that.

>> ROBERSON: Okay, thank you. I think.

[LAUGHTER]

>> ROBERSON: I want to just talk for a minute about risk acceptance. And you guys talked earlier about reductions to, you know, I'm going to use risk generally. I mean, we clearly understand your standards, your orders, your requirements. I certainly do. But, when it comes to collocated worker and the worker, I think because of the controls you have in place, and as we understand them, the ones that will be in place when you approve your new DSA, there is still some degree of risk acceptance above your own standard that you will accept. Am I wrong? I don’t believe you're going to get collocated worker with controls down below your analyzed dose consequence, is that right?

>> MCCONNELL: I guess the thing that, the reason I'm, we'll take that question because I am not sure exactly what quantitative number you're referring to here when you talk about getting dose below something.

>> ROBERSON: Well, let’s just take the one you said. For collocated worker.

>> MCCONNELL: I never did that, the only quantitative threshold I know of is for maximally exposed off-site individual.

>> ROBERSON: I think you guys used the 6,800 number.

>> MCCONNELL: Well, that's the calculated number, but it's, okay, there are certainly activities, actions we could do that, in the real world, will reduce risks. The problem is, if you're talking about that calculation is so constrained by the way it is conducted because of its actual use, right, it is, it assumes all the inventory and it assumes a person. And so, the person will always be there and the, now we can, the inventory is something we can, we can adjust. Now, that is constrained by the need to ensure national security. So, there's always going to be the inventory that the analysis says is released, oxidized and the plume carries it to this person. So, that 6,800 number might change if the plume analysis is

changed to reflect new understanding of the science of nature, how the plume goes. But other than that, those controls might actually reduce the real world likelihood of some of that tritium being oxidized or some of the tritium being released, but because we assume it's all released and all oxidized, those real world controls are not going to change that 6,800 REM hypothetical number. So, I want to make sure that we're communicating, because we're going to reduce real risk.

>> ROBERSON: Yeah.

>> MCCONNELL: But some of these calculations won't change.

>> ROBERSON: Well, let me just say, what we can call real risk, I don't know what they're always based on. I mean, they're qualitative.

>> MCCONNELL: Right, that's why I was struggling to come up with a number.

>> ROBERSON: Right. But what I'm saying is, in your own standard, says you are expected to iterate until you get that consequence down to a certain level. And all I'm asking, is that your plan?

>> MCCONNELL: Yes.

[LAUGHTER]

>> MCCONNELL: I'm getting better at those short answers.

>> ROBERSON: I don't know. You might want to check that answer.

>> MCCONNELL: We have plans for continuous improvement to, continuous improvement will reduce risk.

>> ROBERSON: Yeah, I don't think we're talking the same thing. But, I'm good.

>> CONNERY: I don't think we're getting anywhere.

>> HAMILTON: Let's go to sub-recommendation two. And again, I will pause for a minute and let you read this.

[INDISCERNIBLE WHISPERING]

>> HAMILTON: Okay, we'll open it up for questions on sub-recommendation number two.

>> ROBERSON: So, I had a couple of questions. And again, I'll just state the questions. So, one of the go-to solutions is the tritium finishing facility. And obviously, it's early. We're looked at as much information as we understand is available on this. But, is it your plan to move processes from the other facilities into this facility?

>> NELSON-JEAN: Yes.

>> ROBERSON: Okay. So, I guess that's just something we haven't seen yet in any of the documentation produced. Other than the activities in 234, you're moving operations from 233 into the new facility?

>> NELSON-JEAN: No, the tritium finishing facility will replace all old manufacturing.

>> ROBERSON: Okay.

>> NELSON-JEAN: Strictly replace old manufacturing.

>> ROBERSON: And so, really have a significant impact on the high MAR facility that we're concerned about.

>> NELSON-JEAN: It will have, it will fundamentally change the MAR and our, and it is seismically qualified and it will be a much more robust facility. I can't go into how much of our operations are in old manufacturing. It's significant.

>> ROBERSON: No, no, no. And I understand what's in the replacement facility. I mean, you have a complex of facilities. And what I'm focused on are the other facilities in that complex that maybe aren't so old, are you planning to, because it is a newer facility, seismically qualified, will there be activities in your conceptual planning that move from the other facilities into that, that have their own issues. The other facilities have their own issues.

>> NELSON-JEAN: Yes, as I mentioned in my prepared statement, we've already moved some activities from older facilities into newer, more robust facilities that we could and we had facilities that were available. So, that is something that we are currently doing, and we will look at other plans that, where we can move other activities into more robust facilities. But TFF, the tritium finishing facility, is specifically for activities in old manufacturing, specifically.

>> ROBERSON: Okay.

>> HAMILTON: Anything? Still thinking.

>> CONNERY: And what's the optimistic finished date for the finishing facility?

>> NELSON-JEAN: Right now, we have a schedule of 2031.

>> CONNERY: So, I guess, and I'm not trying to be redundant here, I guess our concern is, that's a long time between then and now, and so, we are concerned about the actual controls that you intend to put in place in the facilities that you have operating with the MAR reduced as is it. That is implicated, not just in, we just, just to be clear, it's not just one accident scenario. There are several accident scenarios in which the guidelines are challenged. And in which the collocated worker is significantly impacted. And I think, I just don't want folks who are listening or watching to be under the impression that we're only talking about one accident scenario.

>> MCCONNELL: So, if I might, yeah, we would all like to be able to build new high security hazard category-two facilities faster than has been our practice, but that is what our experience tells us that it, this is a complicated facility and it's going to substantially require time to get it online. In the meantime, and the second part of my job is infrastructure, there's a whole effort of maintenance and modernization that goes on within all of our existing facilities. For example, and I won't be able to, I can get you the information later, but tens of millions of dollars of upgrades, just oxygen monitors alone, which is a safety system to detect issues in the, I don't know, I'm concerned about getting too far into details here, but an important system. At tritium, we've been replacing oxygen monitors for the last few years. And we will continue. And so I know for a fact that in my program, both in terms of maintenance of existing systems and upgrades through minor construction, that's been ongoing, will go on, will continue through the ten years that it takes to realize tritium finishing facilities.

>> CONNERY: And you'll get no bigger supporters than us on the importance of maintaining the aging infrastructure and moving into new facilities. I mean, obviously that is a solution set that we are supporting of and have demonstrated in many, many ways, including our last chairman who testified in front of, on the Hill, with regard to the aging facilities at the complex. So, I'm not trying to denigrate that, I am only trying to note that, in the meantime, we need to be extremely vigilant. And again, I said it in my opening statement, we don't write recommendations until we feel like there's nothing else we can do and until we feel like the situation is grave. We've communicated time and time again on these facilities. And we've seen some improvements and then we've seen some backsliding on the tritium facilities in specific. And we wrote you a letter in 2011. And this DSA is actually a result of that letter or is what was promised in that letter six years later. That's just to get the DSA done. So, we're a little concerned with the situation as it stands, and that's why we're here today. It's not because I don't want you to have a brand new facility. That would be fantastic. And we want you to have the infrastructure upgrades. But the situation as it stands and the humans that could be affected in the event of an earthquake or a crane drop or an airplane impact, that's what we're concerned about at the moment. Sorry, that wasn't a question. That was diatribing.

>> NELSON-JEAN: Well, I would like to add, Jim is exactly right. We've put a specific bridging strategy in place for actions in electrical, ventilation, civil, safety-basis capabilities and security all related to our activities in old manufacturing every year until we have a final facility. So, a bridging strategy has been put in place to address activities from now through that time, and prior to today, actually.

>> ROBERSON: Well, that's all I need to ask.

>> HAMILTON: Let's go on to sub-recommendation three. And again, I will pause and let you read.

>> HAMILTON: Okay.

>> ROBERSON: I guess the only question I have is, and you guys, I know you will correct me. It appears your emergency response is a first line of defense. And we kind of thought we were consistent with the department in viewing it as a last line of defense. If you are relying on it as your first line control I am a little confused.

>> MCCONNELL: It's part of our layered defense, right. It is not the first line of defense. That is, the.

>> ROBERSON: That's not what you intend.

>> MCCONNELL: The modern approach to high hazard safety anywhere I know of relies on a layered defense strategy, and so do we. It is an important layer at tritium, but it's an important layer everywhere. The, earlier on, I talked about, before the break, way before the break, that the insights you provided in your recommendation and the things that we're talking about here, are, is good information. We completely accept that there is, as the board has done for its almost 30 years, good help and insights into what we can do. We're not doing it under the recommendation because we don't accept the premise that we have not provided adequate protection. But the opportunity to use your insights to help us strengthen everything from emergency management to hazard reduction and, you get sucked into these, some of these things that, there is one thing that's even higher than engineer controls, and that's eliminate the hazard. But when you eliminate fire loading in order to make sure it stays gone, you put in an administrative control. So, you know, sometimes we get wrapped up in these semantics. But we are doing those things that you asked of us, and we look at your input and say, you

know, we probably, there's more that we need to do. And I'm not going to speak for the site specific folks, but I'm pretty comfortable saying that we will do things in the future that address some of our learning from what you have provided us here in the recommendation and in the back-up material.

>> ROBERSON: Yeah. And I think, listen, we have a dance. The board will say it believes certain issues constitute a challenge to adequate protection, and the department will say, we're going to improve. I mean, that's pretty classic, historically. I guess the question I have here, and if we just take this one sub-rec, by your own actions, this is about moving people. Why, take this one along, why did the department reject this sub-rec?

>> MCCONNELL: Again, the reason, to, I don't want to do this as a negative. The reason we rejected the recommendation is to accept the recommendation would have accepted the premise that we are not providing adequate protection. We rejected that premise, therefore we rejected the recommendation. But as we have talked about here, continuous improvement is something we completely accept and agree. And so, our actions to improve our path forward based on your insights is not tied to our decision that you reached a decision about adequate protection that we can't support.

>>ROBERSON: So, let me just say, I mean, I think you understand our hesitancy. There have been plenty of times where that, like for almost a decade in this area where the board has stood to the side and said they've got these actions. And what we've seen is, they linger on. so, but I want to focus specifically on sub-rec three because the department also has a reputation of saying we're not going to accept that one, but we're going to accept this one. So, on sub-rec three, by your own actions, you acknowledge, you can't really demonstrate, you've moved people the way you might need to move them in the case of certain scenarios. Which I won't state. So, why is that?

>> MCCONNELL: So, I guess one thing is that, let's just as a thought, experiment here.

>> ROBERSON: Yeah, that's what I meant, yeah.

>> MCCONNELL: If we had done one drill at a very large scope and that drill was successful, I don't know how much confidence I would be able to take out of that saying that that, because drills are, and emergencies have so many variables in them, and there are so many things that change that it would be nice to know that if we do continue to do more and more challenging emergency response exercises, we get more and more learning, and we're all about that. But it doesn't prove, like an LCO, that we've established something that we can take into the future.

>> ROBERSON: No, no, no.

>> MCCONNELL: It just allows us to continue to learn in greater insights to more things.

>> ROBERSON: No, no, no. You're, I agree with you 100 percent. I don't think we asked you to prove, we asked you to practice. And the practice is what demonstrates capability, right? I mean, that's the whole premise behind the program.

>> JOHNSON: I mean, one of the things I think I mentioned in my response, which was, you know, we will continue with directing the contractor and some things that are onsite and will continue to make efforts to improve and I think I made mention of the fact that, you know, we were planning a larger scale impact exercise. And we'll get it scheduled and we'll practice for that. And I heard you from before,

and that, you know, obviously the department and others have said they were going to do many things and many times it has lingered or not happened. You didn't actually say that, but –

>> ROBERSON: That's a good recap for me, thank you, Thomas [laughs].

>> JOHNSON: That's what I heard.

>> ROBERSON: Okay.

[LAUGHTER]

>> JOHNSON: But, and this is sincere, I mean, we're planning it, and we're going to make sure that those kinds of drills are done there onsite.

>> AUDIENCE MEMBER: And if I could add to that, the star record that documents those actions that we are going to pursue as a direct result of your five sub-recommendations are all contained within one star record, which we have worked jointly with NNSA for their concurrence, and we have shared that with the local representatives in your department. I think it has meaningful and measurable milestones associated with it, so you would get some indication if we're becoming off-track where we could be readjusted or asked for an explanation. As for, have you demonstrated it, large-scale movements, we have not done that in conjunction with a per-se tritium release. But we have demonstrated large-scale movements of site employees based on our hurricane evacuation plans and some of those other plans that we currently have in place that when Mr. Johnson said that we're looking to consolidate some existing plans, procedures, tenents and processes that we have parked in different locations, we are looking to consolidate that more so into one stand-alone document. And I hope that answers your question better.

>> ROBERSON: Thank you.

>> CONNERY: So, I like the idea that you have milestones. You know what else would give you milestones? An implementation plan of a recommendation, just putting it out there. I do have some questions about oversight. Two weeks after the recommendation was sent, DOE SR sent a letter of recommendation to SRNS taking the contract, asking the contractor to conduct, or I guess tasking the contractor to conduct an assessment of the issues listed in sub-recommendation three. However, in DOE's response to recommendation 19.2 the NNSA administrators stated, and I quote, DOE SR in conjunction with DOE NNSA will perform an evaluation of the items listed in sub-recommendation three. And to me, that's an important distinction because obviously it's, at the end of the day, it's the department that's responsible for the health and safety of both the workers and the public, not the contractor, although I know you work in conjunction with them, and I think the new terminology is partner with them. But I'd like to understand what your intentions are with regards to DOE for performing an independent assessment rather than relying on the site contractor.

>> JOHNSON: Well, I'll start and Duane may add to this. But a couple things in what you said that I want to make sure is clear, you're hearing it from the administrator. One of the things is that, at the site level, we work pretty much hand-in-hand with NNSA. Nicole and her deputy and myself and the site manager, we meet on a regular basis to discuss whatever issues or concerns that we may have with, in our respective areas. And so that we can have a site solution to whatever the issues may be. So, it's not an

NNSA problem or an EM problem at the site. It's an issue that we're trying to work at the site level. And it's the larger part of what I wanted to respond.

>> AUDIENCE MEMBER: Yeah, and since you specifically try to address your question because it was formally transmitted to the contractor, it has certain caveats that are associated with it. The contractor will develop their own stand-alone corrective actions, milestones and achievement tasks. But as part of the final, what I would call verification and validation, the DOE oversight on both sides of the house would have to conduct effectiveness reviews to ensure that those corrective actions did achieve the goals that we were hoping to obtain. Further, we would look for some, let's say they did these things in a drill or a tabletop format, we would look towards working with Ayesha's group jointly to develop some stand-alone DOE LOI effectiveness reviews that we would be filling out to try to validate the correctiveness of those closures.

>> CONNERY: Thank you.

>> HAMILTON: I'm not seeing any other questions on sub-recommendation three, so Ms. Lane, you can go ahead and take that down. Are there any other questions at all for our – yes.

>> CONNERY: Did you have any?

>> HAMILTON: No, I've got some closing remarks. Hearing none, thank you Jim McConnell and Thomas Nelson and Nicole Nelson-Jean. Did you want, did you have something that you wanted to say? Oh.

>> JOHNSON: Nothing other than Thomas Johnson.

[LAUGHTER]

>> HAMILTON: Oh, I'm sorry. Where did I get? Okay.

[LAUGHTER]

>> HAMILTON: Yeah.

[LAUGHTER]

>> HAMILTON: Let me start over.

[LAUGHTER]

>> HAMILTON: Thank you, Jim and Thomas and Nicole for being here today and for the presentation to discuss these important issues with us. These are vital to our shared interest in ensuring the public health and safety at the tritium facilities. Board members, do we have any other questions for deliberations amongst ourselves while we are in a public meeting format?

>> CONNERY: I do not.

>> HAMILTON: Hearing none, I will now turn to my fellow board members for closing remarks. Ms. Roberson.

>> ROBERSON: Thank you. And I want to thank the three of you and your cohorts for coming and doing this briefing. I greatly appreciate it. I'd just like to say, I don't see a real difference in the technical underpinning of the issues we raised and the description and actions you've described, which makes

sense to be, because, primarily we're reacting to the department and contractor's own technical analysis. The issue the recommendation raises is, should and can the department take additional actions in the present to mitigate and demonstrate adequate measures to ensure protection of the public, collocated worker and worker? And I think, you know, as we deliberate, that's the key question that still exists.

>> HAMILTON: Thank you, Ms. Roberson. Ms. Connery.

>> CONNERY: Sorry you caught me unprepared. So, I would also like to thank the panelists, the audience for putting up with this. It was helpful. I don't know if I got more out of it than I got from reading your response or knowing what it is that you're doing onsite. Because you do provide us with information that keeps us informed. I'm keenly interested in the emergency preparedness side and if you're going to do a site-wide exercise, keep me in mind, because as I said before, I have an affinity for attending those. I would say that, I am going to associate myself with Ms. Roberson's remarks. We're going to consider the information that you gave us. I can say personally that, it didn't sway my concerns with regard to the situation at hand at the tritium facility and the urgency of actions that need to be taken. It's, the plans, I think, are good. And you'll evaluate the DSA and we'll look forward to see what that looks like. But as I said, I think that they would have been much more value, and I still believe that there's value in acceptance of the recommendation, the development of an IP along with our staff so that we can assure ourselves and each other that we're doing the utmost to protect the individuals who are at the site, who work at the site, who traverse the site, and those of us who visit on occasion and we like to do that. I think that that is important. My other concern is that I don't believe that this is an issue of a sentence in our cover letter about adequate protection or if we had used the word may cause concern of adequate protection, that the recommendation would have been accepted. Your colleagues, I think Mr. Mallory in the audience have stated explicitly that if we put forward a recommendation on the tritium facility, that it wouldn't be accepted by the department because the department refuses to acknowledge that the defense board has a role in the protection of the collocated worker statutorily. So, that is my fear is that this view of the department with regard to our jurisdiction is causing harm to the relationship and causing harm to safety in the process by creating a rift that I don't think is naturally there, given that we are all, as Nicole said, and Jim said the same thing, we are all here for the same purpose, which is to make sure that mission of NNSA is done and it is done safely for the American people. Thank you.

>> HAMILTON: Thank you, Ms. Connery. I will now offer some closing remarks. And first of all, I do recall Mr. McConnell, you said that 140.1 was not a consideration in this. So, I will discuss that again in a minute. But, as I think everyone here knows, I did not support this recommendation. My reason for my dissent is laid out in detail in my remarks associated with the notational vote, which was posted on our website Friday, May 31st of 2019. While I won't repeat those remarks in their entirety, I do want to highlight a couple of main points. The adequate protection criterion does allow for risk. In writing the Atomic Energy Act, congress understood that there would always be some risk present in the nuclear enterprise. And that absolute certainty or perfect safety is an unobtainable standard. Congress established this board using an informed and experienced group of nuclear field experts for the very purpose of weighing their differing views on what constitutes adequate protection in order that we come to a balanced conclusion. Congress declines to provide an objective definition of adequate protection, and instead deferring to the collective wisdom of this board. And while each decision can and should be informed by objective analysis, and adhering to standards, what constitutes adequate protection is, in the final analysis, subjective. I respect my fellow board members' views that the tritium

facility currently does not provide adequate protection, just as they have demonstrated in their words and actions that they respect my view that it does. Our disagreement is about where we each, independently, draw a line along a subjective continuum between adequate and inadequate. The fact that I have a higher tolerance than they does not mean that I don't think there are concerns at the tritium facility, I do. A catastrophic accident at the tritium facility likely would result in multiple casualties, including acute fatalities to workers, and perhaps to persons located in adjacent facilities. That said, the tritium facility is in a relatively remote location to the broader general public population, such that there is effectively no acute and only minimal chronic hazard. And the risk to facilities workers and collocated workers is in line with other industrial risks present in the United States today. Further estimated consequences are based on conservative analysis and that, and actual radiation doses would be lower than those calculated. Additionally, as pointed out previously, Congress intended that the board weigh such factors as the record of past performance, that such a postulated accident, such postulated accidents have not yet happened at the tritium facility does not mean that they never will. However, the absence of less severe precursor act events should be taken into account when applying the adequate protection standard. Given the conservative analysis, the rough parody to other industrial accidents and the low proximity to the general public, and the history of the facility, I previously concluded that the public health and safety is adequately protected. Taking the actions proposed in this recommendation might increase safety margin but even without them, the adequate protection of the public health and safety, which is always subjective in determination, is still preserved. I'll close with two final points. First, the department's September 10th, 2019 rejection of the board recommendation argues that DOE NNSA already has a risk reduction strategy being implemented. While that may be laudable, it is irrelevant to whether a recommendation is warranted. The board's responsibility is to inform the secretary when the adequate protection standard is not being met today. Saying that a recommendation isn't needed because the department has a plan to make things better would be like my saying that I don't have credit card debt because I have a plan to pay off my credit card debt. Second, I am encouraged that, in rejecting this recommendation, the department did not include board jurisdiction in its reasoning. Because I think everyone knows the board believes strongly that DOE Order 140.1 wrongly attempts to limit board jurisdiction in ways that are in direct conflict with the plain reading of the Atomic Energy Act. In a previous draft recommendation on the tritium facility, the department's Under Secretary for Science inaccurately claimed in a letter of February 15th, 2018, that the board had no jurisdictional authority over the tritium facility, quote, in light of the limitations on the board's authority, under its enabling statute, to make recommendations necessary to ensure adequate protection of public health safety, his emphasis on the word public, all references to these facilities should be removed from the draft recommendation, unquote. In other words, he claimed the board had no jurisdiction over the safety of facility workers or collocated workers. This mischaracterization of the board's jurisdictional authority was seemingly lifted right of DOE Order 140.1. I am very glad that this wrongheaded reasoning wasn't used in this recommendation rejection, which we've been discussing today. The board's next statutory step is to decide whether to reaffirm the original recommendation or to make a revised one. As always, I look forward to working with my fellow board members in that process. Those conclude my personal closing remarks. This concludes this public meeting of the Defense Nuclear Facilities Safety Board. We are adjourned.