

Feb. 11, 2008  
1952 Palisades drive  
Appleton, WI 54915

Dear Dr. Garrick and Board Members,

Thanks you for readying my public comments. I know I'm not an expert, but I did follow the documents on dry cask storage for years. So I do know some of the history involved.

Thanks you for all your concerned questions. They are much needed. Keep thinking creatively!

Thanks,  
Fawn Shillinglaw

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Public Comment by Fawn Shillinglaw on USNWTRB Winter Bd. Meeting January 16, 2008, Las Vegas Transcript (To All Board Members

p 25

I am very interested in Mr. Sproat's report to come out this summer on a need for a 2<sup>nd</sup> repository or "other options." I hope this will be public information. As you know, industry is already gearing up to build more reactors. I saw article on that in the Texas paper as we were on vacation bird watching there last week. The board certainly should make it clear that they expect to be involved in peer review of any 2<sup>nd</sup> repository plans or "extensions" of Yucca Mt. Wis. is very concerned about this.

p. 26

"What does Congress want on "centralized government interim storage"? The board should pose questions on this issue.

p. 51

He says, "Our current plan is to use commercial facilities to maintain the casks that ship bare fuel" and that the maintenance facility at Yucca "will be designed to maintain casks that have only shipped canistered equipment." Do I understand this to mean that dry cask storage already at the plants will remain there, and only TADs accepted for a long time? If so, this gives unnecessary high doses to workers at plants, in transportation to the public, and transport workers, and to Nevada people. The "oldest fuel 1<sup>st</sup>" policy set along ago is a good one – lower doses on the roads and rails, and oldest fuel gets to Nevada before it fall apart in the casks outside on pads in Wis. weather and other places. The oldest fuel already on pads should go to Yucca 1<sup>st</sup>. How can DOE justify sending fuel from pools, instead, when public and worker safety should be NRC's main goal?

P. 57.

He says, “The accident risks of spent fuel shipments are far less than the accident risks associated with other hazardous commodities.” Does this board agree with this? Consider that TADs, or the transport overpack, or their rail cars and attachments, have never been used or tested. I don’t see how they can make this statement. Certainly no casks containing the huge amount of spent fuel as a TAD, and that weight, have ever been shipped in the amounts of shipments and time that will be sent to Yucca Mt. in the future. What was his statement based on as far as comparisons? Date? Amount of fuel? Weight? Etc? I find statement lie this made to appease public concerns need very careful backup in documented cases in reality. With terrorism added to risks now – time are very different. Has the board questioned this at all? What accident risks can you think of they didn’t evaluate? (The cask hasn’t even been finalized in design yet!) Does an “accident” include terrorists holding a cask hostage in a tunnel, or on a bridge, or hitting a train with a place, or derailed cars hitting other hazardous waste on other trains passing by, or trucks waiting at crossings? There will be a lot more waste, and a lot more shipments, over a long, long, time. This picture needs to be evaluated in real present scenarios.

It says spent fuel accidents are less risky that methanol, propane, chlorine, etc. – but this is all based on what? small casks of the past with a few assemblies, a few times a year? where’s the “real” comparison?

p. 59

I don’t think just a “test” of a rail cask hit by a locomotive at a crossing will prove a whole lot. These tests are too limited in scope. I like the emergency response testing with it though. Surely we need a lot of that.

p. 61

He say’s, “If there is not a perceived benefit, then no risk is acceptable in the public’s eye.” With the delays going to drive up costs for the total repository and transport program in the future, the huge US deficit and war going on etc. – the public is going to see a lot of other areas needing scarce funds in the future – will they really see the sick of all these spent fuel shipments going through their towns (and along highways next to their kids in cars) as a benefit? Will they look at solar and wind and geothermal etc. and say we don’t’ want t 2<sup>nd</sup> (or even 1<sup>st</sup>) repository, or more nuclear waste generated by new plants? Where is the real long range planning for the safety of future generations here? France made a choice in the 60’s. We are not France. France did not develop or test the nuclear bombs or drop one. Nobody n this country will forget that, or 3 Mile Island. The fear is there because so much radioactive waste was mishandled and people were exposed to radiation over all these years. You can’t just erase that.

p. 62

He lists remoteness as a main benefit of Yucca Mt. – Yet does not elaborate on comparison of the 121 sites to Yucca and its transport system over many years. Is it really in the public safety benefit to continue this more and more expensive program?

p. 66-67-68

Mr. Abkowitz is asking good reality questions here that apply directly to our Wis. situation with more dry cask storage on pads over the years. And if TAD production is delayed, dual purpose or storage only casks will be used. This means a lot more handling at the plants and at Yucca Mt. over time and is going to be a major problem – that details of which should be of big concern. Wet handling at both utilities and Yucca Mt. will cause scheduling problems and more risks and exposures.

Being “hopeful” that utilities choose to use TADs is a big assumption. Also hoping for a turnaround of a week for loading a TAD at a utility is unreal. A working group of transport people and utility people better start looking at the details of unloading dry casks (many different casks form and different procedures and equipment needed at pools) from pads as well as scheduling loading TADS etc. – he real details always get left to the last and always cause big problems. What if a TAD is loaded, found faulty, and needs to be unloaded at the plant? Remember this is a new cask, new procedures, new equipment. I can’t help but remind you of the explosion at our WI Pt. Beach Plant because of the unknown hydrogen production from the painted surface of the VSC-24 cask used here. Pool chemicals are different at each site, as is equipment, and procedures. This is a big concern of mine – the real thing. (We’ve had a mess here before because of too many assumptions and not enough testing.)

p. 69

Dr. Abkowitz is right – rolling stock and empty overpacks are a concern – problems come up a subcontractors or vendors – there are a lot of production QA concerns to be worked out – will material be available? Etc. etc. – In a rush – often welds aren’t checked well, seams requirements aren’t done accordingly, the rush in production causes problems with lids don’t fitting or fuel getting jammed in basket slots etc. etc. Lots of problems need to be worked out with the real thing in production of new designs – especially if the design isn’t really finalized, but keep changing as ours did. Workers have a hard time keeping up with a constantly changing safety analysis and design and the public end up with a poor product actually costing more because it wasn’t done right in the 1<sup>st</sup> place. We have experienced this in Wisconsin.

p. 71&72

To expect empty waste packages “on demand” and loaded waste packages “removed immediately” etc. – not looking at interactions between facilities is a big concern. The public kept asking utilities and NRC to look at the total cask system with certifying cask designs in the beginning and that wasn’t done. We feel that it as an “interactive system” and the details of that were not thought out carefully so that after design certification -- a lot of “kinks” (major ones) had to be worked out which should have been worked out in dry runs and materials testing etc. over time before the utilities were used as guinea pigs for new cask designs. It may seem long ago when our VSC-24 was the 1<sup>st</sup> generic certification by NRC, but it was a mess! Vendors can make a lot of claims and promises that don’t work out to be true when money is to be made. There will be delays. There will be problems. It does have to do with “handlings” and “exposures” as Dr. Abkowitz says. The type of performance described in models and documents may very well not be able to be achieved in the real total system. Just the cable fit-up to put a lid on a pool edge can cause a major setback, if not planned right.) The devil is in the details – we’ve seen it happen here for sure. Can you believe that at one site they used flammable plastic tubing and duct tape to vent the hydrogen from the VSC-24 cask (that wasn’t expected in the

cask design) – this was in another state – I remember talking to the NRC inspector about it – the tubing burned twice before they decided to use something else. (Maybe they used bubble gum and a straw? I was appalled!!) But when you visualize real workers on the job trying to innovate something in a critical time frame, because the cask wasn't tested properly, this is the kind of stuff that happens in reality! I wish I still had that document – I'd send you a copy.

p. 73, line 15 & 16

No waste should come into Nevada “thermally in a condition not ready for disposal.” Oldest fuel first should come 1<sup>st</sup>.

p. 73, line 21& 22

What does he really mean in number of years when he says “fairly significant aging requirements for some of the fuel that's received” – this is STORAGE.

p. 99

Does the Board have a copy of the “Standard Contract” with utility on waste acceptance? If not, I advise you all to read it. Years ago I remember public concern on the part about being able to trade places in the lineup for sending waste to the repository. If this is still in the contract, who has the authority to decide what a utility can send and when – can they do as they line and say “we want to send fuel from our pool and leave our dry cask storage on the pad here” and instead of storing the waste on site and sending their oldest fuel (already in casks and “aged” and less radioactive) they want to send hotter fuel from their pool and let it “age” or be stored in Nevada until thermally ready for disposal – maybe for decades! Can Nevada get stuck with a pile up of hot waste in “aging” status while the repository fills up with fuel that is hotter than in casks at the utilities on pads? If this ends up to be the case, it is just plain against all the laws intended to prevent this made up until now. The coolest fuel should to in transport 1<sup>st</sup> and into the repository 1<sup>st</sup> – less radioactivity and less heat. The choice should not be left up to utilities to send “hotter” fuel that on their pads already. This is a major concern and needs NRC attention as their mission should be public safety – that means “oldest fuel first.”

p. 106

He talks of all the waste that will have to be aged at Yucca Mt. Has the soil been tested there and is it really feasible to build pads there to hold all these “aging” casks? “Anchored down to seismic specifications – attached to the pad? And has cast to cask “shine,” radioactivity, venting of cask overpacks etc. – has this really been evaluated in detail? I remember that the pads at Palisades in Michigan was built on sand dunes using the EIS for the plant (which was on bedrock) and soils testing having been done after the pad was built the plant EIS was not applicable at all to the pad site. If they want STORAGE at Yucca Mountain, they had better be sure they have a safe pad and the right distance between casks and monitoring of vents etc. I am very concerned about these attachments to the pads – never have I seen these in any cask design in the past. Does the Board have details on why these are needed and on pad soil testing. Is this all really feasible?

p. 107

Why do they need to “preserve the capability of cladding and a barrier? Find this very strange – nobody knows the condition of the cladding after dry storage (or aging) or after transport across

the country. How can they say 350°C “limits degradation to the cladding by pre-rupture processes”? Where is the proof of this?

p. 110&111

Why is he looking only at a pre-closure even of an interruption of ventilation for only 30 days? My understanding is that after 30 days the cladding would exceed 350°C? Is that correct? So, why couldn't a problem result that couldn't be fixed in 30 days? Where does this number come from? Why?

And why is the ELWS (estimated limiting waste stream) based on an emplacement limit of 18 kilowatts, and then allow transport of 22 kilowatts? This demands 2-4 years of STORAGE at the surface in Nevada. If it is really AGING then only a year should be allowed. More than that is not necessary. \*\*Where is proof that it is? Why expose the public in transport (and workers) to higher doses when this is not necessary?

p. 112

I find that the same group corroborating this own results by using more “bells and whistles” is not acceptable. Such a complicated model surely needs an independent review. A computer only spits out what is entered in. If they made a mistake, there will be big problems. How can this be tested? H.L. Menken once said, “for every problem there is one solution that is simple, neat, and wrong.” Is this model too simple? too, neat? and wrong?

p. 116

Do you people see any way that a hot package would mobilize water to cooler packages through evaporation and condensation for a “hose effect”? Can this happen?

p. 119-121

I find that the package to package (end to end) spacing seems way to close for retrieval in the designs. What do you think this spacing should be do you think? They say here they may us this space to “control thermal line load.” What retrieval problems could this cause if they aren't all the same space? I'm glad to see that the Board is doing some thermal analyses of your own. Good. (This needs a lot of attention and coming at the problem from different directions and purposes.)

p. 122, line 7-9

I object strongly to the objective of “getting fuel before it goes out to surface storage at the plants.” Fuel from dry cask storage at the plants should be sent 1<sup>st</sup>.

p. 125

Thank you for asking, Dr. Kadak – a real answer finally and just what the public does not want to hear. Those ISFSI's at plants “will stay at the site” “for a long time.” This is just plan unfair to leave that older, less radioactive fuel on site and transport hotter, more radioactive fuel – it puts the public and workers at the plant, in transport, and in Nevada at unnecessary risk! Plus, if I were a utility, I'd wonder how long I'd be responsible for these ISFSI's?? And what is really happening inside those old casks of all different designs. For example, I'd like to refer to a document we used in call “the fat lady is high heels” report. It was funny, but also a part of very

serious discussions at our hearings with our Public Service Commission in Wis. A little known fact is that there are rings of small ceramic tiles placed between the carbon steel inner liner of the VSC-24 cask concrete storage overpack and the MSB or inner carbon steel canister containing the basket of spent fuel. The theory was that when the inner canister was loaded inside that metal liner of the concrete overpack, you had 2 metal surfaces together there – vented with Wis weather through the lower vents in the overpack and out through the upper vents. Well, for one thing its very cold and damp along Lake Michigan a lot, and water could eventually condense in there, as the fuel gets cooler. The fear by the vendor was that the bottom of the inner canister and the bottom of the metal liner (in the concrete overpack) could rust together over time and not allow the inner canister to be lifted out at the end of use. To prevent this rusting together of the 2 metal surfaces, they decided to place these 2 rings of ceramic tiles on bottom surfaces of the inner liner of the concrete overpack. Then, when the canister of fuel was lowered into the overpack, it would sit on these tiles and the tile would form a gap keeping the 2 metal surfaces from rusting together over time. The public interveners wanted more information about the strength of the tiles, how they were held in place, etc. We did not trust them to do the job at all. That canister sitting on them was a lot of weight! Plus if it came down hard in loading, we felt that tiles could crack or crumble and be lost in the rust build-up over time. The vendor and the utility supplied us with the “fat lady in high heels” report (from the tile people) telling us about the strength of the tiles when a woman of a certain weight walked on a tiled floor in high heels. Well, you can imagine the controversy. And I still worry about those times – never did find out what adhesive was to hold them in place at all. These are the details that can come back to haunt you in unloading! And this is the kind of thing you have to also look closely at in plans for retrieval in the repository. The devil is in the details. Nobody knows if those tiles are in a cracked up mess in those casks at all – once the canister was set on them, you couldn’t see them obviously.

p. 126

Well her it is – “almost all the utilities are going to want to relieve the congestion in their pools.” Seems to me the certification for our Pt. Beach casks was 50 years. – so now I suppose NRC will extend all those certificates for longer durations. I think that’s dangerous.

p. 127, line 5

Dr. Kadak, you said a “no no” in line 5 here – you said “STORAGE” – not “AGING” and Mr. Hardin agreed. Yet we are told aging is not storage!

p. 136, line 1& 2

Where are those “charts showing the distribution of this size of the aging pad requirement?” Are they doing studies way beyond 70,000 tons? Is Yucca Mt. being actually evaluated as the 1<sup>st</sup> and 2<sup>nd</sup> repository at the same place? Is this all that industry need to promote new reactors and creation of waste? Here we go again!

p. 136

Can a “cold trap” form if moisture transports over the air in dust floating about? Is that possible?

p. 139, line 18 & 19

Dr. Hardin says that “seepage is possible” – “the significance over that pulse is low because it is going to encounter an intact drip shield.” And what happens if the drip shield is not intact?

p. 146

Corrosion concerns of Alloy 22 do continue to be a point of contention and I’m not so sure testing coupons in a lab setting will improve confidence – it all depends on the experimental set up. We need to come at this from different angles and get the same results over and over at the least. It’s a big concern! And I look at material interactions – possibly causing further new materials interactions over time as something that has a lot of unknowns depending on real repository behavior in the future. Even years of testing is short compared to repository lifetime. And we are doing this all too late. When I studied some of the tests used for the weld cracks in the VSC-24 – long ago, the crevices made for the testing in coupons seemed to be of real importance – size, shape, depth, material used to cause the crevice – anything in an experiment can create new variables. The passive layer credit ability really bothers me. Handling will have its effect on that layer.

p. 149

What is “black anneal oxide”? Do you understand its concerns? Well, I’m glad that finally all the major corrosion modes will be tested, but are they doing to go ahead with vendors to design a cask using Alloy 22 before these test results are done for at least some years? What do you think of this?

p. 150, line 23 & 24

He says “maybe we missed the boat on representing some of the physical conditions” – in previous corrosion experimental testing. So I wonder, if Congress had come through with funding and this was all full speed ahead, would this Lawrence Livermore testing in the past be all that was done? Now they say maybe they “missed the boat.” Well, I ask the Board to keep asking for long term corrosion testing and keep looking for other alternatives to Alloy 22. I just don’t like the depending on that passive layer to remain intact. I’d hate to see other options not looked at ever again because DOE has zeroed in on a rush to licensing using Alloy 22 as the basis of the whole barrier (when it should have been the mountain – not the cask).

p. 153, one 13

I don’t think a 50-day experiment tells us a lot, but what do you think of the variables used? the set up? the stained regime? any ideas?

p. 158, line 7 & 8

Thanks you Dr. Duquette, for asking, “Do you really think a 50-day test shoed that?” It needed to be asked. And I’m so glad you are looking at the testing process. I always want to know the basis for the set-up and if the results can stand up to questioning like your expertise. Keep asking those questions!

p. 163 & 164

Dr. Latanision – don’t let them off the hook on this – it is important that these tests be done. Don’t accept less. I am glad that Board members have the integrity to question the proposals and results. The public relies on your expertise and you understand the gravity of this situation on

your shoulders for future generations. One question, not asked, may make all the difference. Keep asking. Thanks!

p. 169

So they don't really know if it was "localized corrosion" and so is the discussion about stifling valid? I question stifling really. That passive layer needs a lot of testing – over long periods of time.

Next morning- Two weather facts and thought to tell you today became they effect day cask storage in a way you may not know. We had a lot of snow on the roof and ice dams have formed on the overhang. This relates to how casks are vented- 4 openings in the bottom of the concrete overreach for intake of air and 4 openings in the top to let the air out – all passive. These openings in the top to vent and could form a blockage. I followed the monies for a for a while and there was an instance where icicles had to be closed, with full cooling a lot more by now, those instances would Shirley be more frequent in our big snowfalls this winter. The second thing is that it has been 12 below 0, and they had to change the limit of the tenycirsinc for moving casks at point beech, years ago, because of possible brighteners. If I d remember right, it was 0 and was moved up to 10 or so. We strongly objected to having a cask that couldn't be moved (in case of problem) back into the plant because of these low temperatures. The utility claimed it was for "worker comfort", but the documents said it was a concern for brittleness in the cask when we checked. Also, there was a concern for the screens getting clogged with dust or debris or mud wages getting in there and building nests. The things that mother nature has to herd out, that you don't see in the lab tests. So what dose Nevada have to offer? This deserves some thought. How many casks will be in storage there? How monitored for radiation? How screens (or whatever) checked? How will these tie down (or whatever they are) to the pad he monitored? A lot can happen to the casks out doors on pads. And opening casks and removing the frill after, many years of dry storage really hasn't been done, has it? What surprises will we have in store?

p. 178, line 14-16

Dr. Ginich says "There continues to be the question of how relevant this is to the actual environment that you would get from more field experiments." How true! A fifty day test is very short and the test conditions very limited. Where has alloy 22 been used outside before? How long? How tested? And I always wonder what can come from inside the cask that can affect this only layer? What is beneath it? Heat, radioactivity, other chemicals reactions of materials etc. If that passive layer allows corrosion – what really can happen – say if it dust settles ther or the layer under it starts to rust at that or not. What else? (Expect the unexpected.) All of this discussion about the chamber corrosion tests make me wonder if we just are at the starting point of knowing real facts about alloy 22. You know I was asking about the casks years and years ago and nobody wanted to look at it – just study the mountains. Now here we are at the edge of licensing and we know very little about the cask materials. I think when you consider the ramifications possible, every thing possible must be long term tested – This chamber is only a Start. Everything in that reality now reflects on that passive lager really working and you do not know that it does. If things have to be delayed to do the long term tests necessary , then make sure you demand that time. The length of time of regenerating life and the concern for further generations demands this of you as a broad and think. Common sense dictates that there are surprises in the real world and DOE needs to do this job right even if it is expensive and takes

time. As a grandmother of three (with one on the way) I see future life in a way maybe you don't. Never forget you're responsible for grave decisions being made. You need to keep on top of all this and ask the questions. We depend on you. And we really appreciate all your hard work so far.

p. 187

This work on DUST is needed so badly. Mr Petterman says that "anything at the surface of Yucca net, is going to have a little dust dune in the leeward side" So what about the casks on the pads and their vents and screens – will that be looked at too? And what about TADS and alloy 22 overreaches in strange ready to be used. I remember a report about the discoloration on the coating of a MTC ( Multi use Transfer cask for transfer in poor of canister of VSC-28) That had been sitting in the sunlight outside – in Ark.. I think it was- and they didn't know why- some chemical reaction they never considered I suppose. However, it just goes to show that you even need to consider what happens to alloy 22 after those designed overpass are manufactured .Were will they be stored before use ? What temp? What dust then? Etc. What happens to it before waste is even put in it and what will it bring on its surface already before it ever enters a drift. Think about this. It may and up being ignorant. Will storage buildings at vendor sites have a lot of dust? Will they at Yucca ? What is the path of alloy 22 from the instant it is created? How is it installed? When? Where? Conditions? Before ever welded into a cylinder, and how monitored ? QA? And testing of these layers just helps put on the raid to go into the tunnels. If it is already pitted or scratched – it will fail over a much shorter time then expected. I truly distrust all the degreeless on this little position layer. Too much expanse to anything and too much evading! Dusting in the refectory is the last thing to worry about. What happens before this.

p. 189

Reading about vacuum and the brush and dust pan method described on this page to collect dust for the tests is strange because between writing here, I 'v been dusting a room at a time to get up and stretch. And so I'm using a dust cloth and shaking it out the door now and then. So I'm thinking what kind of dust settles out first on that passive layer particles? Light ones I suppose? And then it descends on air currents (casks near ventilators fans? What comes in) etc. Small room in my house have more dust, some areas of the room are more dusty. So I'm thinking when I vacuum it all gets mixed up in the vacuum cleaner bag. If I use broom and dust pan, it all gets swept together in the pan. My dust cloth is more immediate to a small need. But if you wanted to look at real dust closely is it naturally is in a drift, I'd say carefully remove a touch with a layer of dust. Put it in a container and hardly move it –Then test the dust in a place (without air blowing on it) and study the dust microns from the top down. Taken by layer of particles. What really landed on the rock first? 2<sup>nd</sup> ? Etc? Well then you've have to conjoins of an actual material of the cask. The metal layers covered with alloy 22 put these cognomens in different areas of the drifts. Carefully remove them as not to disturb the dust or test it right there if possible (not removing it) Look at the particles as to how they are layered on the passive layer in reality. But then you also would have the variables of heat and radioactivity in a real cask, would they affect the dust? And will the dry shield called dust as well as the invert etc? Will dust collect at places where the cask sits on the invert as it dose with thing sixty in my furnisher? These are things in the real drift producers to think about dust from rails etc?

p. 193

They say they were surprised to find “pound water” in the dust, I am too. He says “all we can think of is there’s a comment of clay and is solids and maybe by blasted volcanic glass in the dust that’s yielding that water. “ How that offset the alloy 22 passive layer??

p. 195

Metabolism in the dust come from stue – electrodes etc. Seems we getting into something here that has a lot of unknown and assumptions- with ventilation blowing air around in the drifts later- everything in there will let off dust to settle on that passive layer. Way too risky! Dust may be the Achilles heel of the whole regenerating system. The regeneration should never become dependant on a cask passive layer!

p. 200

Yes, this is what I expected- the casks near the ventilation get the most dust. But later the casks put in will get dust every time comes in with a new cask won’t it?- as the air will be disturbed more, and the dust on the t racks disturbed, as well as on the rock, as the cask goes by on the rail. Any movement in there will create dust disturbance to casks already employed. And any rockfall will do what? Especially if bolts came loose or shot crete or whatever else holds up the walls. And what about that fill under the invert? What dust will that create when hauled in there, and placed after that? Too many variables- too much movement- too many materials. That passive layer is doomed, I think. We need something better!

p. 201

Excluding one sample very close to the north portal. Why/ What was that one? May be important? If something doesn’t fit the excreted, I want why it didn’t, don’t you? ( A comment here- Jim not hearing from any woman at all at these meetings. Why not? You know we women dust all the time. I suggest you each go around your office and slide your finger over a lot of different surfaces and look at the amounts and kinds of dust you find. Its amazing what you find. I clean a great variation on my dust cloth and usually I know why after living here all these years. But Yucca mt. Will have so many more variables in the future, that even studying dust now, won’t tell you the story of dust as casks come rolling down the rails inside the tunnels, fill is just in, dry shields, regain to walls, climate change, heat ventilation, radioactivity- what will all the obstacles be the future, try to list them all.

p. 205, line 16

He says I have no idea “how the canisters are going to be cleaned.” Well that’s a thought – can this be done after looking at it all, without disturbing that passive layer? The points contacting on the VSC-24 that created the hydrogen gas explosion surprised every body and made NRC start to take a good hard look at materiel interactions- cleaning solvents were my thing considered better think about how casks could be cleaned and when + then after that – testing the passive layer – all getting way too complicated- dust is every where, all the time, and many heated.

p. 207

If dust drops out in the baffle system and the “The very fines are carried all the way things the drift” the velocity of the ventilation, is this really good or bad? Are the “very fines” the culprit in corrosion or what? And should the “door really be closed on the chloride issue” at this point? Dr. Fatinisim has some very good questions here and ideas for experiments never any. I hope the

Board members see these are done. We need to understand these processes. I 'v seen the word "surprise" too often on these pages today. We don't want suppress in this report, especially since I think there is no adequate retrieval plan even considered yet. And that is a refined. It is severely not ,” us to haul them out the way you put them in.” We need a full blown action plan for retrieval including where you put the carts you haul out if necessary.

p. 213

Thank you Dr. Abbivity for saying what I feel here too. I don't think they can judge this for the long term either and I think Dr. Kadah wonders too and so dose Dr. Fatainisim. Atmospheric dust will change forever, and you cant understand a constantly changing phenomenon especially with climate change looming in our future- as they say, dust can even come from Asia- its worldwide – volcanic ash the whole bit. And I'm not convinced about "stifling" at all from the little testing done. We are now getting to look at the nitty gritty of the real world and if I were a utility chairman reading this I'd think very carefully if I want to cancel my order for mor deal purpose orders or wait till TADS comes shipped to my door. A utility is about money and schedules and future plans – they need to know what to do with their waste ahead, become a vendor can only supply so many to reactors in so much amount of time. Plans need to be made. And if Yucca Mt. is licensed too fast and casks built that don't work The utility is going to end up with casks they can't use and a backlog of fuel in this pool. They are watching all this carefully, and believe me,-as much as they want to get rid of this waste, they also fear this won't work and they don't want to risk their money. Money matters to them utmost. They would like DOE to take the whole mess to Nevada and deal with it on the surface if need be. You can't let this happen. If more time is needed – take the time. This needs to be done right or not at all. And I mean cancel it if it has too many unknowns. Its too big a risk. Don't ever for get the future ramifications – don't let this get easy. It's a grave responsibility on your shoulders.

p. 218

Dr. Wall's response to Dr. Sim's concern that " we would have a states sufficient to translate into further damage cinder seepage conditions" – saying he just dosnt believe " were going to end up in that condition, sets off a red light in my mind. Why not? Wheres the experimented proof? And can it even be done? Would it be able to replicate reality over the long term? I doubt it. Please look at this issue closely.

p. 226

Dr. Wall is right – at this point it seems like ever body at the meeting is getting all excited about testing this dust sample and " putting the issue to head." Dr. Wall says- this is overly optimistic and I agree- one sample he says and why should that one sample be distinctive???

p. 228-229. +230

I think you should be hesitant to use this experiment information until all of it has been done and is defensible. It surly is not now. You need to keep "kicking it around" until you are sure of what you say you know.

p. 235

What happens to all the CRUD on the rods in this evaluation? What is in the CRUD from all those different chemicals in all those different pools over the years? I have always had a great concern about crud ever since I read a document about a spent fuel delivery – it was boiling reactor fuel – that was shiggred somehow long ago – any way it arrived as a pile of stuff on the bottom of the cask- I always wondered if CRUD , dried out over a long time in dry cask storage, would flake or powder off in rough handling and transport –and then what would happen to CRUD in all that spent fuel is involved in before settled in a repository ? Do you know? Lots of stuff in a reactor pool can adhere to assemblies in ther a long time. Are there studies of what is on the cladding surface and what happens to that when water enters the inside of the cask in a repository? Can it cause chemical reactions not anticipated?? I'd really be interested in the Board questioning this.

p. 238

How can they just “neglect income in this reactor.” The cladding reaction may be the 1rst to begin and end up being of real importance. You can't just “neglect” any thing I don't think. It gets too easy to do. It gets done “to fit the molding.” Often modeling is done in a way to get the result you want to get. You can't ignore the cladding because it is expected to be broken from “ground motion” as it says here. What will happen to the broken pieces? The CRUD on them?

p. 253

You can't just ignore it ever was there can you? What chemicals are in this material or can result from nicalary + CRUD ? Say you can't take credit for it-but-what problems can it cause/

p. 254

Thank you Dr. Garish for now asking about this.

p. 257

Dr. Duguette infers “ the assumption is way off.” And it sounds like he's right. So where dose that put the model? Will a film really, be the case on these materials ? Why or why not?

p. 259

This is the cause of everything. Dr. Duguette says “ were stuck with what is the environment that this stainless steel has seen.” That's an unknown – all this spent fuel has different histories- different pool chemicals storage, different dry cask storage, different handling, different lots of things- what else? Can it all be expected to react as the model says it will?

Line 18-23

Very interesting that if the water is used up, the passive film won't thicken- is that right?

p. 266, line 12+13

Dr. Fatenism is thinking creatively here–good. I see very little of this any more. Why not cosider the inside of the waste package. “Steel wool”- its an idea – work from there- sometimes the littlest wild creative idea can be the biggest solution. Now that we are toward the end of cask

design, let's not say alloy 22 is it- let's keep going to other ideas. We need more "brainstorming" here-lets not get in a rut because we are all tired of all this.

p. 267, line 7

It is certainly not " too late in the day for this." It is time we do it!

Keep asking the hard questions, please. We depend on ypu. This may be the most important thing you ever do. Thank you.