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Secretary, US NRC
attn: Rulemakings and Adjudications Staff:
Public Comment on proposed rule
for the VSC-24 revision to include
Amendment #2 to the CoC / as proposed in the Fed. Register
of June 22, 2000, Vol 65, #121
10 CFR Part 72 RIN 3150-AG55

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PROPOSED RULE PR 72 (65FR38795)

Well, I still have not received a copy of the CoC + SER related to this proposed rule, but we are going on vacation next week so I'd better start now. I don't know who really even considers these public comments. Your "direct rule", also in the Fed. Register, almost makes this a "done deal" right from the start. Whoever you are reading this right now, please consider the history here. I sit here thinking back to 1993 when the VSC-24 CoC was issued and casks were immediately loaded at Palisades. I am appalled at what has happened in the 7 years since then. Seven years of problems! Seven years of loading casks of a design that never should have been certified in the 1st place. The cask design, the loading and unloading procedures, the handling equipment, etc. etc. were not tested with the real thing, and all these things really were not "user ready" to protect public safety to the full extent. You know all the mistakes. I won't repeat them all here.

But, when you imply in your "Discussion" section in the Fed. Reg., that all these changes in Amendment #2 "will meet the requirements of 10 CFR Part 72; thus adequate protection of public health and safety will continue to be assured", one who knows the history just has to smile. If, in fact the original CoC and

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tech specs did, indeed, protect public health and safety, then we wouldn't need this amendment now 7 years later, would we? This amendment is actually an admission of failure to do the right thing in the first place. No, NRC is not all to blame, the licensees and vendors sure made their share of the mess, along with their subcontractors. But when does this stop? When will NRC staff have the courage to say that the VSC-24 should not be used? All these promises over the years by Palesides to unload MSB#4. It is still there on the pad — loaded. All these promises over the years to develop a replacable coating for Carbo zinc so we don't have hazardous flammable hydrogen being vented in the midst of weld sparks. Yet do we have a new coating? No.

But what do we have here in this amendment? More changes that prove these things were <u>not</u> correct to begin with.

Under your section in the Fed. Reg called "voluntary Consensus Standards", you say, "this action does not constitute the establishment of a standard that establishes generally-applicable requirements." How did you come to this conclusion? Don't UT testing, and flaw acceptability standards for cask seal welds, a generally-applicable requirement to generic dry cask storage designs now? Certainly a lot of the "lessons-learned" in the VSC-24 that have lead to this Amendment, and are included in it, have established voluntary consensus standards, haven't they? If not, why not?

Then we go on to the "finding of no significant environmental impact." You say "this rule "would

not be a major Federal action significantly affecting the quality of the human environment." I think it certainly does. On what basis did you make this decision? What is a "significant" effect on the "quality" of the human environment anyway? Clarify that in plain language please. Here you are allowing flaws in seal welds and lowering the safety of seals right there. You raise the temperature to allow cask movement. It was originally 0°. We have a lot of below 0° temperatures in Michigan and Wisconsin. If weld temperature has to now be 30°, then I see that as a significant hindrance to cask movement back to the reactor pool from the pad in an emergency. Why, we complained that even 0° wasn't safe in the original C of C public comments. It wasn't low enough.

The thing is, that use of the VSC-24 has had a great effect on the "quality" of the human environment, and will continue to do so. It has set a precedent for certification of all other vendor's cask designs. I actually think the same EA form is used over and over, and NRC just fills in the new cask name each time. You keep following the same path with nobody taking another re-evaluation of what was done to start with.

This 30° temperature limit certainly relates to specific sites where these casks should not be used. There are other designs, without this criteria, that can be moved at lower temperatures, and for safety's sake, need to be used at colder sites. The VSC-24 should not be.

You say the NWPA says you have to approve "this technologic" to the maximum extent practicable." That's an interesting phrase

that really needs some clarity and thought on the part of NRC. What really is "practicable"? It means "capable of being put into practice or of being used", "workable". I would argue that what it meant here was "workable within the total waste system". Certainly they didn't mean for the NRC to certify a hundred diffent cask designs leading to a complete lack of standardization and integration of the total waste program in this country! Is anybody at NRC thinking about this?

Just what does this path you are following in certifying generic casks lead to? — have you planned ahead? — consulting with DOE, DOT and NWTRB? If not, why not? How do these "storage only" casks relate to transport and disposal criteria? Why do you say you don't have to consult with other agencies of the government? The main point here is that, whatever happens to that spent fuel in those casks you certify, and amend, will affect the quality of the human environment, because it affects everything in the future of those pellets and cladding in the whole waste system down the future road (whether there ever is a repository or not). If that spent fuel is not in the condition you expect (in your computer modeling in 20 years, as end of cask certification comes, then what? Can it really be unloaded safely in that steam queens? Can it really be safely traveling on our roads and rails? Can it safely be even put back in the plants Spent fuel pool? You don't know that, because

a cask has never been unloaded. You never expected the hydrogen explosion at Pt Beach, so why should the public also not expect some surprises when you finally unload a cask? Do the real thing.

I understand there are plans to unload a Castor cask at Surrey in the distant future. How does that cask relate to these other cask designs loaded? Why is there a test for zinc vapor on the rods? Gases have never gotten the research they should have in loading and unloading reactions. As I understand it, Transtor has been stopped in its tracks in licensing and the "Fuel solutions" (or wesflex) transport application is only in beginning stages. What happened to all those promises of dual purpose casks? Now WEPCO has applied for more casks at Pt. Beach. What is out there that has been "time tested," in reality, anyplace? Why should we feel that the quality of the human environment is "enhanced" by any of these mistakes? It isn't.

If NRC really wanted to have public safety, and was really working with DOE and DOT for a safe total waste system, then we wouldn't have "storage only" casks that have hydrogen explosions at Pt. Beach, and hydrogen burns at Palisades. We'd have dual purpose, standardized casks in an integrated system that costs less, has less handling and less doses to workers and the public.

Who's fault is it that this is not the case? What can NRC do better to remedy the situation? Do you think about that? Or

do you just keep on doing what you did before — streamling cask certification and simplifying action plans, EA forms etc.?? I really wonder. We are here now amending the VSC-24, 7 years after loading at numerous plants, and making these changes that, in essence, prove that tech Specs were never what they should have been when Sierra Nuclear Corporation wanted that certificate right away — planning to use it "as is", in Mr. Massey's words, and make changes later. The public could see the mess ahead, why didn't NRC? Our comments were ignored then and will be now I suppose.

I don't see how you can base your EA on the original EA for the VSC-24. Things have changed a lot with this amendment. How can you act as if they are the same? And to say that the general licensee (utility) must assess the impact of their specific FSAR is just saying that the impacts really are site specific, that is why I think the cask should always be licensed as site specific. You contacted "no other agencies or persons outside the NRC in connection with the preparation of the environmental assessment." Why not?

This is not a "noncontroversial and routine" amendment. It should not be a "direct final rule". You have made one generic amendment — to allow BORA's in VSC-24 casks. That was not routine, nor is this. You call the SAR "Final", yet you appear to be trying to make it a routine practice to unfinalize it by changing it with amendments.

In the end, as I have said for years, these numerous changes by utilities, vendors, amendments, 72.48, etc. etc. confuse the documents and the workers. By not getting the cask design and handling procedures right in the 1st place, before a cask is certified, you open a Pandora's box of change that lead to human error and fabrication confusion. Dry cask storage is still in its infancy, and to have several "versions" of one cask design on the pad is bad enough — each needing different procedures in unloading. Now utilities will have several different casks on their pads — changing the plant, by modifications to suit each new design it starts loading. How can workers keep up with all these document and procedures for different designs? None of it gets to be routine for it's always changing. I fear grave problems from this in the future. Work staff changes, and in an emergency, if a cask needs unloading, will the crew at each utility really be well versed in what to do? Or in a fire — or a plane crash? — with all those casks with different criteria and designs? The more designs and changes in designs and handling NRC allows, the more chance of confusion at plant ISFSIs in the future — it is all getting Way too complicated! The total system (from plant pool to repository) needs re-evaluation with some fresh ideas and plans. To just keep doing what we have been doing, because its the easiest for the utilities (and cheapest), will probably end up costing tax payers and ratepayers a lot more

money for throw away" casks that just create more waste and probably contribute to fuel and cladding problems as the spent fuel gets handled over and over again.

Your response to all this will be that it's not within the scope of this amendment, as if what's happening in all these casks at utilities, doesn't affect the total waste system. But it <u>is</u> major to it — of utmost importance. This "compartmentalize-ation" way of analyzing what happens to fuel pellets and cladding from reactor to repository is just plain wrong. Why, they have spent something like 18 years studying Yucca Mt. as a major barrier to ultimately protect the public from this spent fuel, yet <u>now</u>, when the time gets close to applying to NRC to license the site, they are <u>finally</u> looking at the repository cask design. And now it turns out we are not depending on natural barrier (the mountain) but about 90% on engineered barriers (the cask!) and they aren't even calling the cladding a barrier any more. So here is DOE trying to develop a disposal cask and what experience do they have to base their design on? What spent fuel in dry cask storage has been fully tested — really evaluated? None.

And you are supposed to be able to retrieve the waste from the repository in 50 years — NRC is supposed to license that. How can you, when you can't even prove to the public that you can actually unload any dry cask design (loaded or pads now) and show ~~not~~ that the spent fuel is <u>as predicted</u>. I don't for one minute believe that what NRC is allowing now in the VSC-24 isn't going to have an

effect on the job of a repository cask. If that spent fuel is in worse shape than predicted, if we have material interactions, or gases formed, or deterioration in dry cask storage at plants, then that cask design for Yucca Mt. has a bigger job to do than expected. It is all related. Spent fuel has a memory — its behavior depends on past treatment. DOE and NRC and DOT have to plan on this together and start doing the necessary research (with the real thing) now.

Why even the position — vertical to horizontal — may make a big difference in the end, as the weight of the fuel and basket certainly is different in a horizontal position — certainly must affect stresses on the lower section of cladding and pull of basket down with gravity. Spent fuel is vertical in the reactor, pool, and dry cask storage (most designs — unknown is horizontal) then probably will travel horizontal, be stored interim at Utah or Nevada vertical (if that ever happens) and then horizontal in Yucca Mt. A simple thing like the position may eventually make a lot of difference. It's the details — is anybody thinking of the whole system?

The most important element of the system has become the cask design. That isn't what was planned. And cask designs are woefully deficient. And who is going to build these? The vendors and fabricators, so far that I have seen, have made a complete mess of things. QA is awful. So don't tell me that when you make this amendment # 2 to the VSC-24 CoC that it is not related to the whole cask system — it is major. The VSC-24

has been the forerunner for all other cask designs proposed in the future. Always remember that spent fuel in dry casks at plants and how you at NRC allow it to be treated <u>now</u> will indeed affect how that very same spent fuel will eventually corrode and fall apart when water finally gets into that repository and our children's children are slow to deal with it. What you allow now <u>does</u> affect the future. You can't wash your hands of it and say that what you did made no difference. It will.

Well, enough of that. Lets get to some specifics of this amendment. Jim looked at enough documents in the PDR to realize that the CoC and SER was basically edited by SNC and Palisades, ANO, and WEPCO. You sent them drafts of every thing and they sent you their comments. You have done that before the public comment period, so I don't expect any of them to complain about any thing here.

And really, every thing here is already being done, because of problems that needed to be solved and errors that needed to be corrected <u>before</u> any of the formal documents even were considered to be changed. UT testing, higher cask movement temp., drain down analysis, acceptable flaw sizes in seal welds — all this mess has been settled. It has been a long process, full of NRC inspectors flying back and forth to plants, full of a lot of stress and agonizing whether those loaded casks at Palisades may have to be unloaded (Horror of all horrors!) For a long time, until you "finagled" a way to finally accept every flaw discovered in those structural lid welds on

already loaded casks on the pads, you weren't sure they wouldn't all have to be hauled back to the pool. What an embarrassment for all, if that had to be done! I'll never forget that one note, "Finally we see the light at the end of the tunnel!" in the documents when UT testing finally was worked out to accept all the flaws!

This! This kind of goofyness — the public has to accept! When the VSC-24 was touted originally as a very simple design —, oh so safe, with its double sealed closure.

How you can expect the public to trust any of this any more is beyond me. NRC discovered an "error" in the thermal calculation on the VCC annulus air-flow rate in 1996! They had to revise the calculation on maximum long term and short term fuel cladding temperatures. Only now is this properly being put in the documents — in year 2000!

I know the history from day 1 with the VSC-24 and so do a lot of other people in the public living near Palesades, ANO, and Pt. Beach. We are the ones directly affected by future problems you know. So when SNC and the head, Mr. Massey, kept changing things and sending in his SAR 0, 0A, 0AA, Revision 1, etc., it was pretty obvious there was a lot not right to begin with! Now it's like BNF and NRC want to "wipe the slate clean" with this amendment — finally clean up the SAR mess and finally make it meet the "real" situation at the plants — and act as if it is "routine and non-controversial." Well, it isn't and never was.

All these years promises to the public have been broken and yet NRC repeatedly stands behind the vendors and utilities. We, as ratepayers and tax payers, pay the enormous cost for solving all the VSC-24 fiascos. Our money goes to SAIC for all the technical expertise given to NRC staff — even to answering public comments! There really should be some kind of government investigation into the total cost of accepting the VSC-24 certification "as is" in 1993. It would be enormous! You may say — well, the only way we could do it was by trial and error, and solve our mistakes as we went along. I don't accept that — not with nuclear spent fuel — one of the most dangerous substances on earth, not with using the people and workers at the areas of Palisades, ANO, and Point Beach as guinea pigs. And that's really what it comes down to. One can hardly look back at the details of what has happened all these years and deny it. ——————

July 13, 2000 ——— So now you want to "clean up your act" in one big amendment, that appears simple on its face, but surely is not. Ever since May 1993 I've been trying to get NRC to require SNC to amend the CofC and SAR. That's 7 years now! all these years the documents did not agree with what was really being done. Now, after everything in this amendment # 2 is already a "done deal", and being used at the plants, you decide to have a rulemaking and give the public a chance to comment. On what? On all the changes over all these years necessitated by the mess of SNC and its contractors, and by the acceptance of this mess by utilities and NRC. — Certainly <u>not</u> by the public.

Please respond to these concerns about what this Amendment #2 is proposing (along with answering the concerns on the previous 12 pages of this comment):

1. The original VSC-24 design bases its closure integrity on two welds important to safety. The structural lid weld and the shield lid weld. We can no longer count on the shield lid weld for safety. How can you guarantee that subsurface cracks in that weld won't come to the surface and cause a problem — probably in unloading more than anything? (HIC can cause subsurface flaws here and PT is for surface cracks.)
2. Explain how UT of structural lid weld evaluates parallel cracks?
3. Explain how UT evaluates radial cracks?
4. Explain how UT evaluates transverse cracks?
5. Explain how UT evaluates the width of cracks?
6. Explain how UT evaluates superimposed cracks?
7. Explain how UT evaluates cracks in a line and in clusters?
8. Explain how UT shows the position of a crack in relation to another weld seam, such as the relation of a crack across the structural lid weld that propagates into the side seam weld of the MSB wall, or how a radial crack could propagate into the evacuation seam of the RX-277 material from a valve plate cover weld. Position of a flaw is of utmost importance. Has NRC evaluated weld flaws possibly affect into an adjacent weld? The crack at Palisades went right into the MSB shell wall.
9. Explain criteria for length of cracks. The crack at ANO was 18 inches long! Where in the documents are

you limiting the length of any one flaw? And say another long flaw is parallel to that or adjacent to that — when is it not acceptable? Can you allow several 18 inch "clusters" in a line? I would assume that's how Palisades finally analyzed out their nightmare of "blips" in that UT test sheet data. Just knowing which of the numerous anomalies were slag inclusions, bubbles, etc. must have been problem enough for the technician to evaluate. It took 9 months for Palisades to find those welds on loaded casks on their pad "acceptable". Or as they say — to "analyze them out." They just couldn't seem to uncouple those flaws superimposed in close proximity to each other! What precedent in what they did there is set for the whole dry cask industry now? A pretty awful one.

10. Explain why NRC accepted multipass welds with only a PT test and helium leak, when it is clear in the literature that multipass welds lead to subsurface cracks (especially in HIC cases) that cannot be detected by a surface or amine test as that for simple gas welds. The original design should not have been certified.

11. (a) Address all concerns this amendment causes in relation to unloading a VSC-24 cask — especially those already loaded at Palisades, ANO, and Pt. Beach. They all have different vent holes, materials, shield lids, etc. — how do the acceptable flaws react in these casks in unloading cooling and steam — and how do they react after 20–40 years of storage in a high radiation area and freeze-thaw in Wisconsin and Michigan? The original C of C was not for a cask with weld cracks.

(redacted) Explain the criteria for the specific couplant to be used in UT, how applied, and research relied on as your bases for this application.

12.

13. How is the couplant kept from drying out in that preheat temp?

14. How is any residue or couplant proven to be removed from a weld area if it needs repair? What is document criteria?

15. Is the structural lid attached to a backing ring already welded to the MSB shell? If so, Then, I assume the lip of the structural lid, as in your diagrams (in other documents) rests on this backing ring edge. What stress at that time, when the structural lid weight rests on the backing ring, (or whatever it is then) is accounted for on that weld of the ring to the MSB shell wall? The structural lid weld goes down to meet the top of that little weld. I see that as an area of stress. Is it? Can a flaw propagate into that weld? Can a flaw propagate under the structural lid lip? It's a strange configuration. I assume that's an air gap under the ring, is it? What can come up into that air gap, if the shield lid weld has an open crack later in its life, propagated from a subsurface flaw not detected by PT? Could we have fission gases up in there? (in fuel failure) That coned could cause an unloading problem, couldn't it?

16. Explain how you have developed criteria for the shield lid to structural lid weld and detecting subsurface flaws there, as well as in the port, valve, or plug, cover plates and other areas? Are these UT tested? If not, why not? Certainly the cover plates are indeed part of the final seal welds of the structural

lid and a crack in these welds — any welds especially on the structural lid in any plane need to be UT tested and meet acceptable flaw criteria. If not, why not?

17. Will preheat or post heat damage swagelok valve or are they no longer used? If so, what is used in their place and how evaluated for welds and flaws? are there definite weld materials, and procedures for doing valve plate welds, and testing them for flaws in the documents? Where? How do you repair flaws there and retest them? what would be doses to workers there?

18 If you indeed have replaced 3 swaglok valves, how is the new replacement to work in unloading damaged fuel? How do you test for this situation and how open the cask safely?

19. Has grinding of welds been evaluated so that the welds are actually no smaller than minimum allowance? This is very important as, if the weld is not the assumed size to begin with, the ratio of the crack size to the weld size is completely invalid for accepting flaws. A flaw could be deeper in a weld if the weld is below minimum. (We had too thin welds + welds in other cask designs early in dry cask storage if you remember). How conservative is your assumption that original weld sizes are actually as you designate fabrication minimum?

20. Are weld reinforcements allowed? If not, is it clear in the documents? It wasn't before. It needs to be clear what a licensee cannot do

with a 72.48 evaluation (for these are not NRC checked and kept at the plant out of the PDR also.) Too often 72.48 changes are made, because criteria in the document lacks detail and clarity and the licensee thinks they can "do their own thing".

21. Has the problem of sulfide inclusions been completely solved? Is criteria for all <u>materials</u> clear for this?

22. Is charpy testing for all materials concerned now clear in the documents? Apparently there was one cask at Pt. Beach tested at -40° instead of -50°. Is that correct? And three casks for Palesides were not charpy tested correctly, right? So how do these work with the new temperature for movement? How is it adjusted for these specific casks?

23. How can you guarantee the public and workers that higher doses won't be caused by UT testing at the plant, and on the pad, in the future? Won't these casks, not originally UT tested, have to be tested <u>again</u> sometime in the future? Is NRC saying they will be fine for 20 years? What is the plan for recertification then? Will you UT them again or demand they be reloaded? It might have been better to unload them now, while you still know the condition of the fuel — rather than in 20 or 40 years when those weld flaws may be <u>more</u> of a problem in unloading. Why not? Unloading never gets enough thought.

24. How can you prove to the public that UT testing of this design really makes this certification any better? In the original we were told

how great the "double seal weld closure" was instead of bolted lids. Can you now still say this design, with only the structural lid UT tested, should be better? I see it as worse in a lot of ways. It's better than not knowing we have a bunch of unknown cracks in welds, but that's about all. (We were promised that in the original certification.) Now what happens is that UT exams eat up TIME in loading, and TIME is a big concern when you are trying to heat the boiling point of water in the MSB. Before, you only had the welding and PT and helium check to use up time, and, even then, drain down was a concern. Now you have to weld and wait an hour each time for HIC and hydrogen diffusion concerns to be taken care of. Now, you have preheat and post heat times. Now you have UT tests, evaluation of flaws, and repair of flaws and evaluation of repairs, to eat up more time. I predict that over and over again, as at the 3rd cask loading at Pt. Beach, you will have cask drain downs as you get closer to the boiling temp. of the water in the MSB. There will always be other human errors (like the gasket "lost" at Point Beach and the "putty knife" not fastened to the crawler unit" in repairing transducers at Palisades). These things eat up time. Venting hydrogen eats up more time and has. Equipment problems eat up more time and has done so. That gasket could have been lost in the MSB at

Pt. Beach. They had to look for it. Then the weld machine had problems, there was hydrogen concentration problems, a leaky valve on the vacuum dryer created problems, and before you know it, Bingo! Time's up! Drain the MSB, and evaluations predicted a possible 4 person rem dose without instituting additional controls. The cask actually had to be welded and UT tested with the water drained. What if they, then, found cracks that needed repairing and re testing? Just how has NRC prepared for such a situation? Are workers and health physics people prepared to cope? High doses can happen more and more with TIME eaten up by UT testing. It is not a better situation than before. And, you know as well as I, that in a "time crunch" like this, flaws will be accepted that shouldn't be. When doses are high like this, what welder wants to go back and repair a flaw and test it again to see it was repaired right?

Then too, just when do you make the decision * to keep on welding, drain the cask, and not put it in the pool to cool? If you have got the shield lid half welded, would you be able to put it in the pool, or what? Would you ever cut open the weld? Say it was only part way done on the structural lid? Just when is putting it back in the pool no longer really a valid solution?? That criteria needs to be clear. Is it in the documents? Jim Trapp is to look at the real process here — as it

actually work at the plants. Are you?

25. What was the error in flow of air in annulus calculation? Who discovered it? In which plant's design? How was this changed in the documents in 1996? If it wasn't? Why not? It was a generic problem, right?

26. What should the temperatures be for UT testing, and how are they taken, and how is this equipment calibrated and when? Temperatures are very crucial here and need to be very clearly stated in the documents. You can't have water boiling when you are using a couplant and UT testing — the "noise" creates havoc with the transducer signals. With that 300° preheat + postheat, then you need to be sure of your temperatures at all times. It gets pretty complicated. Seems UT testing adds all kinds of problems possible. (Maybe a bolted lid would be better. If it is, let's do that instead from now on. Why risk doses higher to workers? (Doesn't seem fair to these people and their families).

27. Structural "fit up" concerns were important in lid weld problems. Has definite criteria been set for gaps, and shims, and backing rings, so that this is now generic? High local stresses in poor fit ups can lead to weld cracks, as we know.

28. I have asked numerous questions about the calibration of UT equipment in a timely fashion and received no response. Pt. Beach asked for a week and, as I understand it, did calibrate equipment way before use. Shouldn't it be calibrated 24 hr. before use? If not, why not?

From what I've read in books about UT testing, calibration of equipment is very important for accurate evaluations. There needs to be clear criteria for this and a method for licensees to document that it actually was done when it was supposed to be. Is this in place?

21. How many flaws are acceptable in any weld? How many flaws of a certain type or size? This really bothers me, as I see no limit to this, and there definitely needs to be criteria here. Can you have 30 "acceptable" flaws in one weld? Say some are parallel or in close proximity to each other. When do you not accept a weld because there are too many flaws, even if each one, singularly, is acceptable?? Can you repair 10 or 15 in one weld? When do you say "no"? (ever?)

30. Why isn't there a limit to crack length in welds? Can another 18 in crack like at ANO be accepted?

31. And if a crack is, say, 7 inches long, and an acceptable depth, what if it is almost as wide open as the width of the weld. Would you know? UT testing does not measure width as I understand it. You look at this screen of signals, as the sound plays "pitch and catch" with the crack location - but what the technician "sees", in his mind, is the depth (height really) and length of this crack in a flat plane doesn't he? Like a photo with no dimension. You don't "see" the crack at all on the screen, but just "blips" indicating the

tips of the flaw end points. To me, that is just plain not good enough. There must be something better than this. This book from our library, "Welding Technology Today" by Craig Stenbeck (1989) is old by my standards, but explains UT and RT tests pretty clearly. It says that with B and C scan technologies, a permanent graphical printout can be made to record results. Is that what you are requiring? How are the printouts kept permanent if they need to be checked in the future? The book says "the part to be inspected is immersed in a water tank". The mock up for your UT tests was done in a "water bath". Please clarify this and how it relates to the "real thing" done at the plants now.

The book says "there are UT calibration blocks used to measure the size and location of known defects". It says "a block with three closely drilled holes is used to check resolution, the ability to distinguish between two defects in close proximity". Once you know you have a "cluster of anomalies" like that, that gave Palisades such trouble, couldn't you use something like this to separate the flaws for evaluation? Seems to me, by the year 2000, that UT methods must be far beyond this 1989 description to do more detailed analysis of flaws. I tend to think that you are allowing the simplest UT test because you don't have TIME to do more, because of doses and drain down requirements. This isn't like an industrial UT of a railroad car

equalizer as in the diagram in UT explanation in another book from 1988 I looked at, called "Modern Welding" (by Althouse, Turnquist, Bowditch). It says, "the UT wave will not travel through the air. Therefore, an excellent contact must be made between the transducer and the surface of the material." What criteria has NRC required in the documents for this concern?

The book also says the couplant "should not be harmful to personnel or the surface of the material" Now, I assume you are using distilled water, but I don't know how it is applied or how the hot weld is kept wet. How is this done? Does it keep evaporating? Could this water get down into any deep narrow cracks, that then need repair, and that moisture create a problem in weld repair being done in a timely fashion? Could "trapped moisture in unacceptable cracks" enhance or exacerbate the repair weld not to work right? These details should be considered. Are they?

The book says, "operators must be skilled to obtain results and the equipment must be calibrated for each type of material and thickness tested." So does each cask need different calibrations specific to that cask? How is criteria for this set?

The book says "defects parallel to the sound beam are difficult to detect". It is my understanding that your UT test doesn't even detect any parallel cracks, correct? This worries me.

You know what, I'll bet you are pretty tired of reading all this. I'm sorry. I'm lying on the floor writing this as I have a sore back, and listening to my neighbors chain saw a tree down, but it's hot and the windows are open. I've worked on cask issues for almost 10 years now. I'm no expert. But I have a pile of documents here on UT testing (that took me 2 days to read over again) since I've gathered them over a long time — a lot of them are NRC documents from copies I made at the Two Rivers Library PDR, which you now have taken away from me and moved to Milwaukee. I was the only one who used them I think. So I do think they were taken away with a purpose. I understand your new computer documents are not very "user friendly". I don't have any computer knowledge, but people who work on NRC issues tell me it is very difficult to locate and print off a specific document or page. So it seems to me, you are making it as difficult as possible for us to even obtain information that is supposed to by law be easily obtainable to the public. Anyway, your documents are repetitive, confusing, and redundant just like mine, and being no expert, I've struggled through the big SAR's, SER's and Inspection Reports, etc. for years. So, I'm sorry to you reading this, that I'm not real organized in this. But time is short here and we are going on vacation. I'm working from my notes taken after rereading all the documents and there are a lot of specifics here. So please try to answer all this if you can. I really do want to understand it better. Thanks.

32. I understand that Palisades came up with a "methodology for uncoupling and superposition of weld flaws in close proximity to each other". Has NRC closely evaluated this in relation to current literature on this subject? Is it valid? Is there a better way? A better methodology??

33. Integrity of welds depends on weld process-induced flaws like slag inclusions, incomplete fusion, incomplete joint penetration, and baffles. What is the acceptance criteria for these? Can a weld be full of such anomalies and be acceptable? Seems to me there have to be some limits here — (especially if these are near or part of cracks!) Has this been considered? (Sounds very possible.)

34. I remember some comment by another vendor on the 1st C of C for VSC-24 proposed rule. They were concerned that the weld wasn't like the parent metal. I suppose that included strength in stresses, pressure, brittle fracture, HIC, etc. Why would a weld crack propagate into the MSB shell wall like at Palisades? I think because an undocumented weld repair was at that location, is that correct? So did it really propagate into the repair area which would be "weld", and not the shell itself, or was it actually the shell wall material? What would cause a weld crack to propagate into the material it is welding? How is this alleviated by your criteria? I'm thinking right now especially of the lid to lid

35. weld which I really have never seen a diagram of in any of the documents, or have forgotten. How is the lid-to-lid weld done, and where? The shield lid has always worried me. We dealt with numerous changes in its configuration at the Pt Beach hearing in the past, in Wisconsin, with our Public Service Commission. That KX-277 can really retain water if it gets in there. There are 3 layers to the shield lid — 2 of carbon steel, one of KX-277. Are these different in ~~out~~ already loaded casks? I think they are. If the KX-277 is on top, and I know it is encased — (in carbon steel?) how is this covering around it welded? How is that weld checked? If water gets in there, in UT testing, with a water couplant, on the st sectional lid above this, what reactions can take place — immediate? and, over time, if that water gets trapped in there?

How do we know the lid to lid welds are not full of unacceptable flaws? You have the lids together at the vent and drain hole points right? There is potential for leakage there if things aint done right. Look at that page from the manufacturer of KX-277 on water retention etc. Has NRC really evaluated that material well to its makers specifications for use?

I know you weld on the shield lid, and then drain out 40 gal of water under it to keep moisture from coming up the holes in the lid and interfering with welding, but how do you make sure no water is trapped between the lids when you weld lid to lid and then dump a water couplant

over the structural lid seal weld to UT test it?

36. What guarantee can NRC give us that helium is not leaking from loaded casks? Loss of helium could result in fuel cladding degradation and in future fuel handling and retrievability problems. What real proof is there that further delayed cracking doesn't occur over 20 years of storage?

37. Is it really equivalent to hold heat at 150° for 4 hours, as to hold it at 200° for 1 hour as one utility proposed? Do you allow that? Is this really OK to allow hydrogen to diffuse out of heat affected zone at valve cover area and minimize the potential for cracking? Does this affect the valve fitting now? It was implied that it may also be very difficult to maintain a high temperature in the region of lid to lid and valve port cover for an extended period. Why? Has this concern been addressed and closed with clear criteria for measurement of temp. there in these regions — is it in the documents now? This could be a big problem — these little things can cause big concerns. I think the valve cover weld is just as important as the structural lid weld. It can leak because of a crack just as easily.

38. Does heating affect water temp. in MSB at all? What layer of the shield lid is just above the water, RX-277 or carbon steel? ANO said RX-277 would protect the water from heating up as I understand it. Is this correct?

39. What was actual charpy test level for MSB-01 at Ft. Beach? How does it affect movement temp? Since Ft. Beach has raised movement temp limit from 0°

to 35°, then what temp. for movement should MSB-01 be to allow for same consideration?

40. In 1997 the ASME Code IWC-3600 was not finished. Is it now? It "was under development" SI said. Does it actually apply to casks "just loaded"? Was the correct section of ASME code used? Should Section III rules really be used?

41. Is the "lip" of the structural lid a problem? There was a reference to lack of fusion and lack of penetration under the lip here, "as expected for a joint with a backing bar". This doesn't sound acceptable to me. Is it?

42. Same with grooves PT Beach planned to put in the ring that the shield lid sits on, so as to let the hydrogen out. Did they actually do that? If so, I would assume the ring is less safe holding up all that weight of the shield lid if it is full of grooves, isn't it? Is the shield lid actually welded to this ring, it sits on, at all then? Is that at the bottom of the shield lid to shell weld? If so — how do "grooves" in the ring affect the weld?

43. The complaint in UT testing has to be kept "below boiling". "Below Boiling" is not a clear criteria here because doesn't this temperature designate the temperature that the calibration of the UT equipment has to be set at? Seems to me calibration at PT Beach was set at 125° for 3rd cask loaded. Was that correct? What should it be calibrated at? Is this now a clear criteria in the document?

44. Can the 200° hold time in UT tests be "cumulative" as one licensee suggested. Please explain. Could the temperature be lowered and raised to 200°. So, for example ½ hr at 200° — then lowered — then ½ hr. at 200° again = 1 hr. of 200° "cumulative". Is that the idea? If so, is that acceptable? Is this clear in the documents? Doesn't seem to me to be acceptable.

45. Is there any plan to use several scans of multiple transducers for revealing flaws across welds? If not, why not?

46. As I understand it, the UT goes in one direction around the lid, so you can't back up to look again at a specific flaw right away, can you? And you can't tell if a crack is radial, transverse, jagged, parallel, or superimposed either? This plan of just using the tips of flaws to pinpoint ends of length and depth does not satisfy me at all. And does it even show depth of the whole flaw? So you have at least a picture of the outline of the side of the crack in your mind's eye?

47. The side seam of the MSB#4 wall at Palisades has weld flaws already. Now we don't know if the shield lid weld could have a flaw that could propagate into that shell side seam flaw do we? When will MSB #4 be unloaded? We have been promised that for years and years. Please require it be done.

48. You do 2 scans in UT as I understand it. One at 60° and one at 52°. The 60° is for upper ⅓ of weld and 52° for lower ⅔. Why is the length data "combined" for both strategies? This is in the mating

for the "cumulative average error". (That is really a strange term) The fact that the 60° scan oversized flaws is not comforting. It does not justify the error values being higher than those prescribed by ASME section XI Code for commercial nuclear power plant components. (a cask is not a reactor — is this part of the code valid for casks any way? do we need a new part for casks?)

49. Transverse flaws can't be revealed in the upper 25% of the weld volume on the mock up used because none were put there to test, correct? Or is it so that transverse flaws can't be detected at all effectively? Nobody has ever answered my question on this.

50. This criteria, that AT technicians are tested and acceptable, if they can detect 80% of 10 flaws is certainly not acceptable to me. That may be ok for railroad components, but not for spent fuel nuclear casks full of dangerous radiation. If they can't find 100% of the flaws, then don't use them. To detect 8 of 10 flaws means 2 flaws are not detected. That means 2 possible leaks in the cask. Do you expect the public to feel this is conservative to safety? I think not. If your technicians need special training for this nuclear technology then set up a training program and have strict testing criteria. Spent fuel requires this.

51. What is clear criteria for HSB to cool in the pool after drying? Just how is it to be handled? What determines when it comes out?

and what determines if the fuel should be removed? When it comes out, and if it is still loaded, are there any different procedures to be followed than from original loading procedures? Has this ever been done? What determines when it is cooled? Is specific criteria in the documents for this? How affects on the cladding and pellets of this heat up and being wet + cooled in the pool been evaluated? I'm often asked about the repeated wet-dry-wet etc. cycle in the life of spent fuel and the total effect on cladding and pellets. Nobody seems to have researched this, have they? Has that cask at Surry been unloaded? If not, will it be? What tests will be done on the fuel? Why? How related to this loading, UT testing, and unloading with "acceptable cracks" in the welds? How does zinc "vapor" relate to the VSC-24 cask? (That was in something about the Surry tests.) Is there a zinc vapor from Carbo zinc coating? Please explain.

52. The paint on the mock up at B&W peeled and the test (UT) was delayed. Why did that happen? What "paint" was this? Was it on the MTC part of the mock up, or MSB, or both? There is no coating in areas to be welded, correct? Has a new coating been developed to replace that awful Carbo zinc yet? Why not, if it hasn't? So there shouldn't be any issues with painted areas and welds, or painted areas and UT tests, correct?

53. The hydrogen venting is a concern as it is supposed to be done while welding is going on to avoid a spark setting off another explosion; also it can cause HIC. I certainly hope that a better method than duct tape holding on a flammable plastic tube, close to the vent hole, is ~~no longer~~ used at Palesides. It caused two "burns". I also hope something better than that baked on coating (for Thornton) that didn't adhere at Trojan, will be used soon for the VSC-24. What is planned here? Will we ever get rid of carbo zincs?

54. Doses are very important. This cask design was touted as being so low in doses when our Wis. Public Service Commission allowed WEPCo to purchase them. Now look at what we have! There needs to be some specific criteria in all of UT testing for lowest doses possible. Is this in the documents? At Palesides, on loaded casks they lifted the shield lid too early, and had no direction for marking the cask for UT marking — both of which resulted in higher doses. All these little procedures add up and take Time — Time means higher doses to workers. How has Time for PT and UT testing been really justified by NRC as a better cask design than originally certified?

55. I have followed the VSC-24 fiasco for years. I have persistently requested that the SAR and CoC be amended properly to meet the real thing, with all the changes made, over the years. And now here in the year 2000, you are

finally doing it — something that was to be done 3 months after the SAR was out — that was when it was to be representative of the SER required specifications. Instead we went through SAR 0, SAR 0A, SAR 0AA, SAR Rev 1, (even an SAR 2 was in there at one time and I never could figure when Mr. Massey got that letter in there!) all along I said we needed to amend the documents. Now 7 years after the cask was originally certified, and all the changes are in use and a "done deal" at the plants, you put this Amendment # 2 in the Federal Register to finally get the documents in order. I'm sorry, but I am just not finally overjoyed at this, because what have we now got loaded?

A. A cask that produces flammable hydrogen in loading that can cause explosions

B. A cask that has allowable cracks in the seal welds — especially in the shield lid which is only PT tested. The double seal weld safety net is gone.

C. A cask that requires UT testing which is a new technology for dry cask, which doesn't seem to evaluate flaws of all types, and which eats up valuable time during which water in the MSB can boil.

D. Possible repair and retest of flaws in the lid welds that also eats up time during which the water in the MSB could boil.

E. An unloading procedure that has never been really tested and which appears to have

more and more possible ramifications all the time.

F. Casks loaded at our plants of materials with sulfur in them and higher hydrogen content etc— that never should have been accepted — weld and other cask component material criteria is all changed now

6. Casks loaded not always tested right

H. Casks loaded with vent holes too small that need to be cut larger in unloading

I. Higher doses to workers and the public

J. a cask that could be moved at 0°, but now cannot be moved below 30°

K. a cask that was supposed to meet requirements for a 30 ft. drop for transport that now only meets an 80 in. drop. I can't even see the NSB as transportable as was touted when W is. got theirs. There were high hopes to certify it as such in the future. (the NSB).

L. a cask that can contain BORAS which cause less shielding for the ATC, more weight concerns, and higher doses.

etc. etc. etc.—— are we supposed to be happy about all this? Surely these are not "improvements"! And this amendment may update the documents, but that is about all it does. It certainly doesn't make the VSC-24 any more acceptable to the public. It always was a poor design and still is. There must be something better that WEPCO can find for Wisconsin I hope.

56. What is "the latest version" of the UT guideline requirements title? What is the date? It should be in the amendment.

57. This business of doing further "flaw specific" evaluations, in order to find an unacceptable flaw "acceptable", is just a big loophole to get almost any flaw eventually acceptable — even if it takes 9 months like it did Palisades for flaws in loaded casks on their [redacted] pad. This seem "linear-elastic fracture mechanics and elastic-"plastic fracture mechanics" covers almost anything I fear. I could predict it is a rare weld that will be found to need a crack repaired, and retested, and that none is ever "unacceptable." They will always be made acceptable by some means. Then in unloading — they will come back to cause problems in the future. They will eventually have to be unloaded. We need to plan for it now. acceptable cracks now may be worse in 20-40 years.

58. What is the reason the 2 hr. delay to ensure any potential HIC is done, is based on? When did we get the 2 hr. time? References and dates?

59. What is the total time calculated for all the welds to close the cask, and test the closure welds? What is predicted dose to workers for this?

** How much has been added because of UT testing added to procedures? What is the highest dose to worker this has caused so far? Is it the 3rd cask loading at H Beach? Or another loading? Please explain your dose calculations.

60. are predicted dose calculations to the public also higher because of QA testing requirements and their ramifications? If so, how much higher, and why? Doses to workers and the public are a major concern for safety. Has NRC done these calculations?

61. The new minimum temp. for cask movement is done to accept larger flaws in the welds.

** This is just plain wrong to do. In Wis and Michigan it is below 0° a lot. There have been a lot of surprises already in this cask design, so why shouldn't we expect some emergency in the future because of some unexpected problem again? Some emergency that requires moving a cask in winter when the temp. is below 30° a lot! Just how are they to measure the weld temperature? What is clear criteria here? Just how are they to measure the ambient? With what? Where? How high? How near the cask? We need definite, specific, clear criteria for these measurements. (This business of alternate calculations is just another loophole — be specific here).

Also please list all the materials that need to be charpy tested and how. Be specific here. This needs to be in the documents. Also explain, please, why the charpy testing is what it now is? What changed here? Why?

62. How has the thermal calculation on the VCC annulus air-flow rate been revised and what actually is now the maximum long term

and short term cladding temperatures at different areas, and at the center of the MSB, and MTC, and VCC? Since this was discovered in 1996, have all users been aware of this since then? If not, why not?

63. How does this new thermal calculation affect unloading? How does it affect cask criteria over long term storage as far as any changes from original calculations — say for an airplane crash fire, or for effect a concrete overturn in VCC, actually everything this temperature calculation was used for in the original documents. Has everything this new thermal calculation can affect been reviewed and changed in the appropriate documents at the plants, and in the SAR and C of C now? This is a very important calculation. Cladding temperatures are of major importance in all handling procedures and accidents, sabotage, etc. This maximum fuel cladding temperature is just one more thing misrepresented to us when WEPCO purchased VSC-24 casks. We used to call this cask a "chameleon" because it was "ever-changing". It remains to be so of fear.

July 14 – 5 AM – I woke up thinking about "subsurface" flaws in the welds and how, if a utility can manage to call a flaw "subsurface", they can have a flaw twice as large be "acceptable". This somehow seems wrong to me, and I'm sure every thing possible will be done to call a flaw "subsurface" if it could be done. What is exact criteria for designating a flaw "subsurface"? Just what

measurements need to be taken. I want this very clear in the documents. Is it? It is very important.

Well, as an aside here, I'm thinking that whoever you are reading this, I don't mean to offend you personally with any of my complaints here. I know you, yourself, may not be responsible for any of it. I feel sort of like I'm getting upset with the operator at the phone company after I'm hung on the phone for an hour listening to music and taped voice recordings. When I finally get to a "real operator — a real person!", I'm already upset with her, and it's not her fault at all that the system is so poor. (But then you are — that's the way things are done.) So I'm sorry you are stuck with this. But it's taken me 7 years to finally see this amendment, which should have been done in 1993. I was told over and over again about "revisions" and "updates", but all this was done without ever doing the proper amendment process. So you are stuck with this, only because of a long series of poor judgement calls by all parties in control of this code design for a long, long time. So I'm going to continue —

Thanks for taking the time now to answer my questions:

64. I have just reread the white paper on depth sizing for "circumferentially oriented flaws" for acceptance criteria for the UT of the VSC-24 — by Douglas MacDonald of EPRI-NDE Center (from PDR of NRC)

First of all, this has nothing to do with radial, transverse, or any other type of anomaly that is not circumferentially oriented in the weld. How do you justify this? This means following the direction of the weld only, and is very

limiting for all the flaw types that could be found in a weld. Please justify use of this white paper with its limitation for use! I don't think it is acceptable.

65. Is EPRI an "independent" entity? I think another look at this, by another group, should be done. Why not?

66. This white paper, as well as I can understand it, is to factor in the "conservatism" that Mr. MacDonald sees in the 60° UT readings. It appears he is actually using that "large positive bias" to actually make the calculation "work" so that the criteria (that RMSE ≤ 0.125 in. cannot be met) is changed to be acceptable. He says "The mean error alone is sometimes as large as +0.125 in." for the 60° TOFD data. Just what is the actual "+" here? What is the actual + 0.125 in. number? He doesn't say. This appears to be a judgement call on his part, and he says his reasoning is "well understood on ultrasonic grounds and will not be addressed here". Why not? It needs to be addressed. It needs to be confirmed by another person independently I think. His figures refer to the "truth" and "dry run 3". Does this refer to the 3rd scan done on the mock ups? Or what? NRC inspected the 4th, one right? So if this is what it refers to, I think the 4th one should be used. Please explain just what, when, and where "Dry Run 3" references.

67. Then SNC calculates the flaw screening criteria calculations "assuming that the minimum design thickness of the weld is 0.75 in." Why should I accept that assumption after all the fabrication errors that

were made? I don't accept it at all. You are actually basing your acceptable flaw size on the "promise" that these casks are what they are really supposed to be. Good heavens! — are you aware that parties concerned here even had to "sign an oath" about some things meeting criteria? When you resort to that in the end, you know integrity has gone down the drain. 68. (Well, it's getting light and I'm going out for my walk — you should too — will both feel better.)

68. Why are both the root and final weld surfaces between the shield lid and shell and between the structural lid and shell PT examined, but only the final weld surface between the structural lid and shield lid, and between the valve cover plate and structural lid? Why aren't the root weld surfaces in all these welds PT tested? What is the problem here? Seems to me the integrity of the lid to lid weld, and valve cover plate welds, is just as important as the lid to shell welds. Is this generic to all casks with seal welds then?? What actually is PT exam criteria and what flaws will it reveal? If you don't exam the root weld, can't you have subsurface cracks in the lid to lid and valve cover welds that were not revealed and could propagate? (— especially in those loaded casks at Palisades) In fact, what is the reason all passes of the welds aren't checked if you are only using PT here?? Can't you have a crack in any layer of these welds? Certainly only looking at the surface

in the final weld is not good enough. I request that the root pass of the lid to lid weld, and valve cover plates, and the final weld surface, at least both be done. If not, why not? The public shouldn't have to accept undetected cracks here any more than in the shield lid to shell weld at the least. Everything now seems to depend on UT of the structural lid weld alone for seal integrity really.

69. I just don't see how a crack in a weld 7/10ths of an inch can be acceptable for length, but you accept them greater than 7/10th of an inch with no limit. Could a weld crack go all around the circumference of the cask and be acceptable in this flaw screening criteria then???

70. And I just don't see why a crack 37/100 in deep is acceptable either. The minimum width of the shell is only 95/100 itself. What is the width of the weld supposed to be? How do you know what depth it is? How do you know when a crack is down more than 1/2 of the depth or whatever. Is there some UT or other measuring device that give you the depth of the weld itself at the place of the flaw? The ratio for acceptability isn't just based on what measurements "are supposed to be" is it? Please tell me it is for the actual measurements of the real thing. If not, why not?

71. Has NRC done a study of current literature to make sure that there aren't more recent ASME parts

or addenda that are now applicable to the criteria you have in this amendment? Your references seem pretty old – 1986, 1988, etc. You aren't just using outdated criteria are you? This is July 2000. Those references are 10 to 15 years old. Seems to me there must be something more recent in ASME Code applicable, and some parts more applicable to the specific dry cask criteria. Is ASME working on Code changes right now specific to dry casks instead of reactors? If not, why not?

72. If in fact, this design basis, is still for integrity of a double seal weld, why aren't the Charpy tests for both lids (and weld material for those) the same? Seems to me they should be. By having different criteria for the shield lid than the structural lid, it looks like something very different is intended here. Material toughness and brittle fracture potential is just as important for BOTH lids and their welds. If not, why not?

73. Why do some owners have one plug in the shield lids of their VSC-24 casks, and other owners have "more than one plug"? How many more? Why? Where? Doesn't this create confusion if the shield lids are different in different "version" of the same cask at plants? How do you check and seal these plugs? What is specific criteria here? Any opening in a lid is as important as the lid to shell opening. Any opening can leak.

74. There were "donut shaped" flaws, and others, in a certain spot on a lot of the NAC casks (revealed by acid etching). These were left because of a temporary attachment — some sort of bar — during fabrication of the MSB shell. Is there any way this fabrication can be done without the use of temporary attachments? It certainly would be better. Has some "brainstorming" gone into this at all? Where are other temporary attachments used and removed? Isn't there any more recent part of ASME code more applicable here in the year 2000? Something specific to dry cask storage? It just seems to me, once again, that the code often doesn't really apply to dry casks. Considering the number expected to be loaded in the future, has any initiative by creators of ASME code been done to make the code directly useful for dry cask use? If not, why not? This needs to be done.

75. I think the water in the MSB should be removed at the minimum, at a specific temperature below boiling to be really conservative and safe for workers and the public. I don't know what temp. — but say at 200° is the limit. I don't know how fast the water can come to a boil like on a stove. To just specify that water needs to be drained or cooled "prior" to reaching a bulk temp of 212°F is not good enough. It takes a while to drain the cask or cool it, you can't start this at 211°. If you leave it up to calculations at the moment, don't you taking a chance somebody's math might

be wrong and not rechecked? This is a crucial question. Temperature monitoring at 6 hr. intervals doesn't seem enough. Basing evaluation on current-heat-up-rate to calculate the "allowable temperature", could be exceeded before the next measurement, is just too close a call as far as I'm concerned. Formulating when a shorter sampling interval must be established "on the spot" worries me. You say [redacted] "using the current heat-up rate is conservative because the rate could only decrease as the [redacted] (sorry, bit tired) system moves toward the steady-state condition." So there any reason at all the rate could increase instead? Has everything been looked at closely here? What unexpected could happen?

76. Why are basket internal pressures and temperatures higher according to new calculations? Please explain how fission gas (Xenon and Krypton — anything else?) reduces thermal conductivity for normal, off normal, and accident conditions. There aren't any gases released in the cask during storage are there? Please explain. What about this "iron vapor"? What about any other gases from BPRAS or fuel rods with pinhole leaks and hairline cracks. (Frankly I don't think any of us really know what "normal" behavior for the interiors of a VSC-24 is!)

77. Have all calculations where SNC used the erroneous ".25 atoms of fission gas produced for each fission" been corrected to .303 atoms of fission gas? How much higher is the basket pressure because of this in the

new calculations? Has this also increased the calculated maximum fuel cladding temperature? If so what is the difference between the old and new calculations? Has NRC verified them to be correct now?

78. Are realistic spent fuel pool conditions for boron and temperature now calculated correctly for drain down specifications? SNC assumptions were wrong here before.

79. What is the minimum quench fluid temp. and maximum fluid flow rate during reflooding in unloading now? Has this calculation been verified by NRC?

80 What is the criteria for an "unacceptable gap" in lid fit up that determines that manual welding should be used to fill the gap? Is this clear in the documents?

81. What is the maximum possible fuel clad temperature in the center of an MSB right after loading and all the welds are sealed? At that point, if there is some unexpected problem, you did not anticipate, that requires unloading of the fuel, can you actually do this safely? Do you have procedures in place or workers know what to do? What would be the relation of the temperature of the pool water to the temperature of the fuel surface in the MSB? You would have to cut open all the welds you did recently and get water into that container and get the fuel out wouldn't you? Would the fuel be damaged in these procedures of quenching, cooling, etc. in unloading at this point? What would happen? Do you know? (Remember that you have a coating to deal with here also!)

82. There was a concern that when drilling the 2¼ in. vent holes in the Palisades shield lids, on loaded casks with vent holes made too small to begin with, that you should not "breech the shield lid". Just what does this mean? What can happen here to the welds? You have new criteria for all these welds, but what is the criteria for removing them? Is that clear? (for structural lid to shell, valve port covers, lid to lid, shield lid to shell, etc. etc.) What do you have to be concerned about in getting back into the MSB to get the fuel out? How is how you do all these welds, and test them now for "allowable" cracks, going to affect these things in unloading. The welds always worry me — they seem to be a point where a lot of problems occur.

July 15, 2000

83. I am attatching to this list and letter of public comment, a copy of my public comments on August 24, 1992 on the proposed ruling to originally certify the first VSC-24 CoC in the Fed. Reg. I want these 1992 comments to be once again public comments on this Amendment #2 to that Certificate in a rulemaking proposal now. You will see that a great many of my concerns were ignored in 1992 and the cask was certified in 1993 without correcting or addressing the problems I wrote about. Some are still concerns. I have marked a few special areas in red with red * stars for you to make special note of. Please review these 1992 comments carefully and make

sure that all my concerns then are now addressed in this amendment #2. The documents should meet NRC criteria. Do they? They should now be corrected for all SNC mistakes over the years. Are they?

84. To still use the term "double seal closure" in the C of C is really false now. You cannot guarantee that the shield lid or valve covers are completely sealed for 20 years if only the structural lid is UT tested. That lid is what the seal is determined by now. (And, frankly, I think that's what the original cask design was as in one of the very early documents the shield lid wasn't even welded (or even checked). I remember being surprised when I saw that was the earlier plan) The shield lid really never did provide a definite seal as I see it. And it surely doesn't now. This cask is a single UT checked weld closure. To still call it a "double seal closure" is misleading at the least.

85. Is SNC and BNFL correctly described in the SER as a "partnership"? Please clarify this. Who actually owns PSNA now? Who is liable as the vendor?

86. I do think your wording is "right," now, that in order to amend the SAR, you need to amend the C of C to do so. The SAR is part of the C of C package and can't be changed without an amendment. That was right in 1993, but nobody at NRC would admit it. The public could see it was what the code demanded.

87. Your wording and nine little terms like "shortcomings", "errors", "expansions", "adequate assurance"

"reasonable assurance", "within limits", "re analyzed", "allowable", "delete", etc. etc. Sound so clean in the new SER, CoC and Tech Specs. It really is a complete cover over, in nice words, of the awful mess it is meant to correct. One reading it, without knowing the history, would accept it as just "updating" as the vendor likes to refer to such changes. But in reality it is finally rectifying necessary changes caused by blunders, poor QA, poor materials, lack of testing, poor calculations, etc. (and sometimes goofiness that almost amounted to fraud) during all these years since initial certification. You don't like to admit doses are higher or calculations for temperature lead to higher results or whatever — it sounds better to say the new figures are "within limits". To me that is not clear. If it is worse off than originally promised, give the difference and the old and new figures and admit things are worse than promised to begin with. When everything begins to approach [redacted] maximum limit instead of well within the limit allowed then I worry. We don't want a cask that is closer to the allowable limit in many ways. The mere fact that "all HSBs manufactured after issuance of this amendment shall have an absorbed impact energy of 45 ft-lbs at 0° F" makes it clear that things were not right the first time for maximum public safety. The fact that you were allowing loaded casks to be moved at 0°, without checking weld temperature at all, before this amendment shows there were

possible brittle fracture problems if those loaded casks actually were moved at Palisades, ANO, or Pt. Beach in winter at 0°F. The fact that the UT testing wasn't even considered in the original Co C reveals that cracks not allowable could have been in those loaded casks in the past. Etc. Etc. Etc. The first C of C for the VSC-24 put the public and workers at risk. This amendment #2 is an admission of that fact no matter how nice you try to make the changes sound. I'm glad you are finally cleaning things up, but it was a grave mistake to take 7 or 8 years to do it.

88. Your revision history does not explain, nor does the line on page A-5 show the location of adding the words "up to" in the 2nd paragraph. Loading the 1st MSB in place with 24 spent fuel assemblies is different from "up to" 24 spent fuel assemblies. I assume this is because BPRAs are in there? Can you have empty sleeves? You need dummy rods, right? What is specific criteria here?

89. You say you "added the statement that artificial thermal loads other than spent fuel may be used to obtain temperature data". But what it said before was just that. This was not added to section 1.1.7. Please explain this. What was done, as I see it, is that you took out the two references to the NRC here. It no longer says shall be reported "to the NRC" nor does it say "NRC will also accept". Why were these references to NRC deleted? Does this

report no longer have to go to the NRC? If so, does it stay at the plants, out of the PDR, so the public can't see it? Doesn't NRC look at this then? If this is the case, say so clearly. Your description of the change in the document at 1.1.7 is wrong then. Correct it please.

90. The change to Section 1.2.3 "revises" the thermal calculation for a cask load of 24 KW to a maximum concrete temperature of 214°F when it was 207° before. That higher 7° more puts it closer to the acceptable criteria level of 225° and is pretty hot. We felt the original temp. was too close. (If measuring instruments are inaccurate, even more so.) What happens if the concrete is above 225°? This higher concrete temp. at a full load needs more consideration. Maybe 24 KW is too much to allow. This higher temp. of concrete is an added risk with a 24 KW cask load. No cask has been loaded with that load yet has it? Has a cask been tested, even with artificial thermal loads, to KW of 24?? The 705°F for the cladding is lower than the original 708°F by 3°, but we thought the 708° was too close to the limit of 712° and 705° isn't much better. That's pretty close. These temperature changes are once again admissions of new concerns.

91. How did we get from "plug" to plug(s) in Section 1.2.7. Please explain. Why the difference in this? Where are these different ones used? How

does this affect welds or unloading and opening and shutting these plugs or plug. Certainly if you have to shut two, rather than one, or open two, rather than one, procedures and time is different, is this clear in all related calculations and procedures in the document? Does Point Beach have a plug, or plugs in its casks?

92. It should be clear in section 1.2.9 that "the PT acceptance standards shall be as described in subsection N-C 5350" of ASME what? It isn't clear that it just refers to the same date and addenda as above it for the test — (no I guess this reads OK) Sorry!

This business of "latest version" for the UT test bothers me — how does a worker know if he has the right document here? "Latest version" could be anything he has in his hand that he thinks is the latest version. How would he know? How are more recent versions used for sure?

93. It says in section 1.2.9 that the "objective" is "to ensure that the MSB is adequately sealed and leak tight, and to confirm the integrity of the structural lid to shell weld". It does not say and to confirm the integrity of the shield lid to shell weld. Why not? Isn't this to be a "double-seal closure" (page 2 of C/C supplemental sheet) It says so there. If the integrity of both seals is not confirmed, then call it a single seal closure. The shield lid weld does not close

the cask not seal it for sure.

94. Section 1.2.10 Time limit for Draining the HASB: What is criteria for taking the S.F. pool temp measurement upon emergence of the HASB from the pool. Just how are you to take it? Where? With what? Exactly when? None of this is clear and pool water temperature is important here. Can you take it in a far corner of the pool away from the cask? Can you take it down 2 ft? What? Next to the pool wall? There are a lot of differences in temperature you could get here depending on criteria that could affect your calculations, letting water temps in the cask "sound good" too, but you run into the same concerns. I think a limit like the 47 hr. (or one even more conservative) would be better. You have definite TIME, you know, then. The other way, there is too much leeway for error in measuring equipment, proximity to things in pool, inaccurate calculations etc.

95. Section 1.2.10 You say "cooled by other means" Like what? This is too nebulous a term, "other means", give specific criteria here. Also give some criteria as to how you are actually allowing time "to allow for the development and initiation of Corrective actions?" Like what? How? Is criteria in place for some troubleshooting here so workers know what to do? Are "lessons learned" incorporated here? They need to be.

96 Section 1.2.13 Thanks for moving MSB in VCC — interesting that it originally said "brittle failure" and you changed it to "brittle fracture". Why the Charpy test to 45 ft. lbs at 0°F now, when it wasn't required before? Seems to me it should have.

97. Section 1.2.14 Basis here says — Charpy tests (this is for temp. for lifting MTC) results ~~that~~, at 0°F, which show ductility (or other appropriate tests) etc. This is a loophole and nebulous — take it out. "Other appropriate tests" means nothing and is too vague. List the tests you consider appropriate. Be specific or something will be done wrong again!

98. Section 1.2.15 MSB Handling height is described in the "change Description" of the "Revision History" here as "added clarifying text". What? You lower the drop from 80 in. to 60 in., and that is a "clarification"? Before, you could drop it at 80 in "without breaching the confinement & venting etc. etc.", now you say this change to a lower drop height will "continue" to meet requirements of storage. "Continue"? So why can't we still drop it at 80° with meeting these same requirements? Please explain the clear reason here for the change from 80° down to 60° height for a drop.

99. This idea of a "direct final rule" is only to suit the utilities time schedule. It shortens time for public comment and does everything way too fast after comment.

100. Thanks for responding to all of this! I know it isn't easy for you (but it's surely not easy for me either).

PROPOSED RULE PR
(57FR 28645)

August 24, 1992

DOCKETED USNRC

(27)

'92 SEP -1 P3:32

OFFICE OF SECRETARY DOCKETING & SERVICE BRANCH

Mr. Samuel Chilk, Secretary
U.S. Nuclear Regulatory Commission

Comments on the proposed ruling to approve the VSC system by Sierra Nuclear and issue a certificate of Compliance for the VSC-24 cask

by Jason Shillingford
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* July 15, 2000
This Copy
is Submitted as public comment
on the proposed ruling on amendment #2
to the original Certificate granted the
VSC-24 in 1993

I have marked some areas with red (*) stars for special notice, but it all needs to be addressed once again.

'92 SEP 24 A10:03

PUBLIC DOCUMENT ROOM

(I'm sorry for the poor copy quality but it is your PDR that supplied it)
Looks like they punched 2 holes in the top of each page and pages at end are from additional comments I sent later & think)

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PDR PR
72 57FR28645 PDR

DS10

Comments on the proposed ruling to approve the VSC system by Sierra Nuclear and issue a Certificate of Compliance for the VSC-24 Cask:

References:

A. Oct. 1991 TSAR - Rev. 3A
B. Nov. 1991 SAR - Rev. 0
C. March 1991 SER - Rev. 2
D. May 1992 SER
E. Feb. 1989 DOE Dry Cask Storage Study
F. Nov. 1989 Report of MRS Review Commission
G. GAO/RCED 92-56 March 1992 - "Development of Casks for Transporting Spent Fuel Needs Monitoring"
H. GAO/RCED 91-194 Sept 1991 - "Operation of MRS is unlikely by 1998"

* (underlined parts in quotations are not in the original references)

** (It would be of great help to persons reviewing cask proposal if NRC would issue one complete final SER containing all the detailed information in previous evaluations. Having to such documents containing a lot of repitition, yet a lot of different material in each, makes it difficult and time consuming to review both. It would also be of great value to include 2 lists - (1) a list of all parts of the system needing further review under other parts of the code (2) a list of all site-specific parts of the system needing further review)

*** (Ref. D p. 12-1 has a mistake in paragraph 3 - it refers to annual interior inspection of the VCC - this should be exterior)

Terms used: VSC - ventilated storage cask (both the metal cylinder inside concrete

MSB - multi-assembly sealed basket (inner metal cylinder of VSC containing the 24 spent fuel assemblies and welded shut

VCC - ventilated Concrete Cask (outer concrete part of VSC)

MTC - Transfer Cask (separate metal cask with doors at the bottom - reusable for transfers and remains at the pool

Comments: List of areas covered:

General:

1. System as a whole – approval adds to lack of standardization and integration
2. Removal after shutdown – decommissioning
3. Utilities as test site
4. Complete cask "system" needs approval before certificate should be awarded
5. Precedent of giving an "exception to the code" of fabrication before approval

Specific:

(1) Dose Rate
(2) Concrete Exception
(3) Weld Exception
(4) Vent Blockage
(5) Snow Shield Elimination
(6) Surveillance
(7) Corrosion
(8) Fractured Tile
(9) MSB handling in VCC only above 0°F
(10) Loaded VCC allowed at 80 in height
(11) Off-normal problems and accidents possible

General Comments:

1. Approval should be denied because the VSC-24 would add to the lack of standardization and integration of the whole waste system. 10 CFR 72 subpart L 72.236(m) says there should be consideration to "compatibility with removal of the stored spent fuel from a reactor site, transportation and ultimate disposition by the DOE." No cask approved for "storage only" fulfills this requirement. The public will view this as permanent storage unless the whole cask or at least the MSB is accepted for transport before any final approval of the cask for storage.

* The NRC itself (p. II-53 Ref. E) stated, "the commission is concerned that inadequate attention is being given to ensure the compatibility of the various steps in the storage, transportation and disposal of spent fuel and thereby enhance the safety and efficiency of fuel handling." (They refer to a "proliferation of storage options")*

In response to the NRC commenting the "Dry Cask Storage Study," the DOE replies by referring to the 20% possibly in storage as may be handled in "less than optimum fashion with respect to integration", (p II-54) and, "prior to any consolidation activities the shipping casks will be oriented for the bulk of fuel which is in the pools", (p II-57), and "longer term shipping casks design efforts will consider modification for the remaining 20%. If not compatible, some fuel may be subject to "delayed acceptance".

Also a recent GAO report states that "the utilities prefer that DOE remove spent fuel from nuclear plant storage pools before shipping and spent fuel from dry stores." (Nuclear p 7

this reaffirms that fuel in casks will be removed last.

The MRS Review Commission states (p. 90 Ref F), "the proliferation of waste forms and packages could increase total costs and reduce the reliability of the waste management system".

The NRC has already approved 4 different storage methods, plus there are all the different types of military waste storage packages. Plus other methods were approved before this generic approval plan. To accept even more waste storage packages such as the VSC-24 "in hopes" that the MSB will be compatible with future Transport casks is unacceptable to an integrated system. To have 1. casks for storage 2. casks for transport and 3. casks for disposal, triple the cost, the dose to workers, and the eventual cash waste. Instead of an integrated system, we are getting redundancy.

2. Approval should be denied because use of the VSC-24 would add to the problems in shut down and decommissioning of the plants: 10CFR72 subpart K 72.218 "Termination of License" (b) states, "an application for termination of the reactor operating license submitted under 50.82 of this chapter must contain a description of how the spent fuel stored under this general license will be removed from the reactor site." How can a plant have a removal plan when using a "Storage only" VSC-24 cask? These casks are approved for only 20 years. Thirty days or more before the time limit, the cask must be submitted for reapproval. If not reapproved, the casks have to be removed. Considering that: "The Federal government is not obligated to begin accepting spent fuel in 1998 if there are compelling reasons to delay or cancel an MRS facility" (p.11 Ref F) and that "Not only is DOE too optimistic in assuming that an MRS facility will be operating by 1998, but also it has no contingency plan if this does not occur", (p. 29 Ref. H), and also that, "a repository that Congress expected to be completed by 1998 will not be available until 2010 at the earliest" (p.16 Ref. H) — where is this fuel supposed to be removed to ??

All the casks already approved by NRC are up for reapproval in Aug. 2010. Then what? Will the fuel have to be put in new "storage only" casks? Will the life of the present casks be extended? Will the degradation of the fuel inside the MSB be checked?, and what happens at a plant to be shut down?

"Maintenance of spent fuel on-site after reactor shut down is not without consequences" — "maintaining spent fuel at a shut-down reactor is expected to cost between $2 to $3 million more per site per year than if all the fuel were removed" (p. 37 v.1. F) — "Following reactor

shut down, trained reactor personnel would probably seek employment where their skills would be more useful. Monitoring the stored fuel and maintaining security would probably be routine and monotonous and could be carried out as a part-time responsibility by persons whose principal duties were elsewhere. Under such conditions, these operations might not be performed as well as expected, so there could be some risk that spent fuel storage and subsequent handling to prepare it for shipment to the repository would be performed under less than ideal conditions." (p.38 Ref. F)

I do not agree with the NRC staff when it "concludes that adequate attention has been paid to decommissioning and decontamination in the design of the VSC-24 system "considering the current state of knowledge." (p.9-3 Ref D) and that a detailed decommissioning plan is "not a requirement for approval of the system" and would be site-specific (p.9-1 Ref. D) For, to use their term, "considering the current state of knowledge", in reference to what's happening with an MRS and a final repository, these casks are going to remain at the plants for a very long time and spent fuel will remain on-site as it always has since the plant started operation. For the NRC to once again put removal plans to future generations, saying the fuel can stay at the plants 100 to 140 years (p.42 Ref H) delays the whole waste removal program and no real progress has been made.

The NRC says that the design of the VSC-24 system has taken into consideration the removal requirement; that "the MSB has been designed to be compatible with future shipping casks." (p.2-15 Ref D) However, a recent March 1992 GAO report [illegible]

that future transport casks are being developed for removal of fuel from pools and the whole report recommends refraining from submitting the design of any (transport) cask to NRC for certification, at least until DOE has demonstrated that an MRS is sited, and that the Sec. of Energy limit funding on these casks and assess potential effects of utilities acting to expand on-site storage programs. So how can NRC say the MSB is compatible when GAO says the transport casks are not even developed yet? (p.12 Ref H)

What it comes down to is the future site-specific case, as NRC admits, when under "decommissioning" (p11-1 Ref C) it says it "withholds formal approval pending review of a site-specific case" and (p11-5) it refers again to "considering the current state of knowledge" saying "it will be necessary to review each site-specific application before determining whether removal of intact MSB's is compatible with existing or anticipated disposal capabilities, or whether cutting and fuel removal are required. Therefore the criteria in the code for compatibility with transport and removal is not fullfilled, but refered to site specific cases and may not be compatible at all.

Only a very brief description as to the method of removal of the fuel from the MSB is given. The MTC could be used to retrieve the MSB from the VCC and load the MSB into a shipping cask at poolside, if compatible, assumes PSN, "or any other way that may evolve over the next 20 or more years." (p 7-8 Ref A.) Or if not compatible, the MSB could be opened "with a carbon arc, air gouge, plasma cutter, portable lathe, etc." — "exact determination of this procedure will depend on the shipping requirement at the end of life." (p 8-5 Ref. A) These casual references to ways the fuel may be removed are not sufficient ..... considering

that this may be necessitated by an accident or off-normal condition even before "end of life". A detailed procedure approved by an NRC safety evaluation should be given for exact methods of fuel removal from the cask, before approval of the system is given.

Since other new cask systems by other vendors are featuring the improved economics of concrete storage and the operating advantages of direct fuel pool loading of the storage cask with no transfer cask needed, why does NRC want approval of the VSC system which necessitates the dangerous procedure of putting a MTC on top of the VCC and lowering the MSB down through the bottom doors of the MTC? The alignment MTC plates permanently installed at the top of the VCC (p 3-2 Rev 0) are not clearly explained. The whole procedure of the MTC on top of the VCC about 15 ft in the air is very precarious. The procedure of taking the MSB out of the VCC is not clearly explained. How would the crane be attached to the MSB once the VCC is opened, when it has to be attached down through the MTC first? Do the doors at the bottom of the MTC open to bring the fuel back up? How is this done? It can't be just assumed that the MSB will fit a future shipping cask. Removal procedures to take the assemblies out of the MSB through use of the transfer cask need to be specific if the public is to be reassured the fuel will definitely be removable.

3. Approval should be denied as approval accepts using utilities as test sites for the VSC-24 cask system. 10 CFR 72.236(7) which NRC says "are the responsibility of the vendor (Ref D. p13-1) states, " the cask and its systems important to safety must be evaluated by appropriate test or other means acceptable to the Commission to demonstrate that they will reasonably maintain confinement of radioactive material under normal, off-normal and credible accident conditions." This was not done by the vendor before approval. It is being left to be done by the utility after the approval. "Condition" for the system are given by NRC and there are test to be done on the casks at poolside before they are allowed to go to the pad." Since the VSC is a new system that has not been built and tested, site specific procedures will be contingent upon successful demonstration of most "first of a kind features. (Ref C. p8-1) "The TR (by PSN) does not mention any pre-operational testing program to assure adequate thermal performance as required by Reg. Guide 3.61 sect. 9.1.6. The Staff does not accept this omission because the VSC design is a "first of a kind". Therefore, as concern fuel loading, a pre-operational test shall be performed to confirm the validity of the design." (p9-8 Ref. C) And on (p9-4) it says, " the purpose of the test shall be to verify heat removal capacity of the VSC system. This pre-operation test is viewed by the NRC Staff as necessary because the fuel clad temperatures predicted by PSN is a mere 4°F below their design criteria on a 75° F ambient day, also the concrete temperature is very close to the design criteria under the same conditions."

Also (p14-13 Ref D) states that (in reference to an air

than 110° for the first VSC," this is a condition not addressed in the SAR and will require additional measurements and analysis to assess the actual performance of the cask. If the excessive temperatures cause the cask to perform in an unacceptable manner, and/or the temperatures cannot be controlled within acceptable limits, the cask shall be unloaded."

All these conditions, tests, and demonstrations of the VSC-24 system should have been done by the vendor *before* approval, not left to be done at the utility after approval. Requiring these at the plant on the first VSC-24 ever created, does not fulfill code requirement. It makes the utilities, their workers, and the public part of an experiment to see if the actual cask works as the analysis says it is supposed to. These things should have been done at a testing facility like INEL, outside, long term in the environment, not at a utility. The plants, which are to be the guinea pigs here, refer to the testing of the actual VSC-17 cask at INEL for "feasibility" of the VSC-24. However the NRC does not make reference to the test in the SER, nor does it make use of the DOE work on that VSC-17 cask. Why not? Should the tests of the VSC-17 using consolidated fuel, short term, inside in a controlled environment, be used to verify use of the VSC-24 or not? Since it is not referenced in the SER's, I think it should not. There are many differences in this "version" of a ventilated cask (VSC-17) from the VSC-24.

Approval of the VSC-24 system should be denied until the complete system is approved. Throughout the SERs there are references to parts needing other reviews and approvals. Without approval to use the lifting cables, lifting yoke, lugs, multi transfer cask, transfer vehicle, etc., the VSC-24 cannot be used, therefore the whole system should be approved before a certificate is issued. Much of this is referred to a 10 CFR part 50 review - for example (p 1-10 Ref C) refers to, "a sling or cable set which is attached to lifting eyes bolted to the top cover plate of the MSB and attached to a lifting hook for a hoist. No information was presented for this cable set. The above two pieces of equipment are used only in the Zion fuel pool building. Therefore the approval for their use is subject to to 10 CFR Part 50 review." And again (p 3-55 Ref C) in reference to operational equipment NRC states, "In general, the operating procedures suggested in Sect. 8 are very brief and are not a substitute for appropriate procedures which must be developed on a site-specific basis." Also, in relation to independent staff calculations, it state (p 6-12 Ref C) "only dose rates for the loaded VCC were calculated since the MTC is only used inside the Zion fuel pool building and is therefore covered under 10 CFR Part 50."

There was a gross error made by PSN in calculating the dose rate at the gap between the MSB and MTC at the top of the MSB shielding ring. PSN calculated it was 440 mrem/hr and NRC calculated it to be 4140 mrem/hr instead. (p 6-12 Ref C) Both SAR's do not give this higher rate but still list the lower one with only a reference at the bottom of the page saying that "the SER reports a larger number (but still acceptable) scattered dose up to the gap. This larger number is the dose without the shield ring. In either case

portable shielding (such as lead bricks), or other measures should be used to reduce the dose to welders." (p 5-13 Rev Feb, considering this high dose rate is covered by NRC, and considering that the inadvertent lifting of the MTC by the MSB lift hoist when attempting to release the load on the MTC shield doors is a major concern, and that the MTC top cover plate and bolts are not designed as critical lift elements, the review of the MTC in 10CFR 50 operation license is of major importance. Yet this is *not approved* before the cask system is given approval (p 2-31 Rev 0) "Safety review and approval for procedures and equipment used within the fuel pool facilities occurs only under the applicable provisions of the 10CFR part 50 facility operation license." (p11-2 Rev 0) So once again actual tests of all these lifting devices are left to the utility. This is not acceptable to public Safety.

Other components left to the site-specific license and needing part 50 approval are the welding machine, the helium system, the transfer vehicle trailer and prime mover, and "components to reverse the process in order to retrieve fuel assemblies from the VSC." (p1-10+11 Rev C) The statement by NRC that all these components "can apparently" be performed by current technology and that such equipment exists or "can be fabricated" (p 1-11 Rev C) is *not acceptable*. This should all be approved before the system is approved. The SAR and SER say cask "system" yet it appears that the approval is for the cask itself, not the system.

There is a concern as to how the lifting arms of the transport vehicle fit into the two air inlet channels of the VCC [illegible] to the [illegible]

in this procedure? How are the vents checked after this? (p1-10 R/C) "another piece of equipment mentioned in the TR but not designed or specified is a piece of bridge steel suitable for bridging the gap between the heavy haul trailer and the storage pad, so that the roller skid can roll across the bridge steel" (p1-10 R/C) This sounds like a dangerous procedure considering the MSB is not centered inside the VCC. Is there potential for damage to the coating on the inside VCC walls or the bottom tiles in this procedure if it's a bumpy ride?

5. The precedent of allowing a vendor an exception to the code by allowing fabrication of cask parts before the cask is given approval, sets a pattern for future problems at cost to ratepayers and tax payers. PSN was given an exception by NRC to fabricate cask parts for the Palisades plant even before this VSC-24 proposed ruling was out. This puts the vendor, the plant, and the public at risk. A condition of approval 10CFR 72.234(c) states, "Fabrication of cask under the certificate of Compliance must not start prior to receipt of the certificate of Compliance for the cask model." The reasoning that Palisades could not operate without a full core reserve is not adequate for this exception, as it is doing so now with the delay in approval anyway. A full core reserve is not a requirement of the NRC, but a utility choice for operation procedures. On May 6, the same day the SER accepting the SAR Rev 0 was issued, there is a notice of deviation non conformance in an inspection on the weld tests of the inner liner of the cask air vents on the casks pre-fabricated for Palisades. Such a problem would not arise if an exception to the code had not been allowed already. This should not have been done for the VSC-system and should not be allowed in the future under any circumstances. To pre-fabricate the MSB's at PSN and pre-fabricate the VCC's at the Palisades plant, is really, in essence, pre-fabricating the whole cask. This is against the code regulation

July 15, 2000 note:
This page reveals what I saw as a very poor Vendor to begin with. To submit something with all these errors to begin with shows a lack of integrity!! NRC should have expected problems in the future! 15

Specific Comments:

1) Approval should be denied because PSN Benchmarking of the TN-24P cask for dose rate of the VSC-24 system were grossly in error. "The large non-conservative difference" (between the NRC independent calculation and those of PSN) and "the fact that the vendor did not benchmark the sky shine-II calculation method, provided sufficient justification to find the vendor's site boundary doses non-conservative as a result, the staff has accepted the shielding design under the following condition for cask use: Dose rates at points along the surface of each storage cask shall be measured by the system user to verify the design basis dose ..." (p 6-3 and 4 key D) In the words of NRC, "The fact that QAD=CGGP underpredicted the cask top gamma dose rate by as much as 52.2% and that ANISN-PC underpredicted the bottom neutron dose rate by as much as 38% was acceptable to PSN. PSN did not provide any technical evidence to explain the difference other than supposition" In addition PSN did not quantify the accuracy of the dose rate measurement instrumentation used for the TN-24P cask. During a review of the PSN TN-24P cask benchmark analysis, an error was discovered in the calculation of the volume of zirconium in both the fuel and nozzle regions." (p 6-10 and 11 key) "The Discord error was in the determination of the dose rate at the top of the MSB shield ring ... as a result the MSB shield ring dose rate should be 4140 mrem/hr instead of the 440 mrem/hr reported ... the error will have an estimated impact of an additional 28 mrem of

occupational dose burden for each Transfer Cask loading 16 cycle." (p 6-12 Ref C)

"At 50 ft, the MORSE calculation results in a single cask neutron dose rate which is 36 times higher than PSN's value. at 1000 ft, the MORSE calculation results in a single cask rate neutron dose rate which was about 77 times higher than PSN's dose rate. The independent review of NRC calculation for 68 cask array gamma air scatter resulted in dose rate which are 18 to 28 times higher than PSN values for distances between 100 and 2000 feet. The NRC calculated dose versus distance curve for a 68 PSN VSC-24 cask array is present in Fig. 6.1. Based on this curve, a minimum public exclusion distance of 1740 ft. is required to meet the dose limits set in 10 CFR Part 72.104." (p 6-12+15 Ref C)

As a result of the errors in PSN calculations plus the non-conservative differences in the benchmark analysis, the NRC staff felt it once again had to require tests of dose rate on each cask by the utility to verify the design dose rate these doses must show site-specific calculations acceptable to NRC for on-site and off-site levels. NRC also lowered the dose limit of the vendor of 100 mrem/hr at the air vents to a limit of 50 mrem/hr instead. (p. 6-4 Ref D). So, once again tests of each cask are required by the utility after NRC approval of the cask rather than by the vendor at a testing facility or an actual cask in the environment before approval. This is unacceptable and puts the utility, it's workers, and the public at risk

- Approval should be denied because "an * exception * to ACI 349 Criteria was requested by the VSC-24 system vendor for the VCC concrete" (p3-9 Key D) "the VCC concrete temperatures can exceed all ACI 349 limits i.e., the 150°F limit for bulk concrete, the 200° limit for local areas for normal operation or any long term period, and 350° for accident or other short term period." (p3-18 Key C) This exception should not be allowed.

"Full blockage of all air inlets is considered as an accident event. the applicant has not provided sufficient data to establish that the airflow will be as calculated ... the adiabatic heat up case shows that concrete temperature will reach approximately 650°F on the liner VCC within one week. This is above the accident temperature limit of 350° for the concrete. The accident temperature of the fuel of 1058°F would also be reached at about this time." (p4-9 Key C) This time is referenced elsewhere as actually "between 24 hours and one week" (p14-30 Key D)

"Concrete temperatures over 350° in accidents (without the presence of water or steam) are not acceptable as they have uncertain impact on strength and durability ... since the vendor did not provide acceptable evidence that the cask will be cooled in the event of full blockage of the inlets or outlets, the requirement to remove a cask from service must be applied." (p4-3 and 4 Key D)

A pre-operational test is required by the NRC as necessary because the fuel clad temperature predicted by the vendor is only 4°F below the design criteria on a 75° ambient day. Also the concrete temperature is very close to the design criteria under the same conditions." (p12-13 Key and (p9-4 Key C)

So there is an exception given to the concrete used in the VSC system, yet this concrete to be used could go to 650°, way above the accident limit of 350°. This would also seem with fuel clad limits of 1058°F. And "for the off-normal case of 100°F the maximum fuel clad temperature was calculated to be 708°F, a 3 cent 40F under the limit of 712°F (p4-9 Ref. C)

* Pre-operational tests are to be done once again by the utility after approval instead of by the vendor at a testing facility before approval. This once again puts the utilities, the workers, and the public at risk in safety as well as cost.

(3) approval should be denied because "the double seal welds at the top of the MSB do not comply with the ASME Code, Sect III, Subsection NC (Ref 10). The inspection procedures outlined by PSN in the TR do not comply with the code" (p 3-3 Ref C)

"If fuel is to be removed from the MSB, either at the end of life or for inspection after an accident, precaution must be taken to prevent fuel oxidation and radiological exposure of personel during this operation" (p 3-15 and 5-9 Ref C) This is done by determining whether the MSB atmosphere is helium or if air is present by using the Swagelok valves on the MSB. If air is present, filters need to be used to flush airborne radioactive particulates. In an accident case, respirators may be required by workers.

Also in off-normal conditions, which are expected to occur with moderate frequency, on the order of one during a calendar year, there would be a "small release of radioactive particulates from the MSB exterior." (p 3-15 and 3-25 Ref C)

Therfore because of these possibilities and since the welds don't comply with the code, it seems the MSB should have a pressure gauge and a way to test the interior atmosphere regularly as some other casks are required to have. Also it would seem that the welds should be tested a second time, after the MSB is hoisted up off the MTC doors and down into the VCC, to see if any damage was done to welds in the lifting procedure. Could all the weight of the loaded MSB and the MTC be on these welds if the MTC were lifted up by the MSB in this case? And if the MTC is attached in any way to the VCC, while it is on top of the VCC in this procedure, couldn't that possibly be lifted up also? These procedures need clarification as this is one of the most dangerous in the fuel transfer. With the MSB inside the MTC

and the MTC perched on top of the VCC, and the MSB lifted 20 up off the doors on the bottom of the MTC and down through them into the VCC, problems can occur. How much (stress)* and (weight)* could be put on the MSB bolts holding the lifting rings to its cover, and how much on the welds, is the question here, considering the welds and inspection of the welds do not meet the code requirements. What is the criteria for these bolts? How much weight could possibly be on them in an inadvertent lift of the MTC by the MSB (and possibly also the VCC)??

4) Approval should be denied because vents in the cask are too dangerous. Vent blockage could be the biggest problem with this cask design. Computer analysis or even testing of a cask in a controlled environment in a lab is not going to predict what mother nature has in store for these vents outside along Lake Michigan. PSN says it is not likely that vents could become blocked by blowing debris, snow, animals, etc. (p 11-38 Key B However in a GSN letter in the "Final Dry Cask Storage Study" (p. III-8.2 and 8.3 Key E) there is a concern that ventilated concrete casks and the NUTHOMS concept "apparently have no inlet or outlet filters"..." the unfiltered air may allow the entrance of insects or other animals which may be killed — eventually plugging the ducts — or at least risk mutation. If filters are foreseen to avoid this scenario, then the advantage of completely passive cooling is lost as the filter need replacement or surveillance for plugging as this may lead to thermal overloads." In the response to this letter of concern in the study, it refers to wire mesh screens instead of filters, and says these will keep out birds and rodents. It says this aspect of the vents did not represent a concern to the NRC (p II-50 Key E) in its review and approval of this technology (referring to previous approval of NUTHOMS apparently). Considering the site for the casks at Pt. Beach outside near open fields which could contain milkweed and thistle fluff, spores, seeds, mold, fungus, cottonwood fluff, Cattail fluff from the plants in the wet land across the road, etc..., I find considerable reason to be concerned with this problem. How big are the holes in the screens covering the vents? Can these screens be easily removed for cleaning and for removing debris <u>inside</u> the screen? There is no reference to this in the SER's. Anybody who has brushed off window screens in summer that [illegible]

greatly. It's certainly a possibility. And what does happen if bugs, spiders, etc. become mutated and are then eaten by birds and small animals? How would this affect other animals in the food chain? Could ants, wasps, bees, whatever other small insects, fly into or around the vents attracted by the heat in colder weather? What are the size of the holes in the security fence? Will this fence prevent voles, mice, shrews etc. from coming in and eating such insects? And even if the fence holes are small, this won't prevent anything that flies from coming near the casks — birds, bats, insects etc. It appears to me that a little thing like a spider or milkweed fluff could cause a problem with a big cement cask.

Complete blockage would occur with either blockage of all inlets or blockage of all outlets. PSN infers that if the inlets at the bottom were blocked, two outlets at the top could work as inlets and the other two remain outlets and this would establish an airflow (p11-38 Ref B) However, NRC doesn't accept this and states that "The applicant has not provided evidence that this method of determining air flow is adequate when there is little or no height difference between the cooling air inlets and outlets" (p4-8 Ref C) It's just like having only one window open on one side of the room and none on the other — there would be no draft or cross-ventilation. With vents at top or bottom of the cask blocked, the cask won't be cooled effectively.

If blockage of all inlets or outlets occurs, NRC says it will depend on "evidence" that shows this occured for less than 24 hours as to if the cask has to be removed or not. There is no description of what this "evidence" would be. What is the [illegible]

decision? Also the reference to vent blockage in this situation is not clear. Some say all vents when others say either inlets or outlets mean that all vents are eventually blocked in either case. This should be clear in all references that refer to this situation. For example (p 4-1 Rej C) states, "the time period for the concrete to reach the accident temperature limit is less than the surveillance interval of one week. Therefore the applicant has committed to remove any cask from service which has been found to have the inlets (and) outlets blocked" (This reference should say (or) instead of (and)), "unless there is evidence that the blockage condition has occurred for less than 24 hr." NRC says this removal of the cask is acceptable "in lieu of a shorter inspection cycle or satisfaction of testing requirement of ACI 349 Sect. A4.3" (p 4-2 Rej C) So instead of requiring daily checking of the casks for vent blockage, NRC finds a weekly surveillance schedule acceptable to them. This could allow accident temperatures in the concrete in less than 24 hr. I find this unacceptable. The March 29, 1981 SAR states that if all inlets are blocked "concrete temperatures will reach approximately 650°F on the inner VCC surface within one week." (p 4-9 Rej C) "This is above the accident temperature limit of 350° for the concrete. The accident limit for fuel of 1058° would also be reached at this time." I find it strange that the May 6 SEK does not repeat the very high 650° temperature but only refers to the fact that concrete would "exceed" 350° in this case. (p 4-3 Rej D) I call 650° greatly exceeding 350° and object to the lack of clarity in the 2nd SEK.

The public really has to read both SEK's to get detailed

are eliminated from the 2nd one. One complete final SER would be a more valuable tool for all concerned — the utilities as well as the public, to evaluate the situation. I hope that in the future, cask proposals have only one final SER containing all the information.

Apparently the vents are not the only possible problem to airflow. There is also a possibility of airflow blockage internally as NRC requires a test on the "first VSC unit loaded, on a one time basis, after 5 and 10 years of service, all VCC internal surfaces will be inspected to identify potential airflow blockage and material degradation. The results of such inspections may require corrective action, which could be classified in the category of maintenance!" (p12-2 Ref D) I find this ominous and don't call corrective action in such a case "maintenance". I call it finding out if the VSC-24 really works by testing it at a public utility. If the results of this test after 5 years show extensive degradation or airflow blockage, then what? This test should have been done at a testing facility, not at a public utility. We should have approval from such a test before we even consider the cask for use in the public arena. There has been plenty of time to consider disposal of spent fuel since the day the nuclear plants started operation, yet now because no solution was found, there is a big rush to use these casks without any physical long term testing. The fuel pools are almost full and there is suddenly a big hurry to solve the problem. This is wrong and a risk to public health and safety.

* * Why has NRC proposed a maximum rise of 110°F air temp between the inlet of the VCC to the outlet? (p. 2 Ref D) "As

this value the maximum fuel cladding temp. is predicted to remain below 712°F and maximum local concrete temp. is predicted to remain below 225°F." (p 12-2 Ref B) Actually, (p 12-4 Ref B) the cladding would be 709° and the concrete 207°. The 709° is only 3° from the maximum for the cladding. This is pretty close to allow for regular use. According to the table (p 4.4 Ref B) half the inlets blocked causes a difference of 98°, and all inlets blocked causes a difference of 153°. The normal rate of temperature difference is expected to be 89° between inlets and outlets. (This table fails to state what the temperature difference would be if all inlets were blocked long enough (24hr to a week?) — certainly more than 153°. It just says "short term" — what does this mean? (p 4-4 Ref B) Does it mean 24 hours? So that the point at which it reaches accident level?

The need to remove a cask after inlets or outlets are discovered to be blocked during sometime at a weekly surveillance, because of what could happen after 24 hrs makes no sense. Why shouldn't the cask be checked daily instead of left unchecked for a week at a time? If the vents were blocked right after the check, they could remain so for 7 days until the next check. Why should this be allowed when it takes only 24 hr. or more for accident temperatures to be reached? "This would not occur if remedial action were taken following detection of completely blockage of substantially all inlet or outlet vents in a daily inspection cycle." (p 9-4 Ref C) The vents should therefore be checked daily, not weekly, as the NRC allows in this proposed ruling.

(5) Approval should be denied because the snow shield had to be eliminated. "The TR mentions a snow shield around the cask bottom. This snow shield has been eliminated from the design. Procedures call for removal of any blockage such as may be caused by snow accumulation." (p 4-7 Ref C) Why was the snow shield originally in the design? Apparently there must have been concern for snow blocking the vents. It appears, however that NRC decided this was not effective for they say, "Procedures call for removal of any blockage such as may be caused by snow accumulation." (p 4-7 Ref C) Since the off-normal event of heavy snow, which the NRC states is "expected to occur with moderate frequency on the order of once during any calendar year" (p 3-25 Ref C) can cause blockage of the air inlets, it certainly seems that daily inspection of these inlets instead of weekly would be the requirement. The cask is first to be used in Michigan and Wisconsin, both which have severe midwest winter storms. The cask has never been built, much less tested, in snow and ice and freezing and thawing. In stormy winter weather, with high winds, even light snow could drift up against the vents. How does a worker clear ice and snow from these vents? How does a transport vehicle move a cask back to the pool in an emergency in such weather? Does it work in heavy snow on an icy road? The MSB cannot be moved (inside the VCC) below 0° because of brittle fracture problems. A winter accident scenario in the midwest is much different from a computer analysis. This cask should be tested in severe winter weather at a testing facility not at a utility.

* * why 15 2000 note this is now 30°! 35° at pt. Beach!

2) Approval should be denied because the surveillance system required in NRC is inadequate. 10 CFR 72.122(i), requires that ISFSIs have the capability to test and monitor components important to safety. NRC Staff asserts that "prior" evaluations have established precident that this requirement can be met for totally passive systems by periodic visual inspection. (p2-10 Rev. 0) How long have these casks previously evaluated been in use? What problems have developed with only visual inspection so far? Details of comparis between the casks setting this precident of visual inspection and the VSC-24 need to be made clear to evaluate this prior judgment application for surveillance to the VSC system

"The TR proposes that no instrument be used for in-place monitoring or by personnel making periodic inspections" — and "that adequate provision of shielding obviate the need for rad ological alarm systems." The Staff agrees with this position. (p2-29 and 30 Rev C) "The field welds and the shop weld on the bottom and along the longitudinal seam are expected to maintain the internal helium atmosphere intact for the life time of storage of the MSB in the VSC. No device (e.g. gauge) is made part of the system for verifying the maintenance of the helium atmosphere." (p5-3 Rev C) However, during final removal of the fuel at the end of service or during an accident situation NRC requires the use of the Swagelok valves which permit determination of the atmosphere within the MSB. At this time a test of the atmosphere must be done to see if air is present. If it is, filters need to be put in place to prevent flushing of airborne radioactive particulates at this time. (p14-2 and 3 Rev 0) Why isn't the atmosphere in the MSB tested periodically in surveillance to make sure fuel integrity is maintained?

"A visual examination [illegible]

examination of the interior of the air inlets and outlets shall be conducted at an interval not to exceed 1 week." (p 14-30 Rev 0) As explained earlier in these comments, this should be daily, not a week, considering vent blockage could cause an accident condition in less than a week. Just what is a "drive by" or "walk-through" surveillance? The outlet vents are near the top of an 18 ft cask. Does the worker climb up on a ladder, use binoculars, or what? I find this a very casual reference to a very important safety factor in the use of a brand new technology. Details of inspection techniques for vent blockage are not given. How can a person see from the outside if a vent is blocked in the inside from corrosion, an off-center MSB, spider webs, or whatever? Why isn't the interior environment of the cask to be monitored? Why aren't the routine gaseous releases from the cask seals evaluated for the multiplicity of continuous airborne releases from a full array of casks over a time scale of years? Could this create a cumulative off-site radiological hazard? I see no reason for public confidence in a cask to be tested once at the utility before moving it to the pad, and then air vents checked weekly by a "drive-by or "walk-through", and the exterior checked yearly (p 14-33 Rev 0)

Only the 1st cask in place is to be tested for interior surface potential airflow blockage and material degradation at a 5 and 10 year interval. A letter of summary is to be sent to NRC then. Only the 1st MSB (in VCC) is to have a test for inlet and outlet temperature for norm airflow (p 14-4 Rev 0) a letter is also to be sent to NRC then. What is to be done with the information in these letters? Will the casks all be returned to the vendor if there

don't work? Why aren't these tests done on a real VSC-24 at a testing facility? Why aren't tests like this part of a regular surveillance program for all casks in use? To take a new technology, a cask never built or tested, and then test one at the plant before operation and then look at it again in 5 and 10 years does not sound like a program of careful regard for public health and safety.

** (another problem not discussed in the SAR or SER documents is how lightning could affect a cask. These casks are 18 feet tall with metal tops and metal MSBs sitting out there in an open field, they would seem a good target for a lightning bolt. Could this fracture the concrete - a possible split open the cask? What effect would it have on the fuel? How would this accident be detected if only weekly surveillance is done, soon enough for emergency action?)

3) approval should be denied because corrosion could be a problem. The MSB shell thickness had to be revised from 0.75 to 1.0 inches to account for the problem of general corrosion of the shell. (p 5-6 Ref C) Also the "Staff was concerned about the possibility of localized corrosion, particularly crevice corrosion, along the flat bottom surface of the MSB and the parallel surface of the VCC liner. This could be an area for accumulation of water through capillary suction". (p 5-6 Ref C) So there was a design change providing a ceramic separator of 29 ceramic tiles to permit air flow and dry out the bottom of the MSB. (p 5-6 Ref C) How do we know the tiles will work? Has this method been tested anywhere? How long?

Rust apparently will form, for (p 3-3 Ref D) states, "Rust formation is reduced by coating all carbon steel surfaces with a radiation resistant hard film coating specified by the vendor." (p 3-3 Ref D) How long will this coating last and where was this coating ever tested in the outside for 20 years? On (p 5-8 Ref C) it also states that cladding creep could have an impact on the removal of fuel from storage, but that it is not anticipated since the space available between the fuel rods and the MSB basket is large enough. (p 5-8 Ref C)

Also how is the fuel to be loaded in the MSB are tested for crud accumulation, defect, etc. before loading?" This spent fuel has already been in the pool for 5 years. "A visual inspection of fuel assemblies, as they are loaded" is referred to. (p 8-4 Ref F) How is this to be done effectively with it in the pool? are the calculations for corrosion for the 20 yr. time of cask storage added to corrosion during the previous 5 years in the pool

Of concern is the fact that "there are no provisions for keeping the 62.5" diameter MSB centered within the 70.5" inner diameter VCC". (p3-9 Ref C) How could the ventilation system work evenly or effectively if it isn't centered? If the MSB were tipped or leaned against one inner side of the VCC would this cause hot spots? Could it prevent drying and corrode in this area, or even rust and stick the MSB to the VCC, over 20 years? There are 8 inches of space here — 4 on each side would give good circulation, but what would 8 on one side and none on the other cause? Is this possible? How much could the MSB be off-center inside the VCC and what conditions could cause this? How is this position affected in lifting on and off the transport vehicle, going down a bumpy road, and transferred over the bridge steel piece? Are hot spots or circulation or corrosion problems possible if the MSB is off center? Could the MSB block part of the vents in this case? How would there be an inspection, detection, and correction of this situation? How could corrosion of the MSB against the VCC inner liner affect its removal at the end of storage?

It also seems that accumulation of water condensation in the vent pipes, as well as corrosion there, could be possible this seems like an area where it could collect on flat surfaces also — Especially in damp areas where fog is frequent like Palisades and Pt Beach along the shores of Lake Michigan where the first VSC-24s are to be placed. We are dealing with mother nature here outside, not inside a computer or a vault or protective building. This cask with vents is open to spores, molds, fungus or whatever [illegible]

warm moist environment. Heat may be very attractive 3a
to some of these. Have experts in this area been consulted
as to possibilites here? Such growths would promote
corrosion by keeping the area moist.

8) Approval should be denied for tiles on the bottom of the VCC inner cavity could be fractured when the MSB is lowered on to them and there is no way of detecting this. "Special care should be taken to prevent impact of the MSB on the VCC tiles to minimize the potential for cracking the tiles." (p 8-5 Ref F) How this would be detected is not explained nor are the detrimental effects of broken tiles, or remedial action. It is possible that the MSB could get jammed inside the VCC inner cavity during the lowering activity also. (p 11-7 Ref F) How could this situation affect the liner coating and the tiles in the VCC? And could the fact that the MSB does not have to be centered inside the cavity (on the tile base) have an effect? If Tiles were broken, wouldn't the MSB be tipped toward the VCC wall and create corrosion, airflow loss, or hot spots?

* Page? *

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This makes no sense

(I copied your PDR copy from me to 2 sided at a local copy shop because I wanted to keep the copy I ordered — but these end pages were here — I know I sent in more comments than the one big one on Aug 24 — there were 2 public comment periods on some of this stuff as I think "proprietary" stuff was put out later that wasn't really proprietary — or some such thing — if you look back you'll see some material was released at a later time for comment — I forgot just how this went then though.

(9) Approval should be denied because "movement of the MSB inside the VCC can be allowed at ambient temperatures of 0°F or above." This is "to avoid brittle failure." (p 14-26 R/D) The NRC admits heavy snow could cause vent blockage, and that vent blockage could necessitate cask removal, yet cask removal is not allowed when the temperature is below 0°F. This makes no sense especially when the first VSC-24 ever built is to be tested at a utility in Michigan and next in Wisconsin, both which have severe winter weather. There is plenty of ice and snow and below 0° weather. So what is to be done in this weather in off-normal or accident conditions with the cask? Does it have to remain on the pad until the weather changes? This is one more reason these casks should not be outside away from the plant pool, along a public road, and near Lake Michigan. Spent fuel in pools is very different from spent fuel in casks out in the environment. Nobody can predict exactly how the cask will behave over 20 years in the "freeze-thaw" weather of a midwest winter unless the cask is physically tested outside — this test should not be done at a utility, but at a testing facility.

July 15, 2000
this is now
up to 30's!
35° at pt. Beach

10) approval should be denied because NRC is allowing a loaded VCC to be handled up to a height of 80 inches. The cask should only be handled at a height no higher than 18 inches. Why is NRC allowing the 80 in. height, when "The Staff concluded that a drop of the loaded VCC from a height greater than 18 in. may cause enough damage to the VCC to compromise its ability to provide shielding or cooling"? They also concluded that "this drop could cause damage to the MSB and the stored fuel. Because the ASME Code, Section III for service level D permits plastic deformation, the spent fuel in the MSB may sustain damage." (p3-7 and 3-8 Ref.D) If a loaded VCC is dropped from a height greater than 18 in, "the fuel in the MSB must be returned to the reactor pool; the MSB removed from service, and evaluated; and the VCC inspected for damage." (p14-28 Ref.D) "Drops through a height of 18 inches and less are not judged to be of concern". (p14-29 Ref.D) NRC says "acceptable" damage may occur to the VCC, MSB, and the fuel for drops of greater than 18 in." (p14-29 Ref.D) They say that "drops up to 80 in of the loaded VCC can be sustained without breaching the "confinement boundary" (?? (what does this refer to?) "preventing removal of spent fuel assemblies, or causing a criticality accident." (p14-28 Ref.D) What is "acceptable damage"? If handling is allowed up to 80 in in height, how do you know what height the cask dropped from at all, much less if it was from above 18 in? If handling were allowed only below 18 in you would know that the cask drop was OK. What is the reasoning for allowing the 80 in. when it is unsafe? Where in the system is there a need for this? In the "Ft. Beach Environmental Screening Report on this ISFSI", it

11. Approval should be denied because accidents at a utility are possible with the use of the cask that would be avoided if fuel were transported from the pool to an MRS or repository and cask storage were not used. DOE's main shipping cask design will be for fuel from pools. By approving a proliferation of storage cask designs, NRC is allowing a proliferation of possible accidents at utilities. A few of the VSC-24 system off-normal and accident conditions possible include:

1. Blockage of 1/2 of air inlets
2. MSB jamming inside the VCC when being lowered into it
3. Air borne particulate from MSB exterior drifting off-site — assumed to behave as a gas
4. MSB possibly hitting an auxiliary building wall or concrete cask during transfer operations
5. Failure of fuel pins — "If gaseous fission products are released, nothing can be done to limit off-site dose" (p 11-10 Ref A)
6. Blockage of all inlets or outlets (in either case, all vents are blocked for circulation is shut off)
7. Brittle fracture of MSB or MTC if used below temperature limits
8. Drop accident — from 80 in height — also transport vehicle could tip over
9. Inadvertent lift of MTC by MSB lift hoist
10. Fracturing of tiles at bottom of VCC, to prevent corrosion, when loading the MSB down into the VCC

To allow the possibility of these accidents, plus the many more referred to in the documents, along the shores of Lake Michigan, one of our nation's great waterways, at Palisade and Ft. Beach is

states on p.32 that "during the movement of the VSC from the plant to the ISFSI pad, lifting of the VSC by the cask transport vehicle is limited to about 6 in., substantially less than the design drop for the VSC." So why is NRC allowing ★ handling up to the 80 in height? It should be an 18 inch limit. That way, returning the fuel to the pool and increasing doses to workers would be avoided.

unacceptable to the public health and safety. This is not a scientific selection of the best place to store spent fuel, but a politically convenient place. To approve the VSC-24 system in a generic ruling for all such plants is one more bailing out of the nuclear industry at the public expense. We pay for all of this as ratepayers and taxpayers. The technology of renewables and the use of conservation is the safe clean energy policy our nation needs for our children's future, not more ways to store dangerous radioactive waste so that the nuclear industry can continue to make more of it. There is no safe place for this waste to go and yet the NRC is approving more and more casks to continue the pile-up of radioactive waste on-site at the plants, just as it has since the day the plants started operation. This is not progress, but simply doing what has always been done — in hopes that pushing the clock ahead 20-40-100 years by using dry cask, a method of final safe disposal will be not only discovered but accepted by the public. When we as a nation admit this is impossible and stop making the problem worse than it already is, we will have progress. To approve the VSC-24 system only allows an extension of waste creation; it does nothing to solve the problem of final disposal.