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The Role of Certification in Onsite Wastewater Technology Approvals

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Tom Bruursema: Previous webinar and a lot of details about the standard, and I think probably most of you know those are quick complex documents, a lot of detail and methods and criteria. At any point, I'm going to skim over that, so if at any point anyone going forward has questions on those I'm certainly available to ask, or to answer those in more detail if you're really looking for a deeper dive into those specifics. But that talks methods and criteria of how to evaluate a product.

The policies for NSF would be different than necessarily another certifier even to that same standard and even if we're both accredited, just an important point to note, as well. Even though the American National Standards Institute may accredit several organizations to decentralize wastewater as a scope, we each can write our own certification policies. There are some general requirements, certainly, of the International Standards that we all have to meet, such as surveillance of the manufacturer, but how you define surveillance can be different. So it's just an important point. We'll talk about how NSF sets our policies, but just be aware that those can vary by the certification body, but in any case there will be a set of policies from the certifier, whoever that may be, and a standard, then in this case the standard is always consistent, that's the American National Standard, but the policies may have some variability to them.

So back to the standards development process and, again, NSF, and this diagram I think describes it fairly well in terms of where we fit in. We manage, we facilitate the process to develop and to maintain the standards. No standard is ever officially done, it's always in kind of perpetual maintenance mode, but of course a version will get published and then that version over time may be changed and edited.

There are three core groups that come together as a consensus body to develop these standards. We have the industry, the system manufacturers, certainly are a third of that stakeholder body. The regulatory officials, and in this case we do for decentralized have federal, state and local regulatory officials as part of the membership, and then a little bit more general category on the user side, which actually NSF does hold one vote.

So this group collectively is anywhere from 30 to 40 individuals in size, given any point in time changes in membership. So NSF would have one vote in there of that 30 to 40 members, and the rest is, again, split out roughly a third. So manufacturers would have, let's say, 10 to 12 seats, if you will, in that committee, regulatory similarly, and then the user category in a similar way. So others that would make up the user category might be engineers and consultants, it could be academic, it's a little bit more of a general mix in that case.

But, again, we facilitate the process, so this committee would be specific for us to decentralize wastewater. We have many such committees across our broad scope of product categories, but we would have a specific dedicated committee that deals just in decentralized wastewater treatment, and there's a chair and a very formal process by which they're governed and function and operate.

So, again, consensus bodies, so I mentioned that roughly one-third of each, balanced membership between the three groups that I talked about, and they're responsible for not only developing new standards, but any changes, maintenance, revisions of current standards. It is a fairly active committee.

It's an open process for participation by anyone that's public. It's not limited just to joint committee members, and there are literally hundreds of participants today, if you looked across all the different past groups or essentially subcommittee activities that all feed up into the joint committee. And if any are very interested in looking at in detail all the meetings, all the minutes, all the information, there is a public portal by which you can go through and look at and become more familiar and contribute to that process, if it's of interest to you.

So I'm just going to kind of bring out here this -- sorry for doing these individually, there's no real point to it. I'm just going to bring them all up there. So we have a lot of standards that we've developed specific for decentralized wastewater. I think many of you are familiar, at least with some of these, maybe not all of them, some are certainly more prominent and more used in the marketplace than others, but it's a fairly comprehensive set of standards that exist today.

So all of these that I've listed, which is to again reinforce, while NSF's name is certainly on all of them as the facilitator and publisher, all these are American National Standards, they're in the public domain. Anyone can make use of them, regardless of our name being on them. There's nothing that precludes anyone from either citing them in regulation, from using them for their own evaluation, their own certifications. There's nothing that limits their use in the marketplace in terms of being a reference and a tool for evaluating products and technologies, and it's an ever expanding list and certainly more are in development, as well.

So testing, just to talk a little bit about the evaluation side of these standards, so there are test facilities certainly for some of the complete systems that we evaluate and others evaluate, and in those cases for the most part that's diverted wastewater from a municipal test facility. There are laboratory facilities, as well, when you're looking at more simulated wastewater conditions. Again, these will be prescribed per the standards, so a good example would be our reuse standard for gray water, for residential sized systems, that's actually a simulated wastewater, not a diverted waste stream. And then there are other general assessments that are done, things like the light and the audible alarm be detectable, as they should be, and electrical evaluations, those things that are less wastewater performance driven, but still requirements of the standard.

In some cases we do conduct field evaluations with actual installations, and then all this is of course more looking at how you kind of beat up the technology, but then in many cases you're also collecting a sample as you're beating up the system and that then goes off to a laboratory for

analytical support and ultimately generating a value that comes back that you compare against the standard.

We have test facilities in a number of different locations, it's just convenient for our clients and addresses some of the interest in having some of this done in different locations, but we have several in the US, several in Canada, as well as in Europe. And the standards that are relevant to those test facilities are relevant because of the type of testing that's required, so I've just listed those here that are relevant to those test facilities -- Standard 4245 you probably know well, 350 the reuse standard, all those are done with differentiated wastewater, as is 240 for the alternate drain field products, and Standard 46 work.

I wanted to list out here a couple other international standards. I've listed here the Canadian BNQ standard is one that we also evaluate products against. And the reason being is it embodies a lot of standards, 40 and 245, and essentially follows them almost exact in the requirements. So, and then they cite specifically the NSF standard. So there's essentially a different name and some additional criteria, but the core of it is very much Standard 40 and 245.

I've added in here the European norm. I wanted to do that just to contrast a little bit and to reinforce that there are standards for given regions and given jurisdictions and, again, we have a very comprehensive set of American National Standards, but there are certainly standards, just like there are in Canada, there are very much standards in Europe for decentralized wastewater treatment technologies.

We don't certify to the European norm for a few reasons. One, the European norm, we have an American National Standard, so there really isn't a need to bridge into a European norm when there is an American National Standard for this market, that's probably first and foremost. And, two, also very important is there are significant differences with the European norm compared to the NSF Standards and the American National Standards, and that's just the nature of how these standards get developed and evolved.

It does not necessarily say that what they've done is a poor standard or an unacceptable standard, that's really for the market to make that determination, but there certainly are significant differences in things like the number of samples that are collected, allowance for maintenance, and things that we just as our committee has developed have taken a different direction and so haven't applied that standard. But, so just to give you the context of that, back to reinforcing kind of the standards and where they apply, and then also what these facilities are particularly doing in terms of the standards that are relevant to them.

A couple pictures, I won't spend a more than a moment on this, but just to show you this happens to be I think all of our test facility down in Texas, but just to reinforce we put systems in the ground. These are actual treatment technologies, no different than what would go into a residence, and we have fairly elaborate dosing systems. Again, this is diverted wastewater from a municipal facility. The dosing system is in the very center of the picture. It just shows how we deliver that wastewater with very controlled time devices, but then also to reinforce that the standard is very prescriptive in how that gets delivered, as well, so it's really just mirroring the requirements of the standard and then certainly there are sample collections, obviously,

throughout the evaluation to make sure the product delivers, both that we deliver the appropriate influent and the system delivers the appropriate effluent.

And then I mentioned there are other simulated conditions. Other standards have other requirements in terms of how the product gets evaluated, so in some cases there's an artificial challenge. I mentioned Standard 350, similarly, there is some of that with other standards, and then we also will look at systems in the field and Standard 350 is another good example where we're looking at commercial systems and that standard would then be applied under actual field installation conditions with natural wastewater that's supplied at that operation, not something that we simulate, and not something that's diverted, but it's the actual wastewater in that particular commercial application. So it ranges quite far and wide in terms of the different evaluations that are performed and then, as I mentioned, obviously there's a lot of samples that are collected and delivered through that process that I'll go through in local support and evaluations.

One piece I wanted to just mention is terms of product families. We have some 500 products certified to Standard 40. We have not tested some 500 products. There are ways by which the standard prescribes. The reason I put it here is it's actually part of the standard, how you can look at proportionalities in a model series and based upon design reviews and engineering reviews make a determination that the tested system is representative of other similar systems within that model series that only differ based on their proportionality. And so it's something that we do very routinely and oftentimes the reason you'll see a test report for a given size, but not for every size because not every size is actually tested.

And then you'll see also testing for a number of things that may go beyond the standard that individual state requirements may have, companies trying to anticipate changes to a standard, or companies wanting to show performance above and beyond the requirements of the standard, and all of that we would embody in the content of the report, itself.

All right, so that's the standard side, which I think most of you are probably familiar with how we go about conducting the testing, and now I want to spend a few minutes on the policy side of it, the certification side of it, and how those come together.

So just kind of high level, certification is really meant to be an assurance and verification at the facility, so we've kind of moved now past the product compliant with the standards, now we're more into a manufacturers' obligations, so that the facility has proper control measures in place, it has specific policies, programs, procedures of its own, record retention, how continuous improvement is, is performed and verified and validated, and then that the certification body is really overseeing that all those mechanisms at the facility is bringing to bear, the manufacturer is bringing to bear and that's done usually through a facility audit and inspection. And then so this is not just, again, a onetime evaluation, but an ongoing annual recertification that a company would comply with.

So this is broad kind of high level what any certification scheme would typically bring, regardless of the scope of the product. In the case of NSF, it's very high level, but essentially there's facility audit and testing are the two core pieces that lead up to issuing certification, and

then once certification is granted there's ongoing monitoring and surveillance, which can circle back and certainly does, and we'll talk a little bit more in terms of audit, but then also can circle back for additional product testing, as well.

The standards you probably know if you really are familiar with the standards that there is an annex in the back, for example, Standard 40, that does lay out kind of the main elements of certification. That's informative, only, but it does embody at least the structure of certification, so if you -- some regulatory authorities actually specify both the standard and the annex, just to make sure certification is embodied in their requirements. Some just state that certification has to be met above and beyond the standard, but just so you know there is an element of the standard that does address certification, but it is an informative piece of the standard, as opposed to a requirement, it's not a normative component.

So talking just a little bit about what does it mean when we're looking at certification in terms of surveillance for continued compliance. So, again, systems undergo facility audits. In the case of decentralized wastewater they actually undergo field audits, meaning we'll go out to actual installations, and then again there is a periodic reassessment of the product to make sure that it continues to conform to the standard. And so essentially the tested system is the manufacture and sole system so it's not just a onetime evaluation, but that through surveillance we can have assurance that what leaves the manufacturing facility is as was tested or subsequently evaluated if there was some change made after testing.

So manufacturing facilities, again, looking at product specifications, in our case every year we go into the manufacturing facility and they are always unannounced, it's just an added level of scrutiny, if you will, that we can just show up at any given time and audit the operations. In the case of residential systems because there are requirements in the policies also for service obligations, which probably most of you know there are service and maintenance requirements for these systems, and we also will go out and do four audits, a minimum of four audits a year, and we'll select different service requirements. Manufacturers are required to provide us a list of all the organizations that do service for them, and we'll go out and audit a subset of those. Manufacturers also are required, in and of themselves, to audit a portion of those that we then review the results of and all that is part of the ongoing oversight and overview that we provide for the companies.

Again, there are service obligations of the manufacturer for residential systems. They used to be in the standard. We lifted those out some years ago, but now they're embodied in our certification policies, and so just be aware that any company that is certified not only do they have to show compliance with the standard, but they have to ensure that by policy when certified that they're also fulfilling the service related obligations, which includes the two-year initial service policy for site visits that they have to perform once every six months. Extended policy is available, the initial policy is incorporated in the purchase price of the system, the extended policy they can make available for a fee, but it has to be made available. They have standby parts, service within certain timeframes, all those are policy driven obligations that they have to comply with, particularly, when they're transferring that responsibility to their service company.

If we find somebody is in violation of those policies we will not go to the entity that's delivering them, we will go to the product manufacturer. Our contract, and this is a contractual obligation that we enter into with the product manufacturer, always brings us back to the product manufacturer, so we're not going to go enforce a noncompliance with their authorized representative, we're going to come to the manufacturer for making sure that any nonconformity is managed and addressed by them directly, even though we may find the problem to be with their particular contracted entities.

Re-testing, we do not formally mandate in this particular program, we do in some others, that the product has to be retested. The complexity of these products normally isn't such that it would really make sense to do that, however, if the system over time goes through a number of reviews and changes and we start to lose confidence that the complete testing on [still] representative, there may be additional testing that has to be done. So we essentially set a milestone event normally every seven years where we will go back and do a complete end-to-end review of everything and see if there's a need for any additional testing of a given product.

If there are changes requested for a given technology we will always evaluate it for a determination of the need for testing at that point. The manufacturer then can decide to pursue that change if there is testing or not. In many cases there isn't a requirement for testing, there may be a change in tank material or a different compressor and things that we can do without having to test. We can look at other ways to make that analysis, but in some cases testing may be required.

Complaints, we absolutely occasionally do get complaints and when we do those are investigated. There is a process by which companies, any stakeholder can bring a complaint to NSF, whether it's about service, maintenance, product performance, and we will undertake investigation to evaluate the relevancy of that complaint and then bring that action back to the manufacturer if there is something there that needs to be addressed. I wouldn't say we get a lot of complaints, but we do occasionally get those and we certainly do pursue them, and so that's all again kind of embodied within the certification requirements of the process and the commitment, if you will, to manufacturers.

I mentioned product modifications. We do get a fair number of requests, oftentimes they're alternate suppliers, sometimes they're very specific design changes, and again I mentioned the scope of those may or may not necessitate additional testing, but ultimately if the product continues to be certified then we will either have tested it to ensure that change is either no impact or only improvement or some other means by which we can go through a design evaluation if testing is deemed not necessary, but still be able to ensure that the product as tested is still meeting the requirements of the standard when incorporating that change.

So if we do find a problem, again, as a scope of work as it relates to the certification and the obligations of the manufacturer there are absolutely components of this that ensure when we do find nonconformance that we have a means by which to take action. That can be everything from holding product within the facility to recalling product, public notice, rare but certainly an option depending on the scope of it, and if we don't know where the product has gone and we need to be able to have an open announcement.

Administrative hearings in the event that we need to bring the manufacturer in for certain nonconformities or that they're questioning whether the decision we're making is appropriate, they certainly can request a hearing, and ultimately leading up to, if appropriate, withdrawal of certification depending upon the nature and the scope of the nonconformity, and again a customer at any point in time can ask for an opportunity to appeal a process or understand the scope of the decision that's being made. So all these are embodied in certification policy, all again mechanisms that we can employ and that a company that's certified understands and agrees as part of the scope of their certification are possibilities.

So kind of back to just kind of this overall, the point of all this, oversight, all these layers. Really certification is meant to ensure that, first and foremost, the product is meeting the relevant standard, I mean that clearly is critical in terms of what all this is intended to do in bringing a credible and reliable treatment technology to the marketplace, but then also that the organization behind that saying, yes, this product has performed appropriately, has its own measure of credibility and demonstrated competency in the laboratories.

And then you go to that next level of that not only is the tested product showing a good dataset, but that that tested product is representative of what's being manufactured and delivered to the marketplace. And then ultimately that the manufacturer through contracts, as I'm representing this certified product that it complies with the standard and I'm recognizing and making that statement that I have to abide by all the requirements, by the standard and certification, to bring that certified product to the marketplace.

So, summary, last slide, and then I'll show you some contact information and hopefully we'll have a few minutes left to address a few questions. So all the NSF Standards are, again, they are consensus driven and they represent the American National Standards for the given technology. And a point I didn't make earlier, but an important one, there would never be two American National Standards for the same scope of evaluation. So Standard 40 is Standard 40 and there would never be something that conflicts with that.

No standard is ever complete, it's always undergoing continuous improvement. Products meeting standard have demonstrated compliance with very strict measures of performance as governed by those standards, and then the certification layers on that long-term commitment to the third-party compliance.

And, with that, my contact information, and hopefully, Maureen, we still have a little bit of time for some questions if someone have come in?

+++ q-and-a

Maureen Tooke: Okay, I'm muted. Thanks, Tom. I'm hearing myself back to myself, so I'm not really sure why.

Patrick Jones: You there now?

Maureen Tooke: Yes.

Patrick Jones: Okay, we've solved the duplication problem.

Maureen Tooke: Okay, can you hear me now? I'm still duplicating, but I'll just go forward.

Patrick Jones: Okay, Maureen, to solve the duplication error you'll go to webinar panel, click that you're using the telephone, so under audio you have two radio buttons, one for telephone, one for micro speakers, tell it you're using the phone.

Maureen Tooke: Okay, got it. Okay, there we go. Technical difficulty.

Patrick Jones: There we go.

Maureen Tooke: Okay, let's see, well, we've got several questions that have come in. Let's see, the first question is can you describe what would qualify as a valid complaint against a manufacturer related to service and maintenance issues?

Tom Bruursema: Yes, sure, so an example would be if they have done no service of a system. So our policy requirements are that for the first two years, included with the purchase price of the system, they have to go out every six months and evaluate the system. They don't necessarily have to change anything, but they have to make sure it's functioning as they would expect, if there's service that needs to be done they would deliver that service.

So one example might be no one has ever come out or called me to come out and service my system. Another might be it just isn't functioning as I think it should, there's obvious odors, there's problems that, to me, as a homeowner or as a regulatory official say this system doesn't seem to be performing as it should. Those are just examples of why someone may reach out to us and ask us to get involved.

Maureen Tooke: Okay, let's see, we have a question of how is NSF funded?

Tom Bruursema: We, the majority of our revenues come from the system manufacturers who are charged a fee to be evaluated against the standard and to care recertification, so it's largely the industry that pays to have those evaluations done by NSF and by the contractors that we use.

Maureen Tooke: Okay, let's see, a question from Max, did NSF consider the development and implementation of a monitoring program to monitor the quality of affluent from certified products during and beyond the first two years of service that is required, perhaps teaming up with the local health department to do that?

Tom Bruursema: Yes, I assume, Max, you're referring to maybe sample collection, sample analyses actually performed on systems in the marketplace. There is a standard actually for that, there's an American National Standard that was generated to do that ongoing sample collection in the field, have a third-party dataset that companies can then utilize and show. The whole point of it was wanting to standardize that process and too to have a single dataset that local and state

jurisdictions would be comfortable with as opposed to kind of having multiple datasets in a given location or to cover many different locations.

So, yes, there is a means by which to do that. We haven't at this point done that on a location-by-location in terms of jointly developing that with a particular entity, but again there is -- there's a means by which to do that on a more national level that this Standard 360 developed.

Maureen Tooke: Okay, the questions keep coming in. If we can't get to all of them we will have Tom respond to them and get back with you as a follow-up, and we will make this presentation available to everyone. It will be posted on our website, as well, just to let you all know.

Next question is is there a readymade database for compatibility between NSF 40 and International Standards, such as CENEN 12566-3 and others?

Tom Bruursema: Not that I'm aware of that's actually compared datasets, so there would be one level of that which is to look at maybe influent characteristics as a point of comparison, another might be technologies that have been evaluated against multiple standards, that's probably a fairly small number of companies that have done both. We know of a couple that carry our certification that have also been evaluated against European norm.

So I would say the answer is no, but it probably also would be a fairly small set of data to make that comparison, but certainly if you looked at things, like influent characteristics, that might be an interesting dataset to develop, but I'm not aware that anything like that exists today.

Maureen Tooke: Okay, and can you give an example of a policy versus a standard?

Tom Bruursema: Yes, so policy really deals with the manufacturer, themselves. So a typical policy requirement would be surveillance audits of the manufacturing facility, what happens if you change the product, it's no longer the tested product, who determines whether that change is acceptable or not acceptable. Enforcement when something goes wrong, what happens if the manufacturer brings something to market that no longer is represented as the tested system but claims it is, who takes any kind of action with that. Those are all on the certification side. The standard is really very specifically how you evaluate the product and how you determine if it is acceptable or not in terms of things like F1 criteria, so it's really just methods and criteria.

Maureen Tooke: Okay, let's see, is the Canada BNQ Standard different from previous BNQ standard, if so, how?

Tom Bruursema: I think there are some differences, it moved from a provincial standard into a Canadian National Standard, so it went through a very formal process to make that transition. I would say largely it's very similar, but I think through that process of development there were some minor changes. I'll say minor, there were some changes, but I don't think they were dramatic.

Maureen Tooke: Okay, why are there only two distinct facility locations in the U.S., knowing that the components of decentralized wastewater treatment systems include the soil, are those testing facilities representative of U.S. soils?

Tom Bruursema: A very good question. Really it's largely a supply and demand in terms of how many facilities exist and how much testing needs to be done. If there were a lot more testing to be done that those facilities couldn't handle then I'm sure there would be others, either those facilities would expand or other laboratories would come in to help absorb that demand.

To the question of soil, so the standards that you probably know most, Standards 40, 245, if you look at the purpose and the scope of those standards you'll see that it does not deal with the management of the effluent, meaning when that's discharged from the treatment system it's beyond the scope of the standard, so it doesn't look at the soil applications.

What it's meant to do is give the marketplace an understanding of what the quality of that effluent would be, and then based upon the soil conditions that may exist around the country you can make a determination of both the hydraulic loading, as well as the particular treatment needs that may need to be addressed, so that's true of 40, 245.

There is another Standard 240, which does start to move a little bit more into soil conditions, which is for alternative drain field products. So in some cases we do start to bridge over into the disposal side of that treated effluent, but most of the standards stop, and that's why those test facilities also stop and don't deal in varying soil types because it's really just looking at end of pipe, if you will, from the treatment system in terms of quality.

Maureen Tooke: Okay, I'm just rolling through. Why do some not consider the NSF certifications [inaudible] data sharing? Is it because some regulatory agencies do not support the NSF program?

Tom Bruursema: That's a good question. I don't have a good answer for that. I'd love to have a good answer for that. I think the reality is there are regulatory authorities, some willing to accept that a dataset is sufficient for their needs, and some wanting to have a greater level of assurance, that product coming into the marketplace has that kind of surveillance layer.

Why one chooses something less than the other -- what I find interesting is I think most of the times the datasets we're getting are from certified companies, so it's almost like they're not taking advantage of something that's readily available and already exists, but beyond that, yes, honestly, I'm not sure if there's just a different level of commitment they feel they're not prepared to take on when it comes to that certification level.

Maureen Tooke: Okay, people ask generally the same question, if a local jurisdiction finds nonconformity should that be reported, and then how would it be reported?

Tom Bruursema: It's really up to the jurisdiction. If it's something that they can deal with directly, and most jurisdictions who come to us, if it's a regulatory body coming to us with a complaint, typically have tried to resolve it themselves, which we certainly would encourage, if

it's a local service provider that they can reach out to, especially if they're credentialed in some way with the state or the county then it makes perfect sense for them to first try and manage that locally, but if they, either they choose not to take that on or they've tried that without success, then that's normally when some will reach out to us.

There is a form that we have, which just makes it simple to basically give us details on what the issue is, that I believe is still available from our website, and I can provide a link to that, but really just reaching out to me by e-mail with the relevant information and we can just correspond with more details is sufficient, as well.

Maureen Tooke: Okay, well, it's noon now. I do have several more questions, if you want to keep going, Tom, that's up to you? If folks want to stay on the phone for a few more questions?

Tom Bruursema: That's fine, if there's a couple more I'm happy to stay on.

Maureen Tooke: If we're not going to get cut-off here, Patrick?

Okay, let's see, Tom mentioned that it's okay to reference their site, the standard, important to know that you may not use NSF logo freely, there are rules for the use -- oh, I'm sorry, this is just a reminder to everyone.

Tom Bruursema: Yes, it's a good point, yes. So our certification mark is a registered trademark, and that is protected. The standards use our name in the sense of the three letters, NSF/ANSI, that you can certainly make reference in the marketplace as a public document, but the mark, itself, is something that, yes, it's a good point, isn't open for general use. That is a protected trademark.

Maureen Tooke: Okay, let's see, there's a question from New York here, the NSF designed flow range is 400 to 1,500 gallons per day, do you know how states with design flows larger than 1,500 gallons per day use NSF certification for those larger systems? Do they use multiple NSF certified units to attain their total facility design flow?

Tom Bruursema: Yes. No, it's a good question. So the standard is, it's residential, that's how we get to the 400, 1,500, but certainly residential flows can come from cluster systems and other larger, still be residential and has representation, but exceed the 1,500 gallons per day. So how the marketplace deals with that, certainly the one you described as kind of splitting that flow into multiple systems would be one approach.

We have on some occasions looked at larger systems, in fact, we evaluate larger systems outside of the standard, but then also we've done some engineering reviews of systems that are within the design series, but go above 1,500, that gets a little problematic if you're getting too large a system. I don't think we've done anything much larger than maybe 2,000 or something a little above that.

So, yes, for sure that is the limit of the standards. There are protocols in place for evaluating larger systems, but if you're looking to use a certified system to Standard 40, for example, for that application then I think the approach you described would be the most relevant.

Maureen Tooke: Okay, I'll just do a couple more, and then we'll close out. If a standard does not ... (Audio Cuts Off)