

1 design. How should clinically meaningful improvement in  
2 frequency of VT episodes be defined? How should recurrence  
3 be defined? Should only the targeted VT be counted, or  
4 should any VT be counted as recurrence?

5 DR. TRACY: You can't count any VT as a  
6 recurrence. I mean you can look at it, you can count how  
7 many times they have had a shock because the subjective  
8 feeling of the patient is the same thing. They don't care  
9 whether they are being shocked for their VT at a rate of 150  
10 or their VT at a rate of 190 or 200, they are being shocked.

11 You can tell from the printout what the VT was  
12 that had the therapy delivered.

13 MS. MOYNAHAN: If they have an ICD.

14 DR. TRACY: If they have an ICD. It makes it  
15 easier to do this kind of a study if they have an ICD. For  
16 a clinically meaningful improvement, you could come up with  
17 some kind of a definition of 70 percent reduction in the  
18 frequency or an increase in time between episodes, or you  
19 could come up with some mathematical definition that would  
20 give you some kind of thing to follow, but I think in this  
21 kind of a study, that some kind of quality of life data  
22 would need to be included because nobody likes to live with  
23 47 plus or minus 116 episodes of VT in two months, so the  
24 subjective improvement even down to 18 would be for many  
25 people very important, or something that might not need a

1 statistical difference might be a subjective, beneficial  
2 improvement for that individual patient.

3           So, I think that would be an important thing to  
4 count as an endpoint in addition to your other statistical  
5 means of following them.

6           MS. MOYNAHAN: I think a lot of times we don't  
7 have any trouble doing the statistical analysis. It's  
8 assigning meaning to change. Are you suggesting that a  
9 quality of life measurement might be used to validate  
10 whatever that change is?

11           DR. TRACY: Absolutely. I think that would be  
12 very important. These people look at you like Bambi in the  
13 headlights. It is a terrible way to live with this thing  
14 firing, you don't know when it is going to happen, you don't  
15 know what is going to happen to you. It is just a really  
16 bad thing, and if you can take it from something that is  
17 just so horrible to something that, to me, might still be  
18 horrible, but to that individual is a dramatic improvement,  
19 that is more important to that individual as compared to  
20 whether they had a statistically significant drop in the  
21 frequency of their VT episodes.

22           So, I think it is an important outcome for any  
23 given individual, and I think it is something we can get  
24 some information that is relevant and meaningful.

25           DR. WILBER: I would like to make just a comment

1 on the definitions of recurrence. Even with an ICD,  
2 anything less than just a total count is very difficult  
3 because although the ICD gives you a rate, it is often hard  
4 to interpret, particularly if there has been any change in  
5 drug therapy, that sort of thing.

6 I think the most you can do is do total, even with  
7 an ICD, is total count of recurrences plus perhaps some  
8 measure of how fast it is, whether it is a fast VT or a slow  
9 VT, and you can try to make that comparable to what is  
10 induced in the laboratory, but realizing that ICD is not  
11 necessarily comparable to hemodynamic stability in the  
12 laboratory.

13 Unfortunately, one of the reasons why I think  
14 total count has been used is because anything less than that  
15 introduces a tremendous amount of subjectivity in  
16 interpretation that opens up the possibility of bias, so I  
17 think you can honestly report perhaps the rate of the VT  
18 that recurs, and you just have to kind of leave it at that  
19 and can make some kind of box about faster than 200 or  
20 slower than 200, but you really can't define the targeted VT  
21 with an ICD readout.

22 DR. WHARTON: I just wanted to reiterate what Dave  
23 said. I feel strongly that you open yourself up to too much  
24 subjective interpretation if you start using, whether it's  
25 the clinical recurrence of the VT, ablated or not. In

1 particular, this becomes an issue if--we frequently study  
2 people on pharmacologic therapy to specifically slow down  
3 the VT, so we can map it.

4           If the approach gets to be--which is what we  
5 actually do--is to take most of these patients off drug  
6 therapy after we ablate them. Then, it is going to be  
7 faster by definition for most of these VTs, because then you  
8 get into this sort of loophole where you say, well, it is  
9 faster, therefore, it wasn't the VT I ablated, it must be  
10 another culprit VT.

11           So, I would argue with Dave that it is just any  
12 VT, you can try to describe it how you want to, but there  
13 are too many areas of subjective interpretation otherwise.

14           DR. TRACY: Would it help to, as was done in this  
15 study, to do the follow-up EP study and see what VT is  
16 induced? Would that be an additional endpoint to look at?

17           DR. WHARTON: It is an endpoint. The utility of  
18 that endpoint is certainly open for discussion. The problem  
19 that we have at least is even the clinical VT, if you are  
20 lucky enough to have more than an intracardiac electrogram  
21 from the ICD, you are going to have a rhythm strip from the  
22 EMS or something like that on the field, and trying to tell  
23 what morphology that is versus what you induce in the lab is  
24 tough.

25           MS. MOYNAHAN: I guess let's move on.

1 DR. STUHMULLER: Can I ask one quick question?  
2 There was a general consensus that quality of life should be  
3 measured. Is there any consensus amongst the clinicians--  
4 there is a variety of ways to measure quality of life--is  
5 there one that you think is more salient than another for  
6 this patient population, or more appropriate?

7 DR. WILBER: There is any number of validated  
8 questionnaires for quality of life, post-CABG, surgery, and  
9 that data is being collected in a variety of studies, and I  
10 think is really important in any subsequent study that is  
11 done.

12 MS. MOYNAHAN: It is usually a battery of measures  
13 that are broad to narrow in their scope, so that you capture  
14 things that are clinically relevant in the study.

15 [Slide.]

16 The third outcome measure would be a measure of  
17 complication rate, which would be defined as the percentage  
18 of patients who sustained at least one major complication,  
19 and all major, procedure-related complications would be  
20 counted. This raises the next discussion point.

21 [Slide.]

22 Question No. 13 asks how should safety be assessed  
23 without a concurrent control group? What is an appropriate  
24 historical control? For example, should it be published  
25 literature on drug therapy, published literature on off-

1 label ablation, or something else? How will you be able to  
2 make a risk-benefit assessment based on the safety data that  
3 you will be given?

4 DR. TRACY: For the date that that patient is  
5 taking amiodarone versus the day that they are having their  
6 ablation done, they are at a heck of a lot more risk the day  
7 that they have their ablation done than the day before when  
8 they were just taking an amiodarone.

9 You are talking about apples and oranges. You are  
10 talking about a procedural-related complication versus  
11 proarrhythmic or something nebulous that might happen, you  
12 know, hepatic toxicity or something else. You are talking  
13 about completely different entities.

14 What it is, is what it is, with a device.  
15 Whatever the procedural complication rate, that is simply  
16 what it is, and then it is up to the FDA to decide if that  
17 is an acceptable risk to the patient, and I think if you  
18 have an idea that patients face this 8 percent Day Zero  
19 risk, but if they make it out to Day 30, and they fill in  
20 their quality of life assessment form, and they are a lot  
21 happier than they were the day before they had their  
22 ablation, then, they are probably willing to take that 8  
23 percent risk that day.

24 So, to me, comparing the risk of taking an  
25 antiarrhythmic doesn't make any sense to compare it to the

1 risk of having an ablation done. Comparing an ablation with  
2 one device versus another would probably be appropriate.

3 DR. SIMMONS: You are talking about comparing an  
4 off-label sort of analysis?

5 DR. TRACY: Or comparing with this device in the  
6 future.

7 DR. SIMMONS: That is not going to be available  
8 for a long time. This data isn't available. I mean I  
9 certainly looked at the off-label papers that were  
10 presented, and sort of looked through a few on my own to get  
11 some idea of risk-benefit, and what is an acceptable  
12 mortality, and stuff. Certainly that influenced my  
13 thinking, and I would say that you could probably get any  
14 number of articles comparing VT ablation and RVOT ablation,  
15 and use those as an historical control.

16 DR. TRACY: I think that is certainly more  
17 appropriate than comparing it to the risk of taking a  
18 medication.

19 DR. WILBER: I would just like to add one caveat  
20 about historical controls is that unfortunately, literature  
21 by its nature generally reports good things, so that  
22 multicenter studies tend to be a collection of studies that  
23 represent centers with a variety to expertise.

24 It is prospectively followed. When somebody has  
25 something and something bad happens, it is part of the

1 study, and I would make a strong argument that, if anything,  
2 the historical data generally underrepresents the toxicity  
3 and complications, and we have learned this over and over  
4 again with prospective studies, so that I would argue this  
5 is actually probably one of the first well-reported  
6 incidences of complications due to ablations simply because  
7 for a variety of reasons, in retrospective reviews of data,  
8 that things don't get in the literature or things get kind  
9 of changed around a little bit.

10           Once again, I would argue that I think it is fine  
11 to look at the literature to see if things are out of  
12 bounds, but you really have to take the published literature  
13 with a grain of salt when it comes to complications.

14           DR. ECHT: I would sort of just second that and  
15 say in your panel pack, in the published literature, there  
16 is a section on previously published literature. I tried to  
17 do that, and it was really, really hard. Half the studies  
18 didn't report complications, the other half did, and the  
19 major adverse event rate ranged from zero to 17 percent, I  
20 believe. I don't know what you glean from that.

21           The only other thing I can mention is that our  
22 complication rate has been published now in abstract form,  
23 and it was in Pace, and it was a poster at NASPE this last  
24 year, and Hugh said he went home to write a paper, so  
25 potentially, it will be in the published literature in the

1 very foreseeable future, I hope.

2 [Slide.]

3 MS. MOYNAHAN: This type of study design where  
4 patients act as their control raises some issues of how you  
5 are going to measure clinical change. Ideally, sponsors  
6 would be comparing the number of VT episodes during a  
7 baseline period to the number of episodes in the follow-up  
8 period.

9 In real life, they are going to have to identify  
10 methods that they are going to use to count those episodes,  
11 and ICD interrogation, event monitoring, ECG from hospital  
12 visit, and self-report have been proposed.

13 It has been suggested that sponsors use the same  
14 method, pre- and post-ablation to minimize any systematic  
15 bias that might be associated with one or the other counting  
16 technique.

17 [Slide.]

18 Question 14 asks for the panel to please comment  
19 on the adequacy of these VT episode counting methods, what  
20 are the limitations of those methods, which are appropriate  
21 to accurately and reliably count VT episodes before and  
22 after ablation.

23 DR. TRACY: The easiest answer, the number from  
24 ICD that you would determine on an interrogation, and the  
25 points that Dr. Wilber and Dr. Wharton raised are very good,

1 with changes in drug management, even looking at the VT  
2 rate, it may not be apparent what VT we are dealing with,  
3 but you are getting a density count at least. So, that  
4 makes it easier to do that kind of study in that patient  
5 population.

6           Event monitoring where you have something on a  
7 piece of paper is also good. ECG, if you have to have the  
8 patient get into the hospital and have a cardiogram, you are  
9 going to limit the ability--that is not going to be easy for  
10 all patients to do, so I don't think that that would be  
11 terribly practical, and certainly self-reporting is  
12 completely inaccurate, and I wouldn't use that at all.

13           DR. STEVENSON: I would just like to make one  
14 comment about that, which is that if one does not use an ICD  
15 before the episode and relies on just patient or on  
16 documented ECG episodes, and then implants an ICD, I think  
17 there is great potential for overcounting episodes in  
18 follow-up, an example of that being CABG patch where 60  
19 percent of people received a shock, but the survival is no  
20 different in the ICD and the non-ICD group.

21           As soon as an episode reaches a long enough number  
22 of beats, the patient gets a little marker that they just  
23 had an event that was that long, and maybe one more beat and  
24 it would have terminated spontaneously.

25           MS. MOYNAHAN: Right. That is why I think it

1 would be important to have the same method used both pre-  
2 and post- for a given patient to minimize that kind of  
3 problem.

4 DR. TRACY: So the patient would have had to be in  
5 that baseline state either with an event monitor or with  
6 their defibrillator in long enough to have satisfied your  
7 criteria to do the intervention and then follow them for  
8 that same period of time afterward.

9 MS. MOYNAHAN: We have two more questions after  
10 this, but before I move on, are there any general comments  
11 on the non-randomized study design? I will take them now.

12 DR. STEVENSON: This has come up a couple of  
13 times, but I just wanted to reiterate it, the difference  
14 between the scar-related VTs and the idiopathic RV outflow  
15 tract VTs. Those probably should really be separated. They  
16 could conceivably be in a single protocol as long as they  
17 were managed a bit differently, because the outflow tract  
18 ones, some of those people are almost incessant or have  
19 50,000 runs a day of ventricular ectopy, enough that one  
20 could get an endpoint, established frequency, with a very  
21 short duration of observation beforehand, and then establish  
22 efficacy with a relatively short duration afterwards.

23 That is, in general, not the case with the scar-  
24 related VTs with the exception of the occasional incessant  
25 VT.

1 MS. MOYNAHAN: So that your inclusion criteria  
2 might impact sort of in a domino effect a lot of different  
3 things about how you are going to carry out this type of  
4 study.

5 DR. STEVENSON: I think if somebody wanted to try  
6 and get an indication specifically for ablation of focal RV  
7 outflow tract VT, that although those patients are  
8 relatively infrequent, that is probably a pretty easy one to  
9 establish an effect in, and the issue there would be more  
10 safety than there is not going to be any more mortality  
11 issue there, but efficacy would be quite easy to include.

12 DR. SIMMONS: Even just counting PVCs sometime on  
13 the RVOTs.

14 MS. MOYNAHAN: Any other comments?

15 [Slide.]

16 Our last two general questions. Question No. 15  
17 asks, how should the choice of study design be made if a  
18 sponsor wishes to: either make a claim that their device  
19 can be used as a first-line treatment for patients with VT,  
20 or if they wish to make a claim that their device is to be  
21 used after failed drug treatment?

22 DR. TRACY: You had to ask that. It is all tied  
23 into the ultimate prognosis of the VT. I think it is the  
24 ultimate prognosis of the VT and what is it that you intend  
25 to accomplish. If you want to say that you are dealing with

1 a VT that has a bad prognosis, and you want to show that you  
2 altered that prognosis, then, you are talking about a very  
3 large, very long study that will show that you impact on  
4 mortality.

5 If you want to make a claim in a VT that is of a  
6 lesser prognostic implication, then, short-term things like  
7 inducibility, more like an SVT model, inducibility, PVC  
8 count would be appropriate.

9 That would not necessarily be that monstrous of an  
10 undertaking. If you want to make a claim that it is a  
11 first-line therapy for malignant VT, but you don't intend to  
12 impact on mortality, but you do intend to impact on quality  
13 of life issues, then, you do everything else that is  
14 appropriate in the management of that patient who you feel  
15 has a malignant prognosis, including putting in a  
16 defibrillator, and you use VT density, but you don't follow  
17 it to the point of mortality.

18 MS. MOYNAHAN: I understand where you are going.  
19 I guess what I am wondering is if they want to make the  
20 claim that their device can be used as a first-line  
21 treatment, should they have studied it in a way that it was  
22 a first-line treatment.

23 If they want to make the claim that their device  
24 is to be used after failed drug treatment, do all the  
25 patients have to have been drug failures, and does that

1 impact which of the study designs they can pick.

2 I think with the randomized studies, in the  
3 randomized study we said it would have been beneficial to  
4 not have patients be drug refractory because they had to be  
5 expected to respond to either treatment arm, so that sort of  
6 eliminates one possibility if they want to make that claim.

7 DR. SIMMONS: It seems like it is almost  
8 impossible for a company. I mean it is hard for me to  
9 visualize a company being able to do a study for a life-  
10 threatening VT to call their device first-line therapy. It  
11 would almost require so many patients that I am not sure  
12 that any one company would want to take it. It would almost  
13 have to be a multicenter NIH kind of trial in order to take  
14 patients at high risk of sudden death, let's say, and say we  
15 are going to treat them with this device, and not implant or  
16 not do other things that would normally be used as first-  
17 line therapy.

18 DR. TRACY: You have to wonder also about the  
19 ethics of doing something like that, even within this group  
20 there were so many that had much more rapid VTs, as well as  
21 the clinical VT, the targeted VT, so it wouldn't seem to be,  
22 it is not a reasonable thing to do if you have somebody that  
23 has that high malignant potential, saying that that is going  
24 to replace other therapies, that doesn't stand up.

25 DR. SIMMONS: To do this kind of a study for

1 malignant VT, you would literally have to have the same  
2 kinds of data. You know, you would have to follow patients  
3 for somewhere on a three- to five-year range, and have to  
4 have hundreds of patients in the study, and probably they  
5 would all have to have ICDs, and have them not go off after  
6 a period of three to five years or something like that, and  
7 to get some kind of database like that in order to say that  
8 this is an effective therapy for a malignant issue.

9 DR. TRACY: Also, too, the long-term mortality, as  
10 was pointed out, they die of the underlying heart disease  
11 whether it is sudden death or heart failure, they die of  
12 their underlying process. Again, you are not fixing that.

13 So, I think mortality impact is not reasonable, so  
14 therefore, why are you using this first-line therapy, first-  
15 line palliative therapy?

16 MS. MOYNAHAN: The last question.

17 [Slide.]

18 How should patient mortality be factored into the  
19 evaluation of safety and effectiveness? How should study  
20 designs be modified? For example, should patient mortality  
21 be included as a study endpoint? Should it be used to  
22 establish stopping rules for the study? Should mortality  
23 rates be reported in the labeling?

24 DR. TRACY: I think it has to be tracked in some  
25 way, but this study really got into trouble where it got

1 itself to a point where it had to report almost a 3 to 1  
2 mortality in the treatment versus the non-treatment, because  
3 they lost their whole control group, and the controls were  
4 so much short duration, and so on, and so forth.

5 I think you have to look at it, because I think it  
6 is important to know that if people are going out there and  
7 saying this is first-line therapy, and I am not going to put  
8 in a defibrillator, and lo and behold we are at a point  
9 where mortality from VT is significantly increased, I mean I  
10 think we need to somehow look at it, but understanding that  
11 if you are dealing with a more malignant group of  
12 population, their mortality is very high regardless of what  
13 you do.

14 So, I think it is kind of a safety thing to look  
15 at to make sure that we are not doing something bad by  
16 therapy, we are not worsening the mortality, and just the  
17 way it was done here, somehow it just was really hard to  
18 figure out. You know, it was hard to figure out what  
19 mortality meant in this study, so the design at the  
20 beginning of the study, maintaining some kind of prospective  
21 comparison either with a historic control or something else  
22 has to be done, so that you are not stuck from the  
23 standpoint where you are looking at, wow, there is 16  
24 percent, 6 percent, which I think was a really erroneous in  
25 terms of what actually was going on here.

1 MS. MOYNAHAN: Right, and I think the underlying  
2 question is, is mortality a driving factor for these kind of  
3 study designs, is it something that is going to end up in  
4 the labeling, or is something that is serious enough that  
5 studies need to be designed around it in a prospective way,  
6 like stopping the study early if things get too out of whack  
7 compared to whatever you are going to compare it to, the  
8 historical control or the other treatment arm or whatever,  
9 or is this something that is going to just appear in the  
10 labeling, and then how will you, as panel members, evaluate  
11 that when it finally comes down.

12 DR. TRACY: I think if you know a procedure in  
13 terms of 50 percent mortality, that has got to be stopped.  
14 Are you talking about acute? I mean acutely, obviously, you  
15 are talking about--

16 MS. MOYNAHAN: Sometimes you can design a study  
17 prospectively to take mortality into account, where  
18 mortality is a driving factor for the study design. Other  
19 study designs, you can collect the information in a reliable  
20 way, for example, maybe not allowing the crossovers or  
21 whatever to make sure that you are collecting the  
22 information appropriately, and then you simply report it.

23 DR. TRACY: That seems to be more appropriate to  
24 me.

25 DR. SIMMONS: I am still having trouble trying to

1 figure out where you are going with this. Obviously, if you  
2 are talking about the patient that Dr. Wilber was talking  
3 about with the isolated infarct in a single monomorphic VT,  
4 and you want to use this as primary therapy, then mortality  
5 is the endpoint.

6           You want to make sure that that group of patients  
7 doesn't die, but if you are talking about a patient with a  
8 change in substrate like patients with coronary artery  
9 disease or myocardial disease, what you want to do is make  
10 sure that the mortality is consistent with historical  
11 cohorts because we are actually looking at quality of life  
12 and reduction of VT episodes and reduction of medication,  
13 and things like that, so in that group of patients, you are  
14 really not looking at mortality as an endpoint, you are  
15 looking at it as a risk factor, making sure that the study  
16 doesn't need to be stopped because of increased mortality  
17 due to the procedure itself.

18           DR. STUHLMULLER: Is part of the point you are  
19 trying to get at, I mean there are clinical studies done  
20 where mortality is an endpoint, and you take an interim look  
21 at the data, and then a decision is made to stop the study  
22 because it could be viewed as unethical to continue the  
23 study because of the treatment difference? Is that one  
24 aspect of this?

25           MS. MOYNAHAN: Right.

1 DR. STUHMULLER: And then the second aspect would  
2 be, for example, a Data Safety Monitoring Board that looks  
3 at acute safety issues related to the use of a device in a  
4 study? I get the sense that you are really trying to get at  
5 two separate issues here, is that right?

6 MS. MOYNAHAN: I guess I am trying to understand  
7 how heavily we are weighting this information, but what John  
8 said is exactly right, there are levels of working this into  
9 the study design. Some are very critical where you arrange  
10 to have interim looks, and then you stop the study early,  
11 and then there are other things a little bit more benign, if  
12 you will, simply reporting it in the labeling, so long as  
13 you design the study in a way to really capture that  
14 information.

15 We can ask the question should the sponsors have a  
16 hypothesis generated around mortality rate or no, things  
17 like that.

18 DR. TRACY: In the sicker population, it is  
19 unreasonable to expect that this would impact favorably the  
20 mortality, so what you want to make sure is that it does not  
21 negatively impact mortality, at three months, the mortality  
22 is not, you know, not much higher than you would anticipate  
23 in that patient population.

24 DR. WILBER: The only thing I would add is that I  
25 think the point that has already been made, we have now all

1 come to comprehend that there are prognostic differences  
2 between idiopathic VT and VT associated with structural  
3 heart disease, and now hopefully, we will also recognize  
4 that within the group of patients with structural heart  
5 disease and VT, it is also prognostically heterogeneous, and  
6 the prognosis of a guy with VT, single vessel disease, an EF  
7 of 40 percent is not the same as a patient with multi-vessel  
8 disease, Class III heart failure, and an ejection of 10  
9 percent.

10 I think the comments that have been made have been  
11 very appropriate in terms of it really depends on which  
12 population you are looking at, and for most of what we have  
13 been doing, certainly for this group of people, the goal of  
14 the study was not to prolong life, but I think it is  
15 possible that at some point, for some groups of patients, it  
16 may be that at least we are not doing harm by doing the  
17 procedure, and presumably, particularly in groups that seem  
18 to have a pretty good prognosis in which I might include the  
19 structural heart disease patients, those patients with  
20 single infarcts and single-vessel disease, that mortality  
21 does become important, but I think it will be impossible  
22 probably to ever establish the superiority of drugs or  
23 devices or anything else without really hundreds of patients  
24 and far beyond the capability--I mean if that becomes an  
25 issue, these things that are beyond the ability of a single

1 sponsor, I think, to study it, and then it is going to have  
2 to be an NIH-focused study, that is agreed to be important  
3 enough that this is an issue that we have to solve.

4 But I think the point is well taken for  
5 particularly as we talk about, there is initial therapy and  
6 that sort of thing, mortality concerns aren't trivial.

7 MS. MOYNAHAN: I keep hearing, you know, this idea  
8 that we might have to specify very carefully and possibly  
9 very narrowly the inclusion criteria for some of these  
10 studies in order to keep them homogenous, for example, the  
11 patient population homogenous.

12 Do you think that the inclusion criteria should be  
13 more narrowly defined for these different types of VTs?

14 DR. TRACY: They should be clear what they are. I  
15 don't think that I would necessarily--I think within this  
16 study there is a couple, three different patient  
17 populations, and it is unfortunate they are all sort of  
18 mish-mashed in together.

19 If you have a study that is set up with different  
20 inclusion criteria, I think that is fine as long as you keep  
21 the analysis, you don't mix the cohorts together. I don't  
22 see why you would have to first accomplish the whole  
23 protocol with this patient, and then 12 months later go in  
24 to this cohort of patients.

25 I think it is reasonable to run them

1 simultaneously using the same device, but as long as the  
2 analysis keeps the groups separate, I think that would be  
3 reasonable.

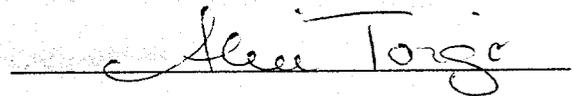
4 MS. MOYNAHAN: That is all the questions I have.

5 DR. SIMMONS: We are adjourned.

6 [Whereupon, at 5:00 p.m., the proceedings were  
7 recessed, to be resumed at 8:00 a.m., Wednesday, July 22,  
8 1998.]

**C E R T I F I C A T E**

I, ALICE TOIGO, the Official Court Reporter for Miller Reporting Company, Inc., hereby certify that I recorded the foregoing proceedings; that the proceedings have been reduced to typewriting by me, or under my direction and that the foregoing transcript is a correct and accurate record of the proceedings to the best of my knowledge, ability and belief.

A handwritten signature in cursive script, reading "Alice Toigo", is written over a horizontal line.

ALICE TOIGO