

## CONDENSED TRANSCRIPT

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OFFICE OF THE SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	) Docket No. 72-22
	) ASLPB No. 97-732-02-ISFSI
PRIVATE FUEL STORAGE	)
L.L.C.	) DEPOSITION OF:
	)
(Private Fuel Storage	) <u>DR. WEN-SHOU TSENG</u>
Facility)	)
	)
	) (Utah Contention L/QQ)

Tuesday, March 12, 2002 - 9:55 a.m.

Location: Utah Attorney General's Office  
160 East 300 South  
Salt Lake City, UtahReporter: Vicky McDaniel  
Notary Public in and for the State of UtahState's  
Exhibit 113**CitiCourt, LLC**  
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**CLEAR REGULATORY COMMISSION**

Docket No. \_\_\_\_\_ Official Exh. No. 113

In the matter of \_\_\_\_\_

Staff \_\_\_\_\_ IDENTIFIED ☒

Applicant \_\_\_\_\_ RECEIVED ☒

Intervenor ☒ \_\_\_\_\_ REJECTED \_\_\_\_\_

Other \_\_\_\_\_ WITHDRAWN \_\_\_\_\_

DATE 5-8-02 Witness \_\_\_\_\_

Clerk pmf

In the Matter of Private Fuel Storage  
Dr. Wen-Shou Tseng \* March 12, 2002

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1 calculation, and he indicated that the differential is  
2 the order of .001 second. And at .001 second one would  
3 consider, you know, for that small pad the effect would  
4 be very, very high frequencies, something on the order  
5 greater than 50 Hz, which is beyond the frequency range  
6 of our interest, actually. So I would expect this  
7 effect would be insignificant.

8 Q. What about for a quadrant of pads in soil  
9 cement that would act as one integrated pad?

10 A. Would you say that again?

11 Q. What about for a quadrant of pads, which I  
12 believe is 125 pads, and the soil cement in between  
13 that act as an integrated structure?

14 MR. GAUKLER: Objection, lack of foundation.  
15 Answer if you can.

16 A. Well, even though you have soil cement in  
17 between the pad, but there is no structure continuing  
18 through -- in other words, there is no rebar going  
19 through it. So even though it may appear to be  
20 integrated, that -- structurally they are still  
21 separate. So I wouldn't consider that to be a credible  
22 case of integrating all the pads together.

23 Q. So do you believe the pads will act  
24 independently of each other, out of phase in their  
25 motions?

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1 A. Well, each pad of course is by itself a  
2 structural element. It may have some minor interaction  
3 between pad to pad through the underlying soil, but  
4 again, that I believe will be a quite secondary effect.

5 Now, if you consider all the pads lying in  
6 one big quadrant, from one end to the other there may  
7 be bigger variation, but since each pad is structurally  
8 not connected, there is no effect from one to the  
9 other, especially from one extreme end to the other  
10 extreme end. And they separate so far apart and they  
11 won't impact much, either. Only when the pad, they are  
12 structurally integrated together in such a large  
13 dimension that such time differential would have bigger  
14 effect.

15 Q. So do you believe the soil cement will not  
16 have an impact in integrating the motion of the  
17 different pads together?

18 A. It stiffens up the soil, certainly, and that  
19 effect has been included in this. But structurally you  
20 don't have really positive connections. Eventually I  
21 don't think they would behave as an integrated  
22 structure.

23 Q. Did you evaluate the adverse effect of  
24 inclined waves on the seismic response of the pads?

25 A. Would you say that again?

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1 Q. Did you evaluate any adverse effect of  
2 inclined -- strike that. Did you evaluate any adverse  
3 effects of inclined waves on the seismic response of  
4 the pads?

5 A. We -- in our calculation for pad design we  
6 did not explicitly consider that. But this incline is  
7 a small angle, which Bob Youngs had estimated to be the  
8 case, X minus like 11 degree from vertical, which is  
9 very small. The effect of that will be very small, as  
10 I stated earlier.

11 And in addition, you know, if you look at  
12 the ASCE's 4-86, some of this variation of soil  
13 property from best estimate to lower bound to upper  
14 bound with a large factor, a factor of two in modulus,  
15 is partially to cover some of these uncertainties, I  
16 would call, nonvertical propagating wave, some slide  
17 possibility differentials, and many other uncertainties  
18 which cannot be quantified.

19 So that variation of soil property from  
20 lower to upper bound in the right range is partially  
21 intended to cover some of this effect.

22 Q. Do you anticipate conducting any additional  
23 analyses or calculations on the PFS project?

24 A. As far as pad design and analysis is  
25 concerned, I do not foresee other than if we need to

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1 answer certain questions, we may do a few calculations  
2 to back up our response.

3 MS. NAKAHARA: If you'll excuse us for one  
4 moment.

5 We have -- I have no more questions. Thank  
6 you.

7 MR. GAUKLER: I may have a few questions.  
8 We'll take a break.

9 (Recess from 1:58 to 2:00 p.m.)

EXAMINATION

10 BY MR. GAUKLER:

11 Q. I have a couple quick questions.

12 At one point in time in the questions asked  
13 by Ms. Nakahara you were talking about Table D-1(d) on  
14 sheet 234 of your calculation. Correct?

15 A. Yes.

16 Q. And that sheet shows vertical displacements?

17 A. (Witness nods head.)

18 Q. Are those vertical displacements all at one  
19 time, or what are the vertical displacements displayed  
20 in that table?

21 A. The vertical displacement displayed in this  
22 table for various nodal points are maximum for the  
23 individual nodes. They may or may not be at the same  
24 time. So the number in each of these loads would show

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