

**From:** "Smith, Jeffrey" <jasmith@sandia.gov>  
**To:** "Mahendra Shah" <MJS3@nrc.gov>, "Smith, Jeffrey" <jasmith@sandia.gov>  
**Date:** 8/5/02 11:34AM  
**Subject:** RE: Material models for CTH and Pronto and Status of Boeing contract

Mahendra:

1) The concrete model being used in the Pronto analyses is the K&C concrete material model described in the Sandia Report SAND2000-1017. That is the export controlled report I gave you when you were here. I had sent you a hard copy of the Pronto manual (SAND87-1912). The K&C model is not described in that manual. I believe I also gave you an electronic copy of a newer PRONTO manual (in pdf format). The K&C model is in that manual. I will contact Kenneth Gwinn and try and obtain each of the parameters used in the concrete properties used in his analysis. I believe as discussed in SAND2000-1017 the user usually provides the concrete f'c and the code picks the other parameters (unless the user specifies something else).

2) I will check on the specifics of which material model is being used for the steel and get back with you.

3) I believe you have the CTH manuals, and the draft ZAPOTEC manual, along with the PRONTO2000 manual on the cd with the results from you visit here.

4) The Boeing contract. I am trying to find out from Jerry the exact status on that. It was my understanding, that by today Boeing was supposed to either have a new statement of work that they were comfortable with, or they were going to let us know the status if they did not have it by today. So, I will let you know as soon as I verify that with Jerry.

5) In regard to the aircraft speed. I noticed on the suggested topics that Bernie sent to Jerry you had listed NSIR speed and trajectory. Can you elaborate on what that is. We had some discussions here as a group and our current plan was to continue to use ( ) for aircraft speed. When Greg Bessette had his models running correctly we would change his to ( ) the Ex 2 is currently using ( ) We felt this was reasonable since it matched the ( ) impact. We though if we wanted to bound or see how a higher speed changed results we would examine that with Kenneth Gwinn's Pronto analyses (i.e. run a case at ( )). We should discuss this. I will try and put together something documenting the discussions we had on the scenarios, so you will know what we were thinking.

Let me know if you cannot find the electronic version of the manuals. I am sure we put those on the CD you took back with you. If not, I will have to FEDEX you another copy.

Thanks,  
Jeff

-----Original Message-----

**From:** Mahendra Shah [mailto:MJS3@nrc.gov]  
**Sent:** Monday, August 05, 2002 7:30 AM  
**To:** jasmith@sandia.gov  
**Cc:** Bernard White; Daniel Huang; Jack Guttman; Robert Shewmaker; Ron Parkhill; jlsprun@sandia.gov; kbsoren@sandia.gov  
**Subject:** Material models for CTH and Pronto and Status of Boeing

E/35

Portions Ex 2

contract

Jeff:

I have the information on the PRONTO concrete material model, which you gave me last time I was at Sandia. However, I was relating the information to PRONTO input described in Chapters 4 and 5 of the USERS' Manual you sent me. Please describe which material model in Chapter 4 is used in conjunction with Equation of State in Chapter 5 for Concrete model. I also need to know how various input parameters for the concrete were determined. Is the concrete modeled as Hydrodynamic material or damage material (Ref. Table 4.1 in Chapter 4)?

Please also let me know how the steel material is modeled, including references to the models in Chapters 4 and 5 and bases of the input parameters.

For the CTH program I do not have the USERS Manual. Please provide the manual and the similar information discussed above.

Please also let me know the status of the Boeing contract. As I understand it, the Boeing has agreed to the clause related to the Price-Anderson Act for indemnification, and that they plan to submit the final wording to the Sandia this week.

Thanks.

Mahendra

CC: "Bernard White" <BHW@nrc.gov>, "Daniel Huang" <DTH@nrc.gov>, "Jack Guttman" <JXG@nrc.gov>, "Robert Shewmaker" <RES@nrc.gov>, "Ron Parkhill" <RWP@nrc.gov>, "Sprung, Jeremy L" <jlsprun@sandia.gov>, "Sorenson, Ken B" <kbsoren@sandia.gov>