

*Bryan O'Connor:*

I think what I learned from that exercise, and it was a pretty good one, the idea of putting a lot of extra work that is related to their ongoing tasks and activities but potentially distracting. That is a form of risk management as well. There is a lot of risk talk you can do on the technical matters and on the performance versus safety, but the organizational approach is equally important. I remember when we talked about this there is a human side to this. We do not want to overburden this team. We do not want to distract them from their job of providing a safe ride to orbit on these six or so missions that we are trying to fly each year. Just having that discussion and allowing ourselves to bring in the human factor. Is this going to be too much for this project manager to handle? Does this project manager have access to the right support from his host center, the matrix people from the engineering organization? If I remember Bob Schwinghammer, was running that outfit. Would he be able to support that project and would the project be able to keep going while they were taking on this new task? Those are all good questions to ask. Sometimes we don't think too much about that piece of it when we talk about risk management but it was very important and it had to be established right up front, that we want to run this project within the program and it's CM system and it's decision making system and within the project's system as well.

Every time we had a major risk issue, technical risk issue, the program and the project were very much biased towards let us get some greybeards in here, let us get some help, let us get some peer review. The laboratories – the folks, especially at Marshall and the connections they had across the country in this area, we would call them in and ask them to look at this problem and see if they could help us. I can tell you right now that there were two big times that we needed some extra help from peer review and so on. But that was not the only time that we did peer review and having outsiders come in and help us look it over. My memory says we had 50 or 60 if you add them all up from start to finish, independent reviews of one sort or another throughout this project. This team was not embarrassed to talk about their issues, claim their lack of understanding and asks for help. I think that is pretty key to success in a project. I have seen projects that were the other way. The kind that refused to admit that they had a problem, considered a peer review to be a last resort or a sign of weakness of some sort. That was not the case here. This team was very open to them and invited them.

*Brewster Shaw:*

Well there were the technical risks, the material itself, the material properties of the aluminum lithium material whether we were going to be able to weld it successfully, whether we are going to be able to do weld repairs, was it going to give us the strength criteria that we needed in order to get the weight savings that we needed to have, so they're all the technicals, technical side, and of course can we do it for a reasonable budget and can we bring it on schedule to support the space station program, all the standard stuff, technical schedule and cost, there are risks in all of those categories, but they worked out alright because we used a rigorous process and the project used a rigorous process that they have documented for their project and we followed those and we did the work, we reviewed it on a regular basis, we pounded flat the problems and, you know, got the speed bumps out of the way and the project came in fine.