Bryan O'Connor:
When you talk about risk mitigation, one of the things I remember about this project and this team was that the project manager and his senior folks did not limit their brainstorming to themselves. A lot of times we will have a risk that pops up or we will identify a risk, maybe from a test failure, from some analysis that didn't come out very well or a flight failure for flight type risks. We will get the team together to try to figure out what is the best way or what possible ways can we mitigate the risk. I think one of the limits that can limit you in your risk mitigation is not inviting enough people from enough levels to participate in that. I remember that one of the stories that came out of the welding issue, the risk that they had with welding the tig welds, the traditional welds on this new material, there was a fellow who was one of the welders, a non-degreed, non-engineer technician welder came up with what was the best mitigation in the end for this major project risk. He said, "If I move my torch a little faster, I get better results and maybe that is something we should plow into the procedures". All the engineers sitting around the table there with Parker and Brewster and all of these other folks and Bob Schwinghammer and his guys may have come up with other things, but I do not know personally if they would have personally come up with what turns out and in retrospect sounds like a simple mitigation. Sometimes you get the best answer by going to the floor and talking to the folks with the wrench in their hand and the torch in their mitt that are actually doing the job. This was not unique to this project, it was actually a tradition at Marshall in what we used to call the PPIO Program and I can not remember what all that stands for but it was a way of getting all the players in a process or manufacturing activity, maybe even a design activity, to sit around the table and talk about what they do, where it does not work to well and how they might suggest to do it better – everybody, not just the engineer. I always thought that was a good lesson for me.