

# NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT

## ORAL HISTORY TRANSCRIPT

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INTERVIEWED BY JENNIFER ROSS-NAZZAL  
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ROSS-NAZZAL: Today is November 16th, 2011. This interview with Pam Melroy is being conducted for the JSC Oral History Project in Houston, Texas. The interviewer is Jennifer Ross-Nazzal, assisted by Rebecca Wright. Thanks again for taking time to meet with us. We certainly appreciate it. I thought we'd start today by talking about what it was like to be a female astronaut in the Astronaut Office.

MELROY: Well, it's interesting, because I've certainly talked to some of the earlier women astronauts and I've talked to a lot of the male astronauts about the women astronauts. It's pretty extraordinary, I think, how culturally tough it was for women in the original group of women and early in the corps. I think that was very reflective of our society. It was reflective of a military culture that was in so many of the leadership positions in the Astronaut Office.

So I'm fortunate in my life that I came into the Air Force as a pilot just at the time that women were being integrated. I think they started in 1976. I went through pilot training in '85. That was pretty significant, because by the time that I went through pilot training women were just achieving a position of middle management in the Air Force as pilots. But there were still no senior women managers, of course. You didn't see the 20-year colonels. So I had enough experience, and I came in at a time when the military culture was already starting to change, because women were in the military as pilots.

So I would say that as a military pilot there was no question that I had a lot of issues with credibility. A lot of it has to do with my physical appearance, which I'm very proud of. I tell kids all the time. Do I look like an astronaut? The little three- or four-year-olds [say], "No!" Their teachers are all horrified. I like to remind them it's not what's on the outside that matters; it's what's on the inside. On the inside, I'm an astronaut. I always knew I was going to be an astronaut, from being a little girl. To me you have a lot of choices about how you handle that.

I accepted and bought into the fact that people looked at me and they were like, "Oh my God, she looks like my kid sister!" You're going to have some credibility issues with that. That was okay with me because from my perspective if I try to behave more masculine, not only was I not going to be true to myself, but you never ever get across the real point, which is you actually don't have to be a man to fly an airplane.

So that was very much a part of who I was even when I showed up. But I will say that going through test pilot school and as a test pilot, it's like, "Oh, I spent all those years as an operational pilot, getting my place, being an instructor, a senior instructor, and getting the credibility, and starting all the way at the bottom." I truly expected the same experience would happen at NASA. It totally did not. That really surprised me.

The one thing that was clear to me from the beginning was that the smarter people in the office—and believe me, astronauts are nothing if not smart—figured out pretty darn quickly that because I was a pilot, someday I was going to be a commander, likely, and potentially their boss. It really changes the dynamic in my opinion.

It's an interesting situation when you come in with that known quantity. I would say, especially because Eileen [M. Collins] came in ahead of Sue Still Kilrain, that really helped a lot

too and then the fact that Sue and I came in together. So the office went from one woman pilot to three women pilots overnight.

Sue and I used to kid about it. There's still some things. When you're out flying, there's so few women. It was so funny, it happened to all of us. We'd go out to go fly, and the maintenance guys would make some comment about a broken jet or coming in late the other night. You're just looking at them going I have no idea what you're talking about. We began to realize they just mixed the three of us up all the time. It was like there was *a* woman pilot.

ROSS-NAZZAL: You all look the same.

MELROY: Yes. Sue used to joke about it. She would say, "I didn't have the brain that day. I gave it to one of the other two bodies." It was so funny, it really was. Of course it's a little different now. There were more women in the office later. A mission specialist was just as likely to be talking on the radio as a pilot, because you trade those duties off. At Edwards [Air Force Base, California] that was a huge deal. You just didn't hear women's voices on the radio at all. So if you made a goofed-up radio call, everyone was teasing you about it in the club that night.

It wasn't that bad here in that regard; it was just a little funny that people mixed us up. But I never got a sense of that credibility gap from the moment I walked in the door at all. It was just a very very different place from the military in that regard. I think that reflects the number of people in the office, the fact that Eileen went ahead of us, and that she bore the brunt of being the first one. So by the time Sue and I got there, I think people expected there to be a lot more women pilots after Sue and I.

So people were like okay, this is just how it's going to be. I really never felt an issue with that. That was great, because as time went on one of the things that that liberated me was to evolve my leadership style.

One of my first experiences in the Air Force, from a leadership training perspective, was being shown the movie *Twelve O'Clock High*. This is military leadership, you come in, and you hammer them, and you're tough, and they respect you. When people start performing, then you can back off and be a little bit of the nice guy. I'm rolling on the floor laughing, going "Ugh yeah, might work for him. Wouldn't work for me, at all." If you tried that kind of tough behavior as a woman, it just doesn't fly. It really doesn't. You end up losing your credibility and just becoming someone who is not rational.

It's so interesting. This behavior that was acceptable in men is irrational when it comes from a woman. It was something that became a little bit of a topic of interest for me, especially in the military, trying to understand why there were differences between the way men and women led; not difference inherent in me, in the person, inherent in the society in the way that you had to be successful. It took me a long time to really understand that leadership has a cultural and a social dimension. It's how people expect you to behave in certain ways.

There's a great military book by John Keegan, a famous military historian, called *The Mask of Command*. He talks about the different leadership and behavioral styles of leaders, all the way from Alexander the Great to [George S.] Patton, and talks about how individual styles would never have worked in the cultures if you mixed the culture. That person would have disappeared. You would have never heard of them, because they would not have been this charismatic amazing leader. Because it wouldn't fit, it wouldn't fit the needs culturally. So that was a great experience for me to understand that, because I thought, "Oh my gosh. One of these

days I could be a charismatic leader even though I'm a woman." I'd come to this conclusion long since before, [that] because I wasn't six-foot-four and didn't have a deep voice and didn't look like everybody's vision of a great military leader, I could never be charismatic.

I can't honestly say that I ever have been charismatic, but I can also say that there's no doubt that in certain situations that social dimension allows you to be more natural and to evolve your personal leadership style. So for me, what I was able to do was to become more of a Pam leader, not a woman leader or copying a male leadership style. I was able to be more individual and authentic. That's actually a really important part of leadership, is to be who you are.

People ask me a lot [about] women's leadership styles and this kind of thing. Trust me. There's dimensions to that. The social dimension is very important. If you can get beyond it, you can really evolve to a much higher level. For me this was a place that I could do that, which was really cool, because I didn't have to worry about that stuff.

I guess I have tried. I have really tried to pull stories out of things that people said to me or whatever times that I felt uncomfortable, and I just haven't been able to do it. Also, the other thing is if anybody ever said anything that made me uncomfortable, I thought it was dorky, I'd just laugh at them, or I'd call them on it right on the spot. It just doesn't happen again after that. It really just doesn't when you're in that situation.

So that was a terrific experience for me [in the Astronaut Office]. I know it's substantially different than the earlier women, and I want to acknowledge that. But it was great for me.

ROSS-NAZZAL: I think it's interesting how you emphasize that you maintained your femininity. That was so very important to you, and you're a test pilot. What's interesting is you also talk

about those early women. My understanding is that they tried to maintain this gender-neutrality, to try and be just like the guys. That's what they wanted to be, was just like the guys. So you weren't one of the guys when you came on board, and said I'm a woman, and a test pilot, and an astronaut. Is that how you envisioned your role?

MELROY: That's a good question. I think it's really just trying to be true to yourself, because I will also tell you that I have a lot of traditional male personality traits. I think that I am extremely comfortable pursuing loud and dangerous things. Oh my gosh, one of the greatest things that just happened to me, I went over to Russia for the Association of Space Explorers conference. We have a community day where you go out and give talks. I went to St. Petersburg. So they have a howitzer that they shoot off at noon every day in St. Petersburg. It's how people set their [clocks], especially before digital things. It's like the whole city lives on time, when the cannon goes off at noon, that's the time. So they offer it to dignitaries if they could do it.

I had so much fun. My interpreter is just cowering. She's this sweet little lady, four months pregnant, and she's just cowering. She's like, "It's going to be really loud." I'm like, "Yes!" So I have to say that I didn't have any trouble mixing and blending with men, because I was truly interested in a lot of the same things and really have a lot of those perspectives. I think it's more about just being true to myself, every piece of me. Not just the piece that liked flying and is proud of being a warrior in the military and those things. I take those things really seriously. So those naturally are the things that are easier to talk about. If you're talking about flying and those kinds of things, it's very easy to blend with men.

But I would never hesitate or pretend that, “Hey guys you’re going sightseeing but there’s a really cute shoe shop right around the corner, I’ll see you later. I’m heading off over there,” and not worry about whether somebody would say, “What’s up with that?”

It’s the parts that are traditionally feminine; I’m not trying to hide them or camouflage them or pretend to be a different person. It’s really about being as true to myself as I could be.

ROSS-NAZZAL: Do you consider yourself to be a feminist?

MELROY: Yes.

ROSS-NAZZAL: Some of what you’re saying suggests to me that you are.

MELROY: Yes. I don’t know why people think it’s a bad word. I guess yes, I absolutely do. In the sense that I think I guess maybe in a sense I’m a humanist, that we all have the right to be who we are, for whoever we are. To me that’s what feminism is about, is being true to who I am.

ROSS-NAZZAL: You also mentioned something that I find interesting about the Astronaut Office, about the fact that you were coming in, and at some point people recognized that you would be a commander. So there seems to be a status within the office for the mission specialists and the pilots. Can you talk about that hierarchy?

MELROY: Oh you truly can't have never heard about that before. Yes, it really is shocking. It took me a long time to understand that it is human nature that you have this very narrow slice of the human race. What do we do? We organize ourselves into stratum and layers, not cliques, but categories and criteria and who's a better astronaut. It's so complicated, because people have these different personalities, and these different backgrounds, and they all bring something different to the table. It's really human nature, you just do it. If you get people in a room together, and it is very logical, and it made perfect sense to have the pilots be the commanders on the Space Shuttle. Really there's really no way you can not have that. As a result though having military experience was so highly valued, and for good reason.

The teamwork and the leadership training that you get in the military, there's a given when you meet someone and you know that they've had at least some of that. It doesn't mean they're great at it automatically. One of the challenges that NASA has had I think is the fact that the military leadership style is really again only a narrow slice of all the possible styles that you can have. You're trained in that style to be successful in that specific situation. Some of the risk aspects really carry over. So having those leadership traits and skills really helps, but so many of the things that you do aren't similar to the military. Then you've got civilians who have a very different perspective, both on themselves and the team and the mission.

So you have to dig a little deeper into your leadership bag and not just pull out the same response or the same tools that you would use as a military officer. That's been tough. I think that because the leadership of the office for so long was military, and they were pilots, there certainly was some kind of a status difference, without a doubt.

I know you'll hear it from the mission specialists. From my perspective it was really about evaluating somebody's past experience and how much leadership experience they had, and



operational experience. You don't put somebody who's got 50 hours in a light airplane in the front seat of a T-38; you just don't do it. It's not a smart idea.

As mission specialists are in the office longer and they pick up those operational skills—and certainly with the leadership programs that NASA has in place now—I've seen some terrific, terrific leaders in our MS [mission specialists] corps. Peggy [A.] Whitson is a great example of that.

ROSS-NAZZAL: Tell us about those first few days when you came down here, and you were a candidate. Do you remember those meetings?

MELROY: Oh. It was great. It was so much fun. It was a really good class. I think I interviewed with a bunch of them, so I already knew them. We just had a great experience. It was a very blended class. We had a lot of internationals. We had a lot of women. For me having Sue in the class was great. We hit it off right away and became really close friends, which we still are. It was a terrific experience. I think again the big thing is how to stop treating mission specialists like, "You can't trust those guys."

It's really funny. Watching us organize even things like the Christmas skit, and who you put in charge of what. I always had this really strong sense when I looked around the Astronaut Office. "Hey, we are going to be the leaders of the office in about five or ten years."

And sure enough, it's the case. You find yourself sitting around at the morning meeting, where all the branch chiefs are at the table, and all the rest of the astronauts are sitting out in the chairs. Only the branch chiefs sit in the middle table. Looking around and seeing that three quarters of them were my classmates. I knew from the moment we came in that that was going

to happen, and that our ability to bond was going to reflect how well we were going to lead the office together in the future.

ROSS-NAZZAL: What were some of your first assignments when you came in?

MELROY: Well, I was training. Then I went to the Cape [Canaveral, Florida] and worked as a Cape Crusader. Mike [Michael P.] Anderson was with me. That was so great. Mike was such a wonderful guy. So that was just a really wonderful opportunity to be with him. He just is such a great person. We had so much fun, and we were learning everything together. Oh, talk about nerve-racking. The first time you go inside the Shuttle and you're working on stuff and getting it ready, and you're just so nerve-racked.

I'm trying to remember the mission. It was the Tethered Satellite, I know that. Scott [J.] Horowitz was the pilot and I think Andy [Andrew M.] Allen was the commander. It was my first mission. One of the Pc meters, one of the meters that told you that the engines were performing, dropped to like 50% on liftoff, or after they lifted off and they throttled back. It didn't throttle back up. The engine was actually working fine, but the meter failed. So Mike Anderson and I of course were standing on the roof of the LCC [Launch Control Center] and listening to this. We both had the same thought at the same time. We looked at each other when we heard this. We're like, "It wasn't something I did, was it?" We were both so scared, "Oh my gosh, I was in the cockpit an hour ago, did I do something?" Very funny. Very funny. That was an amazing experience to do that.

It's also really special to spend time with the people in Florida [Kennedy Space Center, KSC]. They are so intimately bonded with their hardware. Their rhythm, their patterns, very

different, but I learned to be very respectful of that. I also loved the intimacy of spending the last couple moments on Earth with the crew. That was definitely my favorite part of that job, was that last 45 minutes before you close the hatch because the crew has got a million things on their mind. They have to do com [communication] checks. So they actually rely on the Cape Crusader to help remind you, "Say this, and don't forget the person you're talking to, her name is Roberta. So it might be nice if you said, 'Good morning Roberta.'" You hear it all the time, you hear astronauts [say], "Good morning, Roberta; how you doing, Jim?" In some cases they really do know them that well but rarely. There's someone coaching them and reminding them, "Hey that's who is on the other end of the line." So to do that, to spend those few minutes helping them get through that preflight and looking around. Any last tweaks, you want me to move that a couple inches to the right; you want me to take that down, is really really wonderful. The same thing with bringing them home, being the first one into the cockpit and seeing them.

ROSS-NAZZAL: How do you train for that position? Is there a lead Crusader?

MELROY: There's a lead Cape Crusader who trains you. You have to go in shadow mode for multiple experiences before you can actually lead and be prime is what we called it. That was great. I got to prime. I think I primed four or five times.

One of the times it was not my turn, but Mike Anderson came down with a dreadful cold two days before we were all supposed to fly to Cape. So even though I hadn't been working with this crew I ended up priming and strapping them in anyway. Not that I didn't love it; I loved every minute of it. It was so cool. It was just great.

One of my favorite memories actually from that was Bill [William F.] Readdy. That was STS-81. It was his last flight in space. He'd gone to Mir. It was already a special flight because Marsha [S.] Ivins was on it. She was the one who was the lead Cape Crusader who taught me to be a Cape Crusader, starting a long friendship between us. So it was really special I think for both of us to have me strap her in as prime. That was a neat experience.

Everybody at the Cape knows her so well, because she's done that so much. There are all kinds of special jokes and little inside jokes that we had going on. So helped everybody out of the seat. Then it was only Bill left to get out of the left seat after the landing. I said gently, "Bill, I'm ready to take over now." He was like, "I just want to think about it for a minute." Okay. So I sat down in the pilot's seat, and I said, "What you thinking about Reads?" He said, "That was cool." He started telling me a little bit about going to Mir, and how much landing the Shuttle meant to him.

He left to go up to [NASA] Headquarters [Washington, DC] shortly afterwards. It was really clear he knew this was his last time in the Shuttle. Just to be able to sit with him for a few minutes in the right seat and let him talk about that, because he wasn't ready to let it all go yet. At that time, when you haven't flown yet, it was just like magic. You felt like you were this far away from being in space. You were so close to it. You could smell the ozone. It was right there. For him to share that with me, especially as a young new astronaut who had not flown, that was actually really special. Sometimes we talk about it, when I've seen him since then, and how nice that was to share that moment. All kinds of funny stories. I've got a lot of funny stories from the Cape.

ROSS-NAZZAL: I can imagine. I understand that's one of the prime jobs, I guess, in the astronaut corps.

MELROY: Oh it is. It's so much fun. Yes, but it's hard. It's operationally very rigorous. So it's very comfortable for me as a military pilot. Nothing that isn't comfortable to a professional pilot in terms of the rigors and the checklist following and some of those other things. For some of our folks who are not operational, it was actually hard and gave them an opportunity to learn more about an operational environment. So I think more stressful perhaps for them than it was—although I was pretty stressed whenever I strapped a crew in, don't get me wrong. You're on a timeline.

ROSS-NAZZAL: I can imagine. Then you also did some CapComing [Capsule Communicating].

MELROY: I did. I CapComed. Let's see. That was between my second and third mission. I trained as an ISS [International Space Station] CapCom. It would have been fun to have been a Shuttle CapCom. I think I would have enjoyed that, but that training flow is very intense for ascent and entry. They were in a lot of demand, and I frankly didn't have time to spend doing that. So I could only really do it part-time. But I did get to be the lead for STS-115, Brent [W.] Jett's flight, delivering the solar array. That's a great experience too.

That's a different kind of thing. You really go through everything with the crew in the simulator and on orbit. I really enjoyed that too. You even get to know their families a little bit that way as well. They give you the wakeup music. You're in charge of all that stuff. That's a really interesting experience, because you're sitting next to a flight director who is in charge and

telling you what to say. But how to translate it to the crew and how to guess in your head what it is they're doing at that exact moment and in the shortest number of words can you give them the flavor of the situation. Also recognizing everyone in the world is listening on air-to-ground. It's a hectic thing on a Station assembly flight to be a CapCom. There's always drama during the spacewalks so you're really trying to rack your brain all the time. What are they doing? What do they need from us? How long should we talk about this?

Probably some of the most rewarding time I spent on console was when Bill [William S.] McArthur was in space as an Expedition crew member, because I'd flown with him on my first flight. I knew Billy Mac well enough that he was probably a little lonely. He's pretty social. So I knew him well enough to know he was probably a little lonely on orbit. So I always tried to talk to him like I was sitting right next to him in the simulator. I'd call him Billy Mac, his other nicknames, Number Two and all this other stuff. Sometimes heads would turn in mission control. Everybody'd be like, "What'd you just call him? What'd you just say to him?"

Nothing unprofessional but just with a certain level of friendship, the intimacy that comes with friendship. Shannon [W.] Lucid and he had flown together. He said it was always great when Shannon or I was on console, because it was like he was talking to us in the same room. So that was a great experience, I liked that.

ROSS-NAZZAL: What did you take from your first mission that you applied to being CapCom?

MELROY: That's a great question. It is not impossible to be a CapCom before you've flown. A lot of people have done it and done a very good job. But in the end you're really restricted in your ability to truly understand what's going on in space, and how much time to give people for

certain things. What they might need to know immediately versus what they're probably not very worried about.

Because unless you've done certain things, like postinsertion or rendezvous and docking in the simulator from the crew side, it's really hard to know what's going on. Where if you've flown you're like, "Oh yes half the crew is downstairs having lunch. This is a good time to call them; they're not busy." You know that. You just know that pace and that rhythm. I think that's the one thing that you carry forward.

ROSS-NAZZAL: What were some of your other assignments before you were given a flight?

MELROY: Well, I went off to work CRV, the crew return vehicle, with Rick [D.] Husband and that was also a fantastic experience. Talk about another tremendous human being. Rick was so much fun. He always used to say, [when] I'd [say], "I don't understand this." He would say in that deep voice, "Well don't be feeling like the Lone Ranger." It always used to make me laugh.

So we just worked side by side on all kinds of things, everything. One of the memories that I actually treasure—somebody recently sent me some pictures from it—is once we flew out to California and met Pete [Charles] Conrad and talked to some of the folks that had the DC-X experience that were looking at working on another vehicle for the Air Force. They wanted inputs on display design, which was a big thing that Rick and I were doing. So that was a great experience to just go out and give a little consulting, tell them what we were thinking about. As a test pilot in the Air Force you don't work a lot on developmental stuff. You work on things after the design period, and you're testing it to see if it's operationally suitable. You know enough as a test pilot to understand what has gone into it, and what the basic principles need to

be. But it's a very different thing starting with a blank sheet of paper. That's not something that they teach you much about in the Air Force, and that was what we were doing.

It was fun. Rick and I flew everywhere. We went to talk to the folks who were designing displays for UAVs [Unmanned Aerial Vehicles]. This was like in 1996 so it was a long time ago. It's all these secure facilities. We flew up to the Phantom Works in St. Louis [Missouri]. We flew to Wright-Patterson [Air Force Base, Ohio]. We flew to Pax River [Naval Air Station, Maryland]. We went everywhere together on each other's wing. That was a lot of fun. It was almost like being assigned together, because usually pilot and commander fly everywhere together on each other's wing. You really get to know each other that way through flying.

Rick was on my wing when I lost an engine coming back from El Paso [Texas] one night. Great stories there. It was a lot of fun.

ROSS-NAZZAL: Tell us about that story, about losing an engine.

MELROY: Oh, it was a bad night. There were thunderstorms. We realized we had to divert to San Antonio [Texas]. Air traffic control was horsing around giving us approval. We were up at like 41,000 feet, and I had to make a pretty hard turn. It is very well known in those engines that at superhigh altitude, especially in unstable air, they are prone to flaming out. So I got it restarted, but it's in the dark, in the weather, in the middle of a divert. Rick was great. He obviously couldn't keep up with me. We had to separate, but he was flying around me and staying nearby. We were both talking to air traffic control. He's helping me with the checklist.



I got the engine restarted and came back in and landed in San Antonio. We went in and said, “Holy cow!”

We had to spend the night in San Antonio. They made me fly back in his backseat because they didn’t want me to fly the airplane home. It’s fine. It just happens. The engine doesn’t do well with that. It was a nice thing actually to hear his voice in the dark as I’m flipping through the checklist with a handful of jet in the dark at night in the weather, to have him there. It wasn’t earth-shattering. It’s dangerous in that it’s distracting and more difficult. The airplane flies fine. You just need to follow some rules. You’re doing a procedure you don’t do very often so the potential for making a mistake is very high. I think that’s what makes it dangerous, [it’s] not inherently dangerous to fly without an engine.

ROSS-NAZZAL: It’s interesting that you both took planes. How come you weren’t just taking one plane with you?

MELROY: Great question. Pilots, we need our flying time. You’ve got to get it in the front seat. You have to have that experience, a minimum number of hours. So that was why. That’s why I did that all the time with my pilots too when I was a commander and when I was a pilot for my commander. If you have an MS that wanted to go but believe me, flying an STA [Shuttle Training Aircraft] at El Paso until 11:00 at night is not exactly their idea of a good time and a great way to get their flying time. So a lot of times when you were flying those STAs out there on a night range nobody was in your backseat, because nobody really cared. They didn’t want to go with you.

ROSS-NAZZAL: Oh, that's too bad.

MELROY: Yes I know. But they were still getting their hours.

ROSS-NAZZAL: How many hours did you have to fly as a pilot in the office?

MELROY: Fifteen hours a month. The typical flight time is about 1.3. So it works out to be 11 or 12 sorties a month. So when you think about that, that's two and a half a week kind of thing, something like that. That's a full day of flying.

ROSS-NAZZAL: Did you ever practice something like emergency landings? Or was it pretty much just flying?

MELROY: Oh no, no, absolutely. In fact it would be deathly boring if you didn't do some of that stuff. Usually what we did, we'd fly formation together, which was challenging. Always have to get a certain number of instrument approaches, either in real instrument conditions or under the hood, which isn't very much fun. It's flying in the backseat. Actually I really liked it. I shouldn't say that because I'm a little bit different. I always liked instrument flying. I found it challenging and fun. The only hard part is usually you didn't end up landing from the backseat, because landing in the backseat of the T-38 is pretty squirrely so the instructors did that. When you were flying under the hood you flew in the backseat and you literally pull the hood. It's dark. It's pitch-black in there like you're flying in instrument conditions. Then you pull the hood back at the right altitude, but you don't actually usually land. So you got to get a certain

number of those kinds of hours so you'd fly to local bases and shoot approaches. A lot of times we would get our flying time going to and from our STAs or flying to and from the Cape.

Good heavens. When I was a Cape Crusader and I worked *Columbia* reconstruction, I was going out there once a week. So I was getting all the flying time I needed. There was not a problem with that. I almost always had somebody in my backseat who needed to go to the Cape for something. Those are better.

I personally really enjoy pattern work. So I like to go around the traffic pattern and do an engine-out landing and a no-flap landing and a single engine go-around. I enjoy that. It's fun.

ROSS-NAZZAL: Do you miss flying the T-38s?

MELROY: I do. I really do. It got hard at the end when I was working as a branch chief on Orion. I was going to so many meetings and I was so interested in the programmatic, I really wanted to learn about program management, that I scheduled myself very tightly. I found myself getting into places where I'd schedule one day for the week to go fly and go get all my flying time for the week, and then the weather was bad, or they didn't have a jet for me. Then that really was tough because then I was flying at night and on the weekends, and I was just trying to get flying time. The last year or two was not that much fun because I was just grinding all the time. It's always great. Walking out to the airplane, flying it was always fun. But I always felt like I was under so much time pressure that it wasn't the best use of my time at the moment. So now I've been gone for a couple years I really miss it.

ROSS-NAZZAL: Tell us about being selected for that first flight and hearing the news that you're going to be on a crew.

MELROY: Well, it was tough because I wasn't the last person in my class to be assigned, but I was the last one to fly, because we were waiting for the Russian Service Module to get launched. So that was tough. It was so exciting to be assigned, but we were assigned for almost three years. The rest of the crew loved it. They're having a ball. They know that being assigned to train is like the best place to be in the Astronaut Office. It's really the best it gets in a lot of ways. So they were all having a blast, but I just wanted to go get my first flight. It was hard watching all my classmates go fly and waiting for my turn. I was very anxious but what an amazing crew.

There's a couple of observations that I would make about astronauts. One of them is that they're very very competitive people. They would not be where they were if they weren't competitive. They're perfectionists. They like the hardest thing out there. Real challenging for a commander, because everybody wants to do the hardest thing on board and nobody's worried about who's running the computers and stowage. You have to have those little jobs that are less fun, and someone has to do them.

You've got all these really smart people. Then you're starting from scratch. You don't have to break someone's culture, because it's a new crew. You're not trying to change things. You are trying to create a new culture. So what you're really limited by is the willingness of the people to merge into a team, whether they really value that or not.

I believe that. On the STS-92 crew, you want to talk about some extremely diverse personalities and backgrounds, it was a very diverse crew from a personality perspective. But

everyone wanted to merge. Everyone wanted it to be close and fun, to know each other's families. We spent a huge amount of time socializing together. We used to go to Molly's [Pub] after simulators or after flying over just off El Camino [Real] over there. After we flew they put like a roof over their little outside picnic tables, which is where we always sat. We're like, "Ooh, STS-92 must have paid for that," because we were there almost once a week. After a simulator or after flying together we would all get together.

That was extraordinary because it gave us a place where we could talk about things that had not gone well in training or knotty problems that we had to face. It gave us this very relaxed social environment to work out those issues. The only issue that we had really in the end was that we were so close to each other that we had so many inside jokes that no one had a clue what we were talking about. Somebody would say something, we'd all respond, and then everybody would laugh. People were like, "What?" So in that regard we were almost a little closed ecosystem of our own.

Brian [Duffy] is a fantastic leader and taught me so much. A lot of it is that his leadership style is very different than mine. That's a fantastic experience, because when someone's leadership style is very similar to yours—and I would say that Jeff [Jeffrey S.] Ashby, my second commander, my classmate, we really had a lot of things in common. The way we approach problems, the way we think, the way we solve problems, which made us a very harmonious team in a lot of ways. The way the information flowed from him to me was that he would tell me about his thought process or relate experiences that he was considering when he was making a decision. So it's about the information. He was transferring experience and information to me.

Brian on the other hand rarely did that, which was frustrating for me initially because I just wanted to know. I wanted to hear the stories. I wanted to know what the answer was. Brian instead is someone who would rather have everyone in the room think it was their idea. So he never tells anybody what to do, or very very rarely. Instead he creates an environment where questions get asked. He knows how to make things happen without making it appear that he had a hand in it. So it really is such an evolved form of leadership. A good leader is someone who everybody says, “That’s a good leader; she’s a good leader. Look at what she just did, that was a good leader.” Brian is the kind of leader where everyone says, “Aren’t we a great team? Didn’t we do such a fantastic job on that?”

It’s only if you know all the mechanics that are going into it behind it. He did amazing things by just making a phone call or just asking a question in the right place that directs everyone’s attention to the core problem and gets everyone else and all the levers moving. He is a master at organizational dynamics. He would call one person and ask a question, and stuff that really needed to happen—that you could have spent hours or days trying to work up a chain—it would just happen naturally. Everybody thought it was their idea. It was amazing to watch. He’s really an extraordinary leader in that regard.

As you can tell, obviously somebody who has absolutely no ego whatsoever and is about getting things done. I think for him, the joy was really in the social relationship and the fact that we did work together so well, and we had so much fun doing it.

We flew the first IMAX 3D camera. That was a great part of the mission for me. I’m like, “Oh my gosh. Here I am. I’m an astronaut.” I thought it was the coolest job in the world. I get to direct my own scene and film for an internationally released movie. How could this be happening. How cool is that when your name rolls in the credits, and you’re sitting there

watching this in this movie? It was so cool. It was terrifying too. The film costs like \$12,000 a foot. We agonized over everything with it. It really made me fall in love with photography to do it, to really have that experience.

Rats. I lost what I was talking about. It was Brian and IMAX. It'll come back to me. But there's a story there. There's so many stories about IMAX I can't even remember which one it was. Sorry, got off in a ditch.

ROSS-NAZZAL: Not a problem. Do you want to tell us about that scene, the scene from the IMAX movie that you directed?

MELROY: We had one [camera] in the back [of the payload bay] so I ran that most of the time. There were some really great scenes from the payload bay. But the ones I think that mean the most to me are the ones that we filmed [using the camera] inside, because we actually had to measure the light, measure the distance. We had a little light meter. Then you're driving this camera. Which no kidding, it had handles on it because it was that big. It was about two and a half feet across and about a foot and a half high and maybe two feet deep. The rolls of film were about the size of a large pizza, double, like that. One of the things that scared me the most was changing the film.

We practiced it on the ground, but it wasn't easy. It had this clocking thing to it. This giant thing that I could barely get my hands around the roll of film. Trying to get it in. It had a very specific clocking. Even here on the ground doing that in a dark bag up to your armpits was very very tough to do. It was a real act of courage on orbit when I said, "Yep, I'm going to do it." I stuck my hands in that bag, and I'm like, "I'm not coming out until I get it done." We

actually have it in the crew movie. My face just lights up when I finally got it into place, but it probably took me 20 minutes to do that, of fooling around with it to get it in there. It was pretty nerve-racking. After about 15 minutes I'm thinking, "What's going to happen if I can't change the film?" That was fun.

I was the baby on that flight. Everybody else had flown in space. We waited so long to fly that I had worked myself into a complete frenzy, because I was so afraid that I was going to do something wrong. I was going to let my crew down. I was going to let our nation's space program down. I just needed to go fly.

There's so much you don't know. You don't know if you're going to get sick. You don't know if you're going to be able to use the bathroom. You don't know if you're going to make a mistake that will ruin your career that you'll never fly again. It doesn't happen often, but it does occasionally happen that people really just don't take to it and can't handle the stress of the environment very well. We got up on orbit. I started not feeling good after a few hours, which is pretty typical.

I tried everything so they left me upstairs while they were getting the downstairs ready. One or other of my crew members would come up. "Okay, try sitting on the floor with your back against the wall, and your feet pressed against the pilot's seat," all these little tricks that people learn. "Sit here. Do this. Try that."

Finally I'm sure I just looked totally woebegone. So Brian said right then, "We're giving you the shot." "Okay." So they gave me a shot of Phenergan. I was super sleepy because it makes you sleepy. I was having a problem actually with that. I talked about it to the doctors when I got back. I'd never heard of it before. It's called the sopite effect. It's a reaction to motion sickness that makes you really sleepy. It's like your brain pulls all the circuit breakers,



says I don't have a clue what's going on here, and you're so [sleepy]. I was like through peanut butter—everything. I was so tired.

Then they gave me this shot which completely knocked me out, and they stuffed me into my sleeping bag. The next morning I woke up, and it was a whole new world. I slept through it. My brain had adapted. My body had adapted. I was just like, "How cool is this?" I was going head first, which is a big no-no if you get space sickness, from the flight deck down to the middeck. It's just a hole. There's a ladder there in gravity. But you don't worry about that stuff.

One of the ways that you try to keep yourself from getting too sick is maintaining orientation with up and down. This is the ceiling, this is the floor, it just helps a little bit. I was shooting head first down into the middeck. I felt great. I felt great for the rest of the mission. That was a wonderful thing. I remember Mike LA [Michael E. Lopez-Alegria] said to me about six or seven days into the flight. He's like, "Whoa. You have gone from not knowing how to brush your teeth to you could probably command. You could figure this out." It was great, it was just great. It was such a supportive environment for me to go through that.

When we waved off it was even better, because we were all so tired. We'd done four back-to-back EVAs [Extravehicular Activities] attached to the Space Station—not from the ISS airlock, which didn't exist. There was no one on board the Station. We were the last crew to visit before people lived up there. It was a little bit like going into a hotel room. You open the hatch, you spread out; you go in and hang out. So it was a very different experience from my other two flights to do that.

We owned the Station as much as anybody did, at that time. We had had a very rough undocking day because we had some issues and problems. We had an electrical bus short the day we were supposed to install both the Z-1 Truss and PMA [Pressurized Mating Adapter]-3.

That was an amazing experience, because I had seen many of the malfunction scenarios, but I'd never seen all of them at once.

The caution and warning, it was off; it was pages, pages and pages and pages of them. I had no idea what was going on. Then they told us we'd lost payload bus 3 because of an electrical short, which later they determined was because of the Space Vision System. We powered it on early the night before, per the direction of the ground, because they wanted to monitor it. It was so critical.

This camera system was absolutely critical for installing these two pieces of Space Station. What did it do? It shorted itself and the whole payload bus 3 which had our attachments to the Station and all kinds of things. That's why we got all those warnings. It was pretty funny. Later when we talked about it we said we used absolutely every piece of flight data file we carried. That's really unusual. A lot of times you carry books that you never touch. They're there in case of an emergency. We used every single book, including malfunction books. So we pulled that out and did a merging of two IFMs (in-flight maintenances). I read the checklist and started that way.

There's a really great picture of Billy Mac and Koichi Wakata and I working together on rewiring the Shuttle electrical system. At the very end we had to literally rewire a cable with pins. Looking at these teeny tiny little pins. [N.] Wayne Hale was the flight director. He called up, and he's like, "Are you guys about ready to plug that thing in?" I'm like, "Wayne, I've checked it about seven times. I think I'm ready." He was just laughing. He's like, "Yes, I know what you mean."

So we did, but it took us a while to recover from that. It took us like four hours down on the timeline and that just rippled through the whole mission. We had a lot of other great

experiences on the flight. A lot of stories with the spacewalks, especially testing the SAFER [Simplified Aid for EVA Rescue] for the first time where Jeff [Peter J.K.] Wisoff and Mike LA got the opportunity. They were hooked by a loose tether but they were floating and flying using the SAFER. We've got great video of it. It had to have been an amazing experience.

Not like Bruce McCandless going way way out but still pretty darn cool. Flying a little jet pack around. It was a great mission, but on the last day it became clear that we didn't have time to back out of the Station. There's procedures, and there was nobody on the other side. We had steps we had to follow.

So we just said okay. They sent us up. So I'm reading the morning mail. I'm getting the sense that we might have a lot to do before what was essentially about 10:00 in the morning body clock. At the time, because there was nobody aboard the Station to back us up for punching us off in case something happened, we had to undock over a Russian ground site. So we had a five-minute window that we had to undock. I said to the crew, "I'm a little worried about how much time we have."

They were like, "Okay. Well maybe we'll get started now." So it was like, "Good." I wasn't doing any of the back-out stuff. I was doing all the stuff in the Shuttle cockpit. Me and Billy Mac were getting the Shuttle part of things ready.

So we're all working through that. I'm calling down. Now I'm hearing the ground calling them. I'm hearing Brian's voice starting to get stressed for the first time I've ever heard it. They're really down in the timeline. I'm looking at what they have left to do in procedure and how much time we have. I even said to Brian, "Maybe we should wave off a rev," and he was like, "No. We're going to get it done."

So it was really tense. I mean really really tense trying to get everything done. I could hear them. I went down there a couple times. Koichi was doing stuff, and Brian was like, “Next. Next. Next. Next.”

That was pretty funny. Then we all got up into the cockpit with like five or ten minutes to spare. The ground called us up to do something. Billy Mac said—I went to reach for the switch that they called—he said, “Stop!” We all froze and looked at each other and said, “What? They called us and told us to throw the switch.” He said, “If you throw that switch it’ll invalidate the leak check.” I went, “Okay.”

So he grabbed the mike, and he called the ground. I’m looking at Brian and going, “What do we do? They told us to do it.” There was this long silence from the ground. They’re like, “Yep Bill you’re right; thanks, good catch.” So we weren’t the only ones who were feeling a little stressed. I think everybody was pushing it.

Now that I think about it, this was a pretty amazing mission. It was also the mission that—I don’t know if I should tell this story. It was so funny. It was so funny. It was the funniest thing that I have ever seen in space. This is my best dine out story.

We had a problem with the toilet. It would not sweep. It’s a mesh bag. It’s got a metallic bottom, and it’s got a sweeper bar so you can sweep all the poop over into the corner and make it open. Otherwise it just floats in there. It gets a little crowded. You start to worry about it floating out when you open the toilet lid.

You have to sweep it about seven or eight days into the flight so Jeff and I got out the tool to sweep it. We’re cranking on the crank. It gets about halfway. Rr. Rr. [Imitates cranking] I’m like I’m going to overtorque this. Rr. [Imitates cranking] We called down to the ground. They were like, “Hm okay.” They said, “Get out the opera gloves.” The opera gloves

are something that you carry on every mission. It's what it sounds like. They're rubber gloves that go all the way up the arm. They are exactly for this purpose, because you got to get your hand down in there and scoop poop off to the side. Break the clots or whatever it is that's causing it to not move.

Well, oh my gosh, this just broke Jeff's heart in like five different ways. First of all, we never found the opera gloves. They found them when they destowed, but he and I tore the place apart looking for the opera gloves. Finally we had to face the fact. We couldn't find the opera gloves. What are we going to use in its place?

So we had a big conversation, and the ground is suggesting maybe using a Ziploc bag, big Ziploc bag. We're like well. So finally Jeff had the idea that we would use an elbow bag. In the toilet, there is a place where you tuck your toilet paper, because it doesn't go down into [the toilet]. The bag has a little crook in it. It's in the wall. So you stick it down in. It's called the elbow bag because it's got a little bit of an elbow. It's got a little flat bottom on it.

So he's like, "Yes, let's use the elbow bag." Great. So we had this plan. We had everything out. I start getting out extra Ziplocs, because we realize it's going to be a toxic mess. Then Jeff starts gibbering. I've never heard Jeff gibber before. "Jeff, why are you gibbering?"

He's like, "Can't -- we're not -- you." "What? Spit out, Jeff, what's the problem here?" Finally after like partial sentences, I suddenly realized that Jeff Wisoff is too much of a gentleman to let a lady stick her hand down the toilet. It's my job; I'm the pilot, it's my job. So I'm laughing. I'm going, "Okay Jeff. You can stick your hand down the toilet," whatever.

We dress-rehearse everything: how he's going to pull his arm out; I'm going to be there with the Ziploc bag; I'm going to get it; then I'm going to roll it down and tie it up, just to keep it from being a mess. We're ready to do this.

When you open the toilet lid it's got a little bit of suction just to keep everything in and keep it from floating out. That's a little ssk [imitates suction] on the bottom of the thing. He gets down in there. He's scooping things around and moving it out of the way. He's like, "Yes, this is working. It's going to be fine."

Suddenly he stops. He looks at me. I'm like, "What? What? What?" He goes, "The bottom of the bag is stuck flat on the bottom." So those little suckers had gone ssk. [Imitates sound] He was pulling and pulling and pulling. He could not get the bag back out.

So he's like this, looking at me. [Demonstrates] Koichi was doing something else in the middeck. Everybody else was over in the ISS doing something. I'm thinking to myself I really don't know what to do. I'm looking at him. We've definitely got some tension. Koichi is like, "What's going on?" I'm like, "Well he's stuck. The bag is stuck to the bottom." So Koichi goes, "Should I get the camera?" Both Jeff and I looked right at him and at the same exact second said, "No!" Although now I wish I hadn't. But at the time we were both really clear on the fact—no cameras.

So I'm like, "Okay we're going to have to call Brian." I think Jeff said, "Call Brian, he'll know what to do." So I get the microphone, and I'm just calling through intercom over to the ISS. I'm about ready to key the mike and I'm looking at Jeff, and he's looking at me. That was when it hit. We both started laughing. We were hysterical. I keyed the mike. I said, "Brian, you got to get over here, we really need you." On the other end he hears this. He's looking at everybody, and he's like, "What's wrong? Is she crying?" So they were like, "Something's wrong." Brian is flying through the Station to come back to the Shuttle. What does he find? He finds me and Koichi rolling, rolling in little balls around the middeck. We're laughing so hard the tears are coming down our eyes. Even Jeff with his arm stuck in is hysterical; we're all

hysterical. So we finally get the point across to him that we're laughing, we're not crying, and that we need his help.

He and I got on either side of Jeff, and we did like a one two three and grabbed the upper edge of the bag, and pulled with all our might, and got it out. We got the thing. Then got this and then we finally did the thing with the torque and got it swept and all the other stuff.

Then I had to get on the radio. I grabbed the microphone. I was looking at Jeff and looking at Brian and thinking I have no idea what to say to the ground. So all I said was, "It's fixed, and Jeff is more of a hero than I think anybody will ever know." That was it.

So we were telling this story, not all of it, but a piece of it during our landing party on the ground. Jeff Wisoff got up and said, "Yep life of the astronaut. One day your hand is in an EVA glove. The other day it's down the toilet. It's just how it is." It was a great story. It was the funniest [event]. It was the most I ever laughed, ever in my whole life. I was really helpless. I was so hysterical. It was pretty funny.

I was very happy to land on that flight. We diverted to Edwards, and we waved off a couple days. We all had time. We were very rested when we came in to land. Edwards was where I had been a pilot. It was the best flying there of my whole life. So when we rolled out on the runway there, and I looked at this place that meant so much to me, and I realized I'd made it all the way through the flight without screwing anything up—too badly anyway—you couldn't touch me for like a year.

You couldn't make me mad. You couldn't upset me. You couldn't make me sad. I was as happy as I had ever been. It was a really great experience.

One of the things that the first flight teaches you is that you can do it. What you also learn when you get into your second training flow is all the things that could have gone wrong.

When I got ready to fly STS-112 with Jeff Ashby, that was a different crew. Jeff had flown twice in space as a pilot. I'd flown once. We also had Dave [David A.] Wolf, but Dave's last flight had been to Mir. He hadn't flown as a Shuttle crew member for like ten years. We had three rookies: Sandy [Sandra H.] Magnus, Piers [J.] Sellers and Fyodor Yurchikhin.

Sandy and Piers have never been close. They weren't close when they were classmates. Fyodor, really I think he felt like he had a lot to prove as a first time flier. So it wasn't the same experience at all. Jeff used to say Mom and Dad and mean Uncle Dave take the kids to space. That's what he used to joke, because Dave was like "suck it up" all the time. Jeff and I really had such a close relationship. I think partly that always happens with pilot and commander. You just go everywhere together. Your whole training flow is together, but we really had such a compatible sense of how things ought to be done.

I think that was just a great experience for me, because he just transferred huge amounts of knowledge to me. I think that was very important. It was a really stressful flight for me because I was IV [Intervehicular Activity person]. We suited the crew up, and then I talked the spacewalks. That was actually a fantastic experience for me. I loved it. I loved being right there with them all the time. With the checklist and talking to them and feeling like I was as close as I could be to right out there, but it was so much work.

It was so much work. I didn't send any e-mail. I felt like I never got any rest for about the first five or six days on the flight. It was really hard. It was much harder than [STS]-92 in that regard. I had so much more responsibility. I really felt it acutely because of the rookies. I vaulted from the protected baby—lots of people available to show me how to do things, and to help keep me from failing, to feeling like failure was around the corner every minute and that it rested on me to make sure that it didn't happen in the things that we were doing.



Sandy and I are really close. I was just talking to her this morning. We're really good friends too. So that was another great friendship. Dave and I actually got really close on that flight as well. So there were friendships, and it was fun. We had our crew jokes, and we had a great time. It was probably very much like an average crew, where there's a lot of great feelings, and a great camaraderie, and that's great, and that's about it.

That was fine, actually. I didn't feel the loss, because I felt so crushingly overwhelmed with all this work to do. So it was different. That was really a grind. It was just tough. I can't honestly say I had a great time on orbit the way I had on STS-92. There were moments. There were flashes. One of the things that I did enjoy the most—other than being IV—was that I was also in charge of photo/TV. I had so much fun with that. I really enjoyed it.

One of my favorite pictures from that flight was when I was setting up the crew for their crew photo, and Dave Wolf grabbed the camera and took a picture of me. I had a video camera going, and I had four cameras set up for different lenses and different shots, and I was holding a camera. He had just taken another one away from me. Over in the photo/TV area they had that picture for a long time. I called it my paparazzi shot, because I'm just surrounded by cameras. In fact, most of the pictures that you see of me from that flight I had a camera with me. I was either carrying it, it was around my [neck], the earphones, the holster, it was somewhere on me. I just absolutely adore photography, and so for me that was a great part of the mission. But it was tough; it was really hard work.

After that experience I felt very ready to command and eager to command. Rommel asked me—Kent [V.] Rominger, the chief of the Astronaut Office—he asked me if I would take over as the lead Cape Crusader to train the new Cape Crusaders. Now how am I going to say no to that? That sounds like a blast. So I finished up my postflight in January of 2003 with the

STS-112 crew. On February 1st I was in Florida on the runway ready to unstrap the STS-107 crew to get my refresher for unstrapping the crew. Of course they did not come home so that was really hard. It changed a lot of things.

I talked about some of that actually in the other oral history. What happened then was that the guys in Florida were tasked to do the reconstruction. So they called the chief of the Astronaut Office and said, "Well during *Challenger* [STS-51L] we had a separate room for all the crew module stuff. We're going to do that again. We need an astronaut to come help us with that." So who else is going to do it but the lead Cape Crusader? You're the liaison to Kennedy. That's how I ended up dropping into that. It was completely by accident. It's not like somebody handpicked me. I didn't even have a safety or mishap investigation background. I would not have been the person picked to do that, but it just so happened to be my job assignment at the time.

Obviously it evolved and had a pretty big impact. Afterwards, I worked some other job assignments. I was working Shuttle upgrades, the cockpit avionics upgrade. For a while I was working on the Orbital Space Plane source board as the chair of the ops committee. I was the lead for Astronaut Appearances, kind of a crap job in the office. But it needed to be done, and I actually liked that. I felt like making sure that that was handled correctly, that astronauts were going to the right events, doing the right things. I got the opportunity to work a lot with Headquarters because they're very interested in that. So I developed some relationships at Headquarters then.

When I was working on the investigation, we had people on the team from JSC Engineering, Safety, MOD [Mission Operations Directorate], some of the flight docs, Life Sciences. We consulted hugely with Biodynamic Research Corporation in San Antonio [Texas],

a world-leading bioengineering investigation company. A friend who'd worked on the Columbia accident investigation, who was both a doctor and a PhD engineer out at Stanford [University, Stanford, California], Dr. Greg [Gregory T.A.] Kovacs. Got a lot of help from the materials science people in Florida.

So I had an experience that not a lot of astronauts get, which is that I interfaced in a very deep way, and in fact supervised the activities of a lot of people from different parts of the Center. It really exposed me to a lot of project management things, but also the different cultures, the different styles, the different capabilities, the different approaches of all the different organizations at JSC and at NASA.

That was a great experience for me because it really opened my eyes up to the world beyond the Astronaut Office. The world was not just about this small group of people flying in space. It is true that I saw them when I worked in Florida. People do work on technical teams with folks, but they come and go. This nearly three years, I think, that we ended up working on the report—and the work that we were doing was very hard and took a huge amount of time—really gave me a huge sense of confidence going into the mission as a commander. I really felt like I had both the experience in space but also the experience on the ground, because being a commander is not just about landing the Space Shuttle. A lot of people think it is. But it really isn't. The flying is an important piece of it, and you have to train. But the commander is responsible to work with the flight director, the lead flight director. You participate in the IPT, (the integrated product team) that brings together everything. There's stowing so the stowage issues are addressed there. Any issues with installation of payloads or other things.

It's a much broader community. I had relationships with those broader communities and had a pretty big perspective on that. So I felt very confident going into that. I knew that again

it's the most fantastic leadership position in the world in that you get to start your own culture. That's good and bad. If you screw it up that's bad, but really you don't have to worry. Most leaders, most positions that you come into, you're not starting with a new team. You're taking over as the head of the team. It's very rare that you're in the position where you can start something. As a commander you get the opportunity to do that.

I think one of the things that Brian taught me was that I needed to let the crew be themselves and that I shouldn't dictate the style to them. I needed to know who they were, without me telling them what to do or what my standards were. That didn't go as well initially. We went off to National Outdoor Leadership School [NOLS]. We went off to Alaska. I think certainly a couple of the crew members were uncomfortable, because they really wanted me to like be in charge and tell everybody what to do and to set my expectations. It's an interesting leadership training because you rotate the leadership on a daily basis. Two people colead every day. When people are making leadership decisions they really expose their thinking to everyone. So that was a great experience. I think it was hard for some of the folks on the crew because they just wanted to know who the boss was, but I wanted to know who they were without me and to let them be themselves.

What I found about the crew was that they were comedians, not everyone. But that was a huge part of the culture of that crew, comedy. They had all the movie lines going. When you're looking at guys like Dan [Daniel M.] Tani and Doug [Douglas H. "Wheels"] Wheelock, those guys can just do stand-up comedy forever. They're really funny funny people. That was clearly a critical part of the crew dynamic. It was also a special crew in that like the 92 crew they were all very committed, very deeply committed, to bonding each and every one to each other. Yet we didn't have so much time that we became out of touch with everyone else. In a lot of ways I

really look back at that as kind of the perfect crew. I don't mind saying so myself. It really wasn't about me, it was about them. We had just enough time to bond together.

One of the places that I did put my foot down was the way we interacted with the people that we worked with in mission control and the training teams, that we would never be a high-maintenance or a high-overhead crew. That we would be respectful of the roles that everybody else played and didn't carry any special requests or demands too far; we weren't difficult to work with and cooperative. I think that paid off. I have had people tell me that we came across that way. So I think that that was very successful.

One of the toughest parts about being a commander too is knowing that when you're in space you can't possibly be there for all the critical moments. You're just not. You can't be in every place at every time. So building this culture is incredibly important, because it's like when you're raising children and you know that they're going to have to make their own decisions at some point. What is their point of reference? They go back to what they were taught about what's right and what's wrong. So you have to work a lot up front at setting expectations for where the boundaries are. "We're not doing it that way. Do anything you want but when you hit that wall I'm going to let you know." So that's what happens in training. You set that culture and you set the expectations.

"We're going to always follow this rule; we're never going to deviate from it, that's just not a rule that's open to any flexibility." Those kinds of things. Yet try to keep it as open as possible, especially for the humor. The only bad part about that for me was that they leaned on me to be the person who said, "Okay we've had enough fun, we need to get to work." I'm very tolerant of that. We could kid around the entire time through a tough scenario in a simulator, and as long as we were getting everything done it didn't bother me. But there always comes a time

when you have to stop kidding around. You got to talk about something, for example. It's not like you have to stop, or anything bad has happened. You're like okay we need to take a few minutes to talk about this, or we got to go somewhere else now. Those kinds of things.

That's always tough, because you're like the, "Oh Mom." You can enjoy it but you also know that you're the safe boundary for everybody, because they know that they'll stop you when it needs to be done. Then they don't need to worry about it, they just have fun. You can tell them when it's time to go home.

That was the only hard part about that. Just a fantastic crew; I really felt that we were all very well prepared to go in space. We did have one hiccup. We had a problem with a crew member who had a medical issue that had not yet been resolved. We knew that when we got assigned. I was told that, but it wasn't being resolved. The doctors wanted more data. They wanted to wait a little bit longer. So after really bonding—through NOLS and training—Mike [Michael J.] Foreman slipped off our crew to a later crew. That put us into a very difficult position. At the time it was like November, and we were scheduled to fly in August.

So I really had to have somebody who had prior experience. At the time we didn't realize how robotics-intensive the flight was going to be. That was not a big focus of our attention initially. Then it became clear that it was very intensive. Looking at the crews that had flown recently and their robotic experience it was really obvious to me that Stephanie [D.] Wilson was the person who needed to come on the crew, and so she did. Even though she came late, she's a sweet gentle spirit. She's the cutest thing in the world when you get her laughing and she can't stop, which Dan and Doug did all the time. She blended very nicely with the crew and brought that key robotics skill which turned out to be so important on the flight.

We had five spacewalks planned. This was a monster mission. It was a monster. Delivering Node 2 and moving P6 and holy cow. It was great. We were all so excited when we got up there. I enjoyed the experience so much more than STS-112, because as the commander your job is really not to have too much on your schedule. It's to be with everyone and to make sure that you're keeping track of the timeline. You pitch a hand in where things are falling behind. I knew how great the flight was going to be from liftoff. On my first mission aaah all this noise and vibration and you're reacting, that's all you can do is just react to all this incredible stimulation. On the second flight I fought really hard to keep up with the vehicle. I knew where we were; I knew what was coming next but just barely.

On my third flight all the noises weren't scary. The feelings, they were like, "Okay. This is going to happen. We're about to have SRB [Solid Rocket Booster] sep [separation] and everybody's going to go, 'Ooh.' All the rookies will go, 'Ooh,' when the SRBs and the pyros light, and it's a little pyrotechnic show in the cockpit." They went, "Ooh." I went, "Yes, they were surprised."

The moment we hit MECO [Main Engine Cutoff] I just said to them, "Welcome to space." You don't need to say more, but you need to say something to them at that time to acknowledge what a huge thing it is. The temptation is to jump right into the checklist, but you have to take the moment to acknowledge it. I knew that that was going to be great. It was great from the very beginning. Great crew; had no issues adapting to space. Just the normal stuff that you have to work through for the first few days: not feeling good and figuring out how to brush your teeth.

I was extremely happy. Everything was going really well. One of the funny stories that I do have to tell—of course Peggy and I started to get excited. We were together on [STS]-112

because she was on the Station. We didn't spend a lot of time together because usually Station crew members have their own stuff going on, but we'd spent enough time. She and Sandy are real close. We have a great picture of the three of us from 112. So I knew Peggy well enough. When you fly in space with somebody, even if you don't spend a lot of time with them, there are a lot of things you get to know about them.

When the missions changed and slipped and the dates slipped, and it was clear that Peggy and I were going to be on orbit together, we were like, "Hey, that's pretty cool." We had the opportunity to talk quite a bit before she went in space, and we shared a lot about each other's crews. Talked about some things. Talked about some of these culture issues.

For me I was just really looking forward to going in space, but the funniest thing happened about a week before launch. Of course I mentioned that I was photo/TV for 112. One of the videos that I really liked—and we used it in the crew movie—was Jeff Ashby shaking hands with Valery [G.] Korzun through the ISS hatch. I filmed it, and I was very happy with it. It really tells the story of the greetings so I'd filmed it on video.

Somebody asked me in a preflight media so how's this going to be. Said, "I'm really looking forward to that first moment of shaking hands through the hatch with Peggy." Well they picked up on it, and it was in the paper. George [D.] Zamka, my pilot, he was photo/TV. So it dawned on him he's going to have to get that picture. He came to me and he said, "We've got to get that picture; you've been talking about it. What happens if we don't get the picture?"

I'm like, "Oh. Okay. We'll do this. We'll call the photo/TV guys up and we'll ask them for help in setting up this shot." The photo/TV guys have a hall of fame and a hall of shame. The hall of shame is much bigger. That is a presentation that they do where they talk about all the things you can mess up on orbit. They have the funny shots where the light is half across



someone's face and it's just horrible. Or the up-the-nose shot or up-the-floating-shorts shot, where there's just a little too much leg showing.

That's their hall of shame, but they have a hall of fame too. We called them up and said, "Hey we really need to get this picture. We'd like some advice. Can you show us some previous pictures like this from other missions so that we can get a sense for framing and positioning?"

They showed us a shot from like, I think it was STS-[71]. It was the first Mir mission. Hoot [Robert L.] Gibson [was the commander]. I'm like, "What, you're joking me. We haven't done it right since then? The last time was on Mir?" They were like, "Well it's really dark in there."

I was like, "Yes, I know. But I got that video." They said, "Yes, but the video camera is much better with low light than the camera is." So it's like, "Oh, you're kidding me." We spent a lot of time talking about this. It was of course a flail on orbit. We had a big light. We had to get it there. Didn't have a cord that was long enough. Getting cords ready. Everybody's freaking out as we're trying to get *the* shot.

Well, [George] got *the* shot. I think of him every time I look at it, but I didn't know how much it meant to him until after we landed. We were doing crew PRs [Public Relations]. It's always a great moment because you find out what everybody else thinks about the mission. Somebody asked him was there a moment, was it doing robotics or something you were really proud of. He's like, "I'm really proud of that picture." He should be, because it was hard to get. It really is a wonderful photo. So that was a little funny thing about us being together. We didn't spend a lot of time thinking about it. Obviously other people did. So that was our one bow to that, to make sure that we got that shot.

Peggy and Dan and I had trained to deploy the P6 solar array, which we had moved over between EVAs 2 and 3. So at the same time there was a separate drama going on. Think it was on EVA 2. They'd noticed some vibrations on the Station that they were not really sure where they were coming from. They got to the point where they started to worry about the Solar Array Rotary Joint [SARJ], one of the two. They thought that there might be potentially some vibration coming from it.

So Dan Tani went out there and pulled back all the thermal blankets and sure enough, there was some kind of contamination over the little teeth that grind around each other. It was not a pretty picture. We were all like, "Yee." So he took a little tape and dabbed it on the contamination. Obviously a very precious thing to bring back, to try to figure out what was going on.

In the end, that turned out to be a very big deal for the Station, resulting in about a year and a half's worth of maintenance efforts, multiple EVAs to fix it. They had to add a different kind of lubricant and to do some other things. At the time it was just the first clue that, "Hey there really is something wrong with the SARJ." Huge deal. So on the ground they're going, "Well let's jettison EVA 5 and let's just plan for them to go out there and really pull all the blankets back, unbolt some things and get a really good look at this thing."

Oh my gosh. First big hiccup. This is all going on on the ground. They're talking about us getting ready to look at the SARJ and do this stuff. Scott [J. Parazynski] and Wheels were on their way back in from the EVA. Dan and Peggy and I—I wish we had video of it, I didn't think it was going to be very interesting—were unfurling the P6 solar array. We had a lot of problems, because the angle was the highest beta angle we'd ever flown to the Space Station. Typically the

really high beta angles means that the Sun is coming in at a very high angle. That can be a problem for the solar arrays collecting power.

They just opened up the tolerance on that a little bit and let us fly at a higher beta angle. It also meant that one side of the Station was always very warm and the other was very cold. So that was something the spacewalkers had noticed, when they were in the Sun it was hot and when they were in the shade it was really really cold.

All this was going on in the background. The camera angles were tough with that high angle. I was getting a lot of glare. In fact I had to call an abort at one time, because I was watching the big picture. I was in charge of the cameras and everything looking right. Peggy was on the PCS [Portable Computer System] laptop with the commands. She was looking very carefully for when the fully deployed command was there. Then she would send the stop. Dan was counting bays. It's a backup way of knowing how far it's gone, because they didn't have a special marker. You actually had to literally count them as they came out to make sure that every single one was really out to know where you were. So he was counting bays. Peggy was there. I was looking at the big picture.

I called an abort because I was like, "Look, it's too much glare. I can't see anything." So we let the Sun angle change a little bit. Then we picked back up, and we got the first half of the solar array out. Then we went to the second half. We got it about two thirds of the way out. There was this big glare again. I was just at the point of going I can't stand this and then it came out of the glare. Then I saw this rip.

I knew right away that something was wrong. It looked really bad. So I called, "Abort. Abort, abort, abort, abort, abort." Peggy's going like this on the PCS. [Hitting keyboard] She's not even looking. She's hearing my voice as I'm saying, "Abort, abort, abort, abort." She's

going like this as fast as she can. So then we're looking at it. It was a lot of glare. It was like we can't really tell.

You couldn't zoom in too much. So we zoomed over to the Shuttle side and got into the commander's seat where you could look out at it, and got the binoculars, and oh my gosh, oh my gosh. At that moment the whole crew was like we can't even imagine what we're going to do about this. There was no way to get out there. The whole thing is electrified. Spacewalkers are told not even to get within X number of feet of it because you can't touch it because it's 120 volts DC. There's no way to get out there. There's nothing to hold on to.

So we had to shut it out actually, because we're being uplinked procedures for us to get ready to go do the big SARJ contingency EVA. We're like, "Okay. I guess we'll go off and think about that." Then they moved the solar arrays more to point at the Sun. So we couldn't really see the rip very well after that, because it was on the outboard array, not on the inboard. The inboard array blocked it.

We went into overdrive getting ready for the SARJ. We set up all the tools and worked all that stuff and got a whole day's work done when they called us and said, "Well, maybe we're not going to do the SARJ contingency EVA." Everybody's like, "Aah, we'd spent all this time on it." They said, "We really think something's got to be done about the solar array."

So we had a long talk with—gosh we talked to everybody. They were so good to us on the ground. We talked to the chief of the Astronaut Office. We talked to our flight director Derek Hassmann several times, and Rick LaBrode was our Shuttle side flight director. That was, I think, a great moment when all those relationships on the ground really played out perfectly the way they needed to. It paid off that we'd worked so hard on them.

It was also critical because usually on the Station, the Station crew helps you do things like get ready for spacewalk. They know where everything's stored, so it's really great to have somebody there who's helping you to suit the crew but then they go on their merry way. They've got their own assignments. They've got lots and lots of work to do on the Space Station, as we well know. They've got their own experiments and things going on.

It was a moment when we realized that was just not going to happen. We had to all come together as a single crew. I think the fact that Peggy and I knew each other so well from having flown together. I have to say Peggy and I have real different styles. I'm much more touchy-feely than she is. But at the same time she is really one of the most kindhearted people that I know. So there's never any issue of generosity. It's not a competition. She's not stern or anything. She just sets very high performance standards. I like that about her a lot.

The ground just basically tossed both of our flight plans out. Everybody played a part. The Russian crew members were helping set up. They had to go find Kapton tape. Used up every piece of Kapton tape on the Shuttle and about half of what the Station had because we had to wrap every tool and everything that was metal on Scott's suit.

When they first called up the plan and said, "Yes, we're going to use the Shuttle boom and attach it to the Station arm," I'm like, "Wait a second. That's going to kill the cameras," because the sensors can't go unpowered more than an hour by the flight rule. So I'm thinking, "Oh my gosh what are we going to do for the inspection?" Because we have to do an inspection after we undock. So I was thinking, "Okay. All right. We're throwing the whole book out on this one."

Then they're telling me, "Yes. We think he's going to be about 45 minutes away from the airlock." I knew from being an IV 30 minutes is the inflexible rule. You start to realize all these things are going out the door.

I certainly understood that undocking was going to cause the solar arrays to probably rip even further if we didn't do something, because the Shuttle thrusters as they fire would cause that to happen. There was also a snarl, and we were very afraid that one of the vertical cables that is part of the structural integrity that keeps it stiff was snagged. The concern was this fully electrified cable—if it snapped, if there was a problem. If you just let it free-unwind without the tension of the solar array anchored at the top, they were pretty sure it was going to damage the mechanism permanently. But you also had this electrified cable that could just float away and God knows what was going to happen to it then. So there were so many things that were bad about this.

Worrying about whether they were going to have enough power for the Japanese lab and the European lab sitting in Florida ready to launch. It was obviously the right decision. We didn't have any issues with it, but there was so much at stake. For me, my biggest concern was for Scott's safety; without any doubt, it was really about worrying about Scott. Scott is such a high performer and so driven. One of the things that worried me was whether he would go so far as to do something that would hurt himself in his effort to achieve the mission. I wronged him in that. I found that out a year later when he climbed Mount Everest and turned back within a few hundred feet of the top because he injured his back.

I realized then that Scott had it in him to turn around when it was stupid. Because I knew he certainly wanted to climb Mount Everest as much as he wanted to fix the solar array, which

he then proved by going back and doing it again the next year, and successfully achieving the top. So I wronged him in that. It's when you feel the burden of responsibility.

I also knew from working in mission control how little you can actually really see there. You think when you're on the Shuttle, "Oh they can see all the same video we can, they hear," they can't. Your situational awareness is not the same. There's a time lag. There's capability of the cameras and the flexibility to move them around. There's com dropouts and all those things. So for me I think the realization was that if anybody was going to call it off and say we've gone too far, and we were going to hurt somebody, and we weren't going to be successful, and we needed to stop what we were doing before something bad happened, I really felt it was going to be me, that that was really the ultimate, "Oh Mom, oh crap."

At the same time knowing how critical everything was, and really wanting to trust my crew, and trusting them. One of the best moments on the whole flight for me though was we had one big massive net meeting together with the EVA and robotics folks. We all crammed ourselves into the airlock looking at the screen.

ROSS-NAZZAL: The whole crew?

MELROY: The whole crew. Yes. The airlock is pretty big. There was actually room for everybody. The hardest thing is that there's just one screen. It was nice to have that face to face. They were talking us through the whole scenario: what they were going to do with the arm, what the concerns were with the boom and the spacewalk. I had my crew notebook open. As they're talking through the scenarios I'm checking, "Okay. We got to do this. We're going to have to do a dress rehearsal with that. We need to ask them for this file." I had this list of things that

needed to get done as we're going through this. The meeting ended and then the crew started to talk.

I floated back up into the upper corner of the airlock, and I watched. There they were. They were talking about everything on my list. Everything I could think of, and a few things I hadn't thought of. They're all firing at each [other], like, "We're going to go do this. We need to go do that. I'll send an e-mail down and make sure we get this file." It was all happening. It was that perfect moment when you realize all that stuff you invested on the ground to set the culture and the expectations. They didn't need me.

That's actually what Brian taught me. That's the ultimate moment as a commander, is when all the right things happen without you being there because it means you set the culture right. All the work that you put in up front is happening. It's all happening perfectly. I don't want to take credit for that because it was the crew.

But at the same time the fact that the up-front investment had paid off made me feel fantastic, just fantastic. It was really one of the best moments. So I just watched them do their thing, and was incredibly proud and amazed and thrilled.

The only thing I really still was worried about was Scott's safety, so I had a long talk with the doctors. They reassured me. They said, "Look it's not a lethal dose. 120 volts DC is nasty, but it's not lethal." I'm like, "Thank you very much." I'm thinking about my poor spacewalker out there at the end of an arm, which if it gets electrocuted and shuts down, how are we bringing him back? Doug is shinnying up the boom to go rescue Scott? Certainly I'm thinking about all this stuff. Going okay, "Well we'll deal with that if it happens. Let's hope it doesn't."



I sat down with Scott privately too, and I told him that I was nervous enough about the spacewalk that I wanted to IV for the actual activities. I know that was hard for Paolo [A. Nespoli]. He was our IV. It was hard for me to take that away from him. Although actually at the time, when we actually were doing it, he appreciated having a little bit of a break and was very supportive and helpful. But I think on some level it was a little bit of a relief too. I just felt like if Scott's life potentially was in my hands that I needed to be right there with him. It needed to be my voice that he was hearing on the radio. I spent a lot of time up front setting up my little nest. Had video cameras. All that photo/TV experience. Video running. A little row of tapes all ready to go and two different lenses out there. One really tight focus, one for more of a wide shot. Binoculars. Then George was running the helmet views.

Watching Scott go further and further away. Just little tiny thing out the window getting further and further away from us. I had the binoculars out. They turned the solar array back round. I said to Scott, "Dr. Parazynski." Something like "I hope you're ready for your surgery." He said, "The patient is prepped. Let's go."

He got out there. We saw the rips and the snarls. The fact that the wire was very frayed. So the plan was he was to cut it. But because of that problem with the rewind, Wheels had to be at the base of the solar array. He had a clamp, a pair of pliers that he held on to the bottom of it. It had a high-tension reel at the bottom. He was holding it. So when Scott cut it he then would release it just a couple inches at a time. It would very gently and slowly reel back in. So that solved that part of it.

That's in fact what they did. That worked out successfully. That was a big relief when that got in. A perfect example of what I mean by everybody in the crew had to get involved.

Peggy and George had turned Node 2 into a machine shop. They had constructed the cuff links that Scott used to stitch it up with wire.

They had to cut out of sheet aluminum the flipper bar that would go through the hole and lock in place to very precise numbers. It had to be a certain distance. Also the length of the cuff link had to be exactly right as well because if it was too tight it would cause the solar array to rip. If it was too loose the solar array would not have structural integrity. So that's what you're trying to do, is add that structural integrity that that one wire was supposed to have in place.

Then they had to wrap the metal with nonconducting tape and then hook it all together and tie it in really tight knots. So Peggy and George did that. They spent most of a day constructing the cuff links to the specifications that the ground had done for them. So obviously there was a lot of sidebar conversations. I think it might have been Don [Donald R.] Pettit, who actually constructed them on the ground for us, so that they could then confer with him about the building of them.

Scott got out there, and he went to shove the first cuff link in. So we're all [tense] [demonstrates] watching his hands as it shoves through the hole. What we didn't fully appreciate was going to happen was that when he pushed on the solar array—now he wasn't allowed to touch it. So he had one hand holding a tool we called the hockey stick. It was a piece of plastic shaped like an L that was wrapped in Kapton tape. That was his stay away from me, and don't touch me. He also had a pair of like pliers to pull things towards him. Like he was able to pull the thing before he clipped it. He had a clipper.

Then of course he had the cuff links. It was way too much for one person. We really needed a second pair of hands out there so it took him a while because he had to untether, tether

everything, every time he needed to change a tool. So he couldn't actually quite reach it. But the arm was at maximum extension.

Thank God we had Stephanie with us, Madam Robotics Expert. She and Dan, they were real-time moving that arm to try to get that last little inch out of it. In the end [Scott] had to grab [the solar array] and pull it towards him, because he couldn't reach it. So he shoves the cuff link in. What happens is that causes a billow to go all the way down to the bottom.

So Wheels, who was sitting at the base of the solar array shivering, because he was so cold, it was really cold down there. He could have been so distracted and like, "What am I doing here? I finished my thing, so now I'm just watching him." He sees this billow start going back up toward Scott.

He sees that it's poofing out. He's like, "Scott, look out!" So Scott looks down, sees this big thing coming at him. He holds the hockey stick out as far as he can. He leans all the way back. Of course I'm looking straight on so I didn't see this until he called it. Then I'm looking through the helmet camera. I'm like, "Oh my gosh!"

So this thing comes up. Goes like this [demonstrates] around the hockey stick. Hits the top, then it slowly slowly gradually settles down again. Then it's like, "Oh my gosh he's going to do this nine more times," and he did. By that time, it had taken us some time to get him out there, to figure out what's going on, and really understand the rip and all that other stuff. The ground is starting to get worried about the duration of the EVA, because we still have to unfurl the solar array.

They're like, "Okay, it's time to get going." So Scott had to pour it on. With all this, he and Wheels had to figure out real-time how to communicate because every time you put a cuff

link in that happened. Wheels had to tell him when things were getting crazy and to settle down and lean back and look out. They made it through.

Then we pulled him back away from it. Then, one bay at a time, opened it up. I was so relieved when it went all the way out. Everybody was congratulating, “Oh my gosh, wow!” Scott is saying, “Great work on the arm!” Dan and Stephanie are going, “Great work of the spacewalkers. It’s awesome.”

Mom had to say, “Guys, we will celebrate when Scott is back inside. So let’s keep going. We got to get him back to safety,” because he was still 45 minutes away, and they had a big robotic maneuver to do. Actually a lot of people have commented to me after that about that statement. But that was my job on the crew, to be party pooper, so I was the party pooper. I was so worried about Scott. Somebody asked me recently so when did you feel good and know that it was over.

I said when the airlock door opened, and I could throw my arms around both of them. Because spacewalking is very dangerous, and it ain’t over until it’s over, and even the repress and depress of the airlock has its dangers. For me the actual declaring success on the solar array didn’t happen until I could be with them inside. It was great.

I remember just hanging out and talking with Peggy. It was a great experience to work with her on this. We each had moments where both of us were too busy to make a joint decision for both crews.

It was simple stuff like, “What order are we going to do this in. Should we call everybody together now for the farewell ceremony? What night do we want to have dinner together?” If one or the other of us was just too busy to make the decision or just didn’t even

want to think about it, we'd say, "I don't know, whatever, you tell us. You tell me when you want to do it. I'll make sure we're there."

That was the kind of fluidity of the leadership between us. You can imagine that saying goodbye and leaving Dan up there, after all this, and after the crews had come together like this. Oh my gosh. It's hysterical. We were all crying the whole time. Even George was laughing about it later. He was like, "Yes, it was a really moist event." He's a Marine pilot. It was too funny, but it was also really really special too. It was really amazing. You can't top that.

After we'd undocked and we were doing inspection, I was sitting up on the flight deck of the Shuttle. I was floating looking out the window with the Earth and listening to the sound of my crew doing their job. Inspection is pretty busy, and there's a lot of moving the arm and getting the cameras ready. By the way, the cameras worked just fine. Yay! That was a great outcome, that they didn't in fact fail.

Thinking to myself, "Is this okay if I don't do this again? Thinking yes. I've got all these memories. They're pretty much burned in there now. I think it's okay if I don't do this again." So couldn't top that. Could not top that flight. Came back in on a beautiful day to KSC. It was fun. We knew it was a big deal.

We also knew what kind of chaos was going on on the ground, because we'd been there. Remember there was a flight where the Station kept going out of control because they kept having a loss of attitude control. So [we knew] they're calling every single person in. No one's sleeping at JSC on the ground. We knew that had been going on. They'd planned no, not one, two contingency spacewalks. One of which, the SARJ, we never ended up doing. Knowing that everybody on the ground had done that.

When you're standing on the runway and everyone is there—people who don't [normally] come out, Shuttle Program [Manager], ISS Program Manager, you're like, "Wow!" It was a really good feeling. What's really fun now is several people on the crew have flown again since then. Whenever somebody from our crew flies, [they] always take a picture of the cuff links and the solar array and send it to everybody down on the ground and say "Looking good." So at the time it was considered temporary. But I just don't think there's anything that they can do that's better.

It's providing energy. It's a fantastic story. Can't beat it.

ROSS-NAZZAL: It's great. It's like your own little mini Apollo 13.

MELROY: Apollo 13. It was exactly like that. It was the same thing. "We've got to do this spacewalk. We got to stitch things up. What are we going to do?" You dump the box on the table.

One of my favorite things is there was a piece of white paper from one of those flip charts, the original concept of the cuff link. They presented it to Scott after the flight. The engineers who'd come up with the idea. That was neat.

ROSS-NAZZAL: Yes that is. Did I see that George [W.] Bush met you guys when you came back?

MELROY: Oh yes. Yes, yes, that's right. Back here. Forgot about that part. Pretty neat.

So we're just about there. That was actually the stuff that I wanted to talk about. So is there anything? Let's see. Peggy. I think you asked a question about Halloween. Of course, I place a very high priority on certain things like that. So one of the things that on my second flight I did was I took up something special for every single crew member.

By special I mean something that would be meaningful to them personally. Sandy loves Tigger. So I took up Tigger stickers for Sandy and stuck them on her crew notebook, surprise to her. So there was always room for that. I brought up a little pumpkin, a little Halloween.

I also actually brought up one of those foldable turkeys, because Thanksgiving was coming. So you can see it actually in a couple of our pictures. I presented all that stuff to the crew. Yes, it's always important to mark those moments and make their home more of a home. I think that was the only other question.

ROSS-NAZZAL: The only other question that I had, just because I'm working on this article about the media and these first six women. What was the media interest like in this flight, being that you were the second female commander? Or was it not a big deal by that point?

MELROY: No, I think there was some interest. I think less so. Certainly much less so than for Eileen, which is good. But it generally came up. One of the strategies that I had though was to really try to make the crew more accessible to the media. In our media teleconference I told a little story. Sometimes humorous. Usually humorous in a sense that I said Paolo was our MacGyver. No doubt if we need to fix the Space Shuttle with paper clips and glue, he would be the guy who would figure it out.

So that actually really helped. I think several people from the media have commented to me how much they enjoyed that press conference and also my crew. Gosh. What? I was just giving them a platform. Once I made a little joke, I just sat back and let them entertain the media. So that was wonderful for me because it really deflected a lot of attention from me. It just made it about the crew, which was really good. I liked that. We didn't have any issues.

ROSS-NAZZAL: Well, Rebecca, do you have any questions for Pam?

MELROY: We definitely covered everything.

ROSS-NAZZAL: All right. Thank you very much.

[End of interview]