

## Administrator's Remarks

At the Launch of

### STS-122 *Atlantis*

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Good afternoon. We are gathered here today to commemorate the launch of the European Space Agency's *Columbus* laboratory to the International Space Station, the culmination of a decade of work on the part of our European partners. The new capability it brings to the ISS is rightly a cause for celebration.

But there is a larger meaning to it all. Recently, I had the honor to meet with several family members of one of those lost five years ago on Space Shuttle *Columbia*. As always, this is a sobering experience; it should be. As the head of our agency, it is difficult to look into the eyes of a family member and accept responsibility for the loss of their loved one because, quite simply, there were things we in this agency should have known and did not. I was not with NASA when we lost *Columbia*, but I know in my heart that there would have been no difference had I been. No one in the space community thought foam was dangerous. We were blind to it; we didn't see it.

When we push the frontier, we encounter things we don't know, that we must know. Behavior that is unremarkable in normal existence, levels of care and diligence appropriate to civilized society, can be fatal on the frontier.

It has always been this way. Allow me to offer a few brief quotes from the National Park Service website on the travails faced by those who pioneered the Oregon Trail:

*"While some people seemed to thrive on the excitement and adventure of the journey across the plains, for many it was an ordeal. After surviving untold hardships, there arose the threat of disease and death. There are, of course, no valid mortality rates available. Estimates are as large as 30,000 deaths, but a more conservative estimate is 20,000 for the entire 2000 miles of the Oregon Trail*

*- an average of ten graves per mile. Assuming the grand total of 350,000 people emigrating is correct, that averages to be one death for every seventeen persons who started.*

*Deaths occurred from poor sanitation practices in cooking and food storage, bad water, and poor living conditions. ... Pneumonia, whooping cough, measles, small pox and various other miscellaneous sicknesses and diseases caused many deaths. Cholera, caused by drinking infected water, was the greatest killer on the Oregon Trail."*

The people who set out on the Oregon Trail didn't know what they needed to know, things which are common knowledge today, things as basic as how to store water safely, or how to prevent infections during childbirth.

*"Accidents associated with wagon travel also took their toll. Injuries, maimings, and death were caused by drownings, wagon accidents (typically being run over by a wagon), accidental shootings, and animal handling. Fatigue caused carelessness and carelessness led to these and other accidents."*

How haunting is this, when we compare it with accident investigations today? Today, we encounter different kinds of accidents and experience different kinds of fatigue. Some of it is mental fatigue from the pressure to pinch yet another penny out of the government dollars we are allocated, or from time spent in answering yet another uninvolved critic of our work. But it is fatigue nonetheless. And this business of launching people into space is physically grueling, as well – which is why we restrict the number of consecutive launch attempts we will undertake before allowing our ground crews to rest. Some things, we have learned. We hope.

*"Weather extremes were among the hardships along the Platte River that could not be avoided and simply had to be endured. April and May could be cold and wet, and since the emigrants traveled with a meager supply of clothes and bedding, many were uncomfortable. Later, heat and dust became the enemy. When it rained, low places became bogs for wagons to mire down in, and rivers that had to be crossed became raging torrents."*

Today our environmental hazards are very different, and yet astoundingly the same. We face, and our astronauts face down, the hazards of launch and entry, of microgravity and radiation, and, yes, the threat of infection and disease from living for months at a time in the closest quarters imaginable. The more things change...

In so many ways our society today is timid by comparison to those who accepted the challenges of those earlier times – except on the space frontier, where 22 of the approximately 470 people who have been to space, or tried to get there, have died in the attempt. Not quite as bad as the odds faced by those on the Oregon Trail, but certainly daunting. We talk about flying the Shuttle “safely”. We talk about “acceptable risks”. Well, what we do on the space frontier cannot, by any normal use of the word, be described as “safe”. And I hate the term, “acceptable risk” when used by those who aren’t accepting it. The risks of spaceflight are not “acceptable” at all. What we have are “accepted risks”. We accept them because we can, today, do no better, and we choose not to quit. To quit, to abandon the frontier, is the thing we can never do.

The truth is that there is much we do not know about this business of flying in space, even a half-century into it. Our descendents will see that our dreams were accomplished through efforts that, in their way, are as woefully lacking in critical knowledge as those of our forebears who set out for Oregon. We do not know what it is that we do not know – or we would fix it now. But it lies in wait for us, out there, for certain.

And so when we approach one of these events – the launch of another crew of our very best on yet another mission to space, another mission to the frontier, another step toward building a toehold on that frontier, I always wonder – what do we not know, that we should? What did we miss? What did *I* miss?

Certainly, all of us responsible for today’s launch believe the answer to these questions to be “nothing”. Many of you gathered here will pray, and we all hope, that the answer to these questions is “nothing”. But we also know that, on some other day in some other time, there will be a different answer. That is the price of expanding the reach of human action and, ultimately human civilization. It is the same price that it has always been. And in the willingness of our best and finest to risk that price, and sometimes to pay it, we see that which is also best and finest in our society.

Today we are here to celebrate the launch of a state-of-the-art scientific laboratory into space, part of the greatest peaceful human enterprise of all time. The science it will return will be surprising, and it will be wonderful. The strength of the international endeavor that has brought it about is equally wonderful, and even more surprising. But in the larger sense it is also another huge step in the opening of this new human frontier, a step taken in the face of risks known and unknown,

to achieve a goal as noble in its own way as the goal of scientific discovery which, as a collateral benefit, it also enables.

Societies as well as individuals must be willing to risk. We risk our treasure, our pride and, above all else, the ineffable quality of our attention to and involvement with those things that we set as priorities, the things that make us who we like to think we are. It is always easy, all too easy, to step away from those things that we do, in President John Kennedy's perfect words, "not because they are easy, but because they are hard". But if we as a society ever step away from this endeavor, then we will have become a society unworthy of those who are out there on the pad today, poised to risk their all to bring it about.

Thank you.